

USDA BDNF
 Madison Ranger District
 5 Forest Service RD
 Ennis, MT 59729

I am writing to object to the Greenhorn Vegetation project

The Greenhorn Vegetation project proposes vegetation treatments on approximately 17,092 acres of NFS lands in the 41,900-acre Greenhorn project area.

Treatments will consist of approximately

- Almost 5,000 acres of hand slashing and prescribed fire,
- 1,047 acres of commercial thinning and prescribed fire,
- 36 acres of stand clearcut and prescribed fire, and
- 11,134 acres of prescribed fire only (Table 1).

Table 1. Proposed actions for vegetation treatments

Proposed Treatments	Treatment Objective	Vegetation Type	Treatment Unit	Total Acres
Hand slashing and prescribed fire	Reduce conifer encroachment to promote early seral conditions	Sagebrush bunchgrass	E1-E16	4,875
Prescribed fire	Reduce conifer encroachment to promote early seral conditions	Sagebrush grass, open juniper, Douglas-fir, aspen	B1-5, 7-13	11,134
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T1	220
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T2	357
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T3	99
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T4	32
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T5	100
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T6	120
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T10	18
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T11	23
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T11A	15

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Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T12	7
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T13	36
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	T14	7
Commercial thinning and prescribed fire	Reduce basal area to 40 to 60 square feet to enhance stand resistance to disturbance and reduce competition	Douglas-fir and mixed conifer	Total	1,047
Stand clearcut and prescribed fire	Regenerate stand to increase diversity of age classes at the landscape scale to enhance landscape resilience	Lodgepole pine	T10A	6
Stand clearcut and prescribed fire	Regenerate stand to increase diversity of age classes at the landscape scale to enhance landscape resilience	Lodgepole pine	T10B	8

"Effects of present and foreseeable activities: The incremental effects of present and foreseeable future activities on forested vegetation are negligible"

I OBJECT that the project will have a negligible effect

11,134 acres of prescribed burn will have an impact

4,875 acres of hand slashing and prescribed burn will have an impact

Reducing 1,047 acres down to 40 to 60 acres using commercial thinning and prescribed fire will have an impact

The importance of this area and why it must remain intact will be the body of my objections. The first question to me is?

Who proposed the project? The Gravelly Landscape Collaborative

The Gravelly Landscape Collaborative (GLC) proposed the Greenhorn Vegetation Project to the Forest Service and helped identify the project area and need for action. The GLC includes the Greater Yellowstone Coalition, the Nature Conservancy, members of the ranching community, recreationists, wood products industry representatives, environmental professionals such as non-government wildlife biologists, and general members of the local public. The GLC teamed up with the Madison Ranger District and the Beaverhead Deerlodge National Forest as a collaborator throughout project development

The second question is;

Why was Gallatin Wildlife not included in the GLC when that organization has been active in the Gravelly Range wildlife conservation for decades?

The answer is in the GLC email to Gallatin Wildlife

We welcome the opportunity to clarify the GLC planning committee composition and process.

The PURPOSE of the planning committee is to explore previous and current opportunities to enhance watershed and forest function and resilience in the Tobacco Roots. The goals of potential management activities are consistent with those of the Greenhorn project and support forest health, fish and wildlife habitat and resiliency for climate change while maintaining diverse uses including recreation opportunities, timber harvest and grazing. These diverse goals and interests have been at the heart of the GLC since its' inception.

The PROCESS of the planning committee is to hold a few meetings with resource specialists (USFS) to coordinate how best to present the current resources found in the landscape, start compiling challenges/concerns within the landscape and how can the information best be brought to the GLC as a whole for discussion. The planning committee is a small group representing diverse disciplines who are COMMITTED TO WORKING COLLABORATIVELY AND SEEKING CONSENSUS. This commitment is part of our charter. The Gallatin Wildlife Association and Cottonwood Law have not demonstrated a commitment to collaboration and the give and take required for consensus, as shown in the continued lawsuits and opposition to management actions that include grazing. For this reason GWA is not eligible to be invited as a planning committee member.

As the GLC explores opportunities for management that supports forest health, resiliency and the shared goals of the collaborative, public meetings will serve to advise and develop best approaches and locations. GLC public meetings are designed to offer opportunity for ALL public interests to participate and provide input, including of course GWA and Cottonwood. No decisions or actions will take place outside of these public forums, just as in the Greenhorn project development.

I hope this provides a clear explanation. Let me know if you have any unanswered questions.

We will be announcing a full GLC meeting in September (September 19 or 20 are target dates, to be confirmed) soon.

From: Jennifer Boyer [mailto:boyerfarm51@gmail.com]

Sent: Thursday, August 02, 2018 2:43 PM

To: Glenn Hockett

Cc: John Meyer; Darcie Warden; Kris Inman; KKSuzuki; Dan Durham; John Anderson

Subject: Re: Gravelly Landscape Collaborative notes & events

The GLC is listed as a collaborative group in a Montana State Publication

Gravelly Landscape Collaborative

The Gravelly Collaborative is a diverse group of citizens and stakeholders who value the Gravelly area for its rich fish and wildlife habitat, natural resources, opportunities for recreation, and clean water. Initiated in 2012, the collaborative strives to include all relevant interests and to foster a transparent, consensus-driven approach to addressing natural resource and community concerns of the Gravelly landscape.

It is obvious that what the GLC said and what they did in the collaborative are much different. It is also obvious that they did not follow a forest service management directive that it be an inclusive group by not including GWA.

Collaboration or Collaborative Process - "a structured manner in which a collection of people with diverse interests share knowledge, ideas, and resources while working together in an **inclusive** and cooperative manner toward a common purpose."

(National Forest System Land Management Planning; **36 CFR § 219.19. p. 83.**)

Greenhorn Vegetation Project, Environmental Assessment

Commercial Harvest (Stand Clear Cut Lodgepole / Douglas Fir Commercial Thinning

- Commercial harvest units include 1,529 total acres that involve possible ground disturbance from commercial thinning, regeneration cuts and temporary roads

Non-Commercial Thinning

- The pre-commercial thin from below treatment includes a proposed 4,875 acres of treatment in sagebrush and bunchgrass dominated vegetation communities. Activity will target encroaching **conifers and subsequent slash created by implementation may receive prescribed fire treatment. Prescribed Fire Within the sagebrush and bunchgrass**, open juniper and Douglas-fir, and aspen components of the project,
- **prescribed fire treatments would be broadly applied 11,134 acres**

Fire

The amount of fire to this important wildlife area is excessive;

- Almost 5,000 acres of hand slashing and prescribed fire,
- 1,047 acres of commercial thinning and prescribed fire,
- 36 acres of stand clearcut and prescribed fire, and
- 11,134 acres of prescribed fire only (Table 1).

The Fire regime in the area does not dictate the amount of fire proposed

Project area fire regime groups

- 98% are in three groups
- 37% Group III-low-to-mixed severity fires every 35-200 years
- 29% Group IV potentially high severity, stand replacing fires every 35-200 years
- 32% Group V all types of fire severity with the majority being stand replacing every 200 years or longer

Fire history of the project area-

A total of 1,047 acres within the project area has burned since 1956 mostly with prescribed burning treatments for re-planting, or pile-burning fuels post-harvest. The Greenhorn Vegetation project is the only planned project involving prescribed fire in the foreseeable future,

1047 acres of prescribed burns or pile-burning fuels post-harvest in 66 years or 16 acres a year does not indicate an active fire pattern.

The Forest Service assumes that their preferred plan will protect this important ecosystem.

Regeneration after fire is not a given as shown in GWA observations

GWA went to a fire area, Storm Castle. GWA's objective for our investigation was to ground truth regeneration 8 years after the fire.

Our main point in making this observation and connecting it to the Greenhorn project is to question using fire on 17,092 acres. Fire will have a huge impact on the area especially for wildlife. This is truer now than ever when climate change is factored in.

Below are EPA and NOAA data that proves that climate change must be a causative factor in future forest service vegetative treatments, or any of the other descriptors that are used to give the forest service authorization for the Greenhorn project.

GWA took a four wheeler the length of Storm Castle Road in the Gallatin Range on August 6, 2020. We took pictures and notes

- The area on Storm Castle that was not burned was forested
- The Millie fire ignited Aug. 28, 2012 because of a lightning strike. About 545 people are assigned to the fire. Four helicopters, 15 crews, 12 engines, seven dozers and one water tender also are on the blaze.
- The extent of the fire is evident in the photos
- Our objective of the drive was to ground truth regeneration
- On most of the burned area visible from the road we only saw regeneration of ground cover
- Of note, no seed trees in much of the area
- On some small west facing slopes we saw a few lodgepoles that were 3-4 feet
- On south facing slopes we saw no lodgepoles

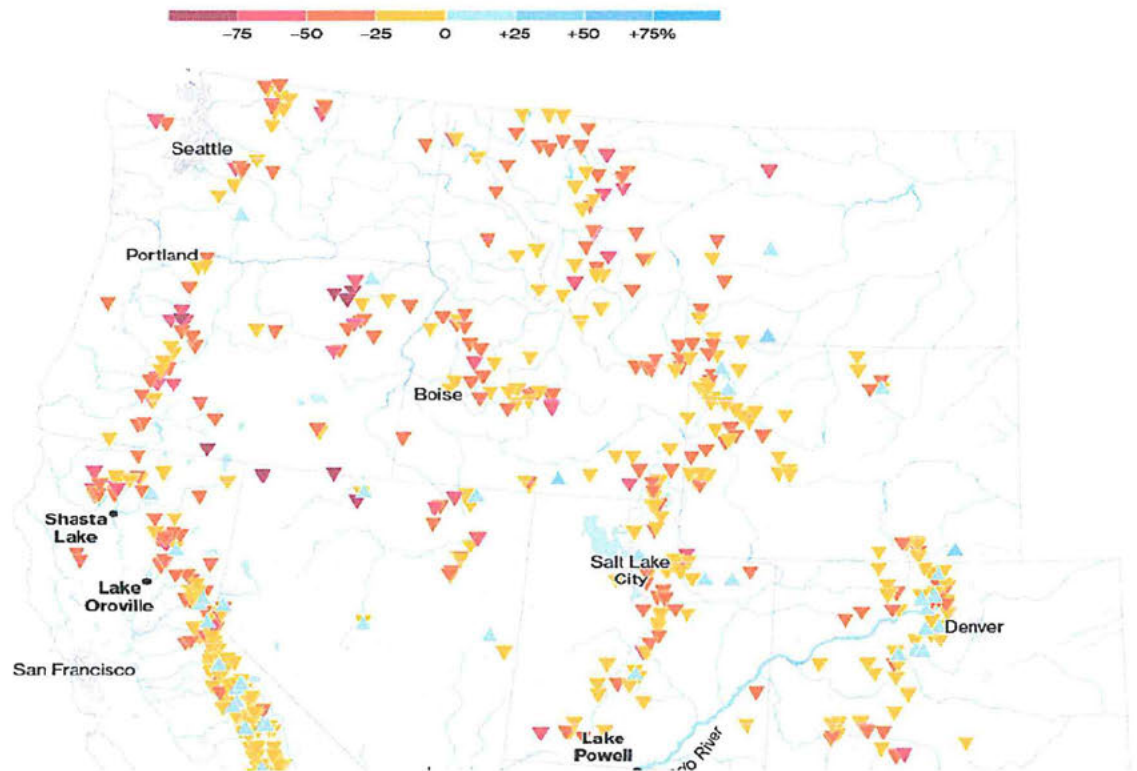
- This area has been extensively logged, note the roads visible in the burned area, and the burned trees still standing. These are old roads, before the fire. There was evidence of previous logging, stumps.



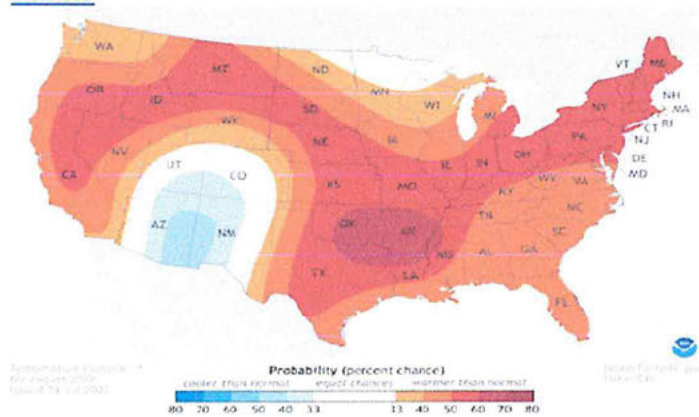
Climate Data is coming out almost daily, and the forest service must evaluate it, here are two in the last two days.

- **The End of Snow Threatens to Upend 76 Million American Lives**
- **Disappearing snowpack is accelerating the historic drought across the Western US, and so far government responses haven't matched the scale of the problem.**
- Story by [David R Baker](#), [Brian K Sullivan](#), [Kim Chipman](#) and [Mark Chediak](#) [Green](#)
- Graphics by [Christopher Cannon](#) for Bloomberg Green
- August 3, 2022

Western Snowpack Has Shrunk by 23% Since 1955
Change in April snowpack in the Western US, 1955-2022



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- Source: EPA
[August U.S. Climate Outlook: a wet Southwest Monsoon and a hot, dry Plains](#)



Threatened, Endangered and Candidate Species in the project area

Threatened, Endangered and Candidate Species in the project area

I object that the forest service seems to respond to “the continued existence” and not the threatened species ecosystem requirements.

Table 31: Terrestrial Threatened, Endangered and Candidate Species for the Beaverhead-Deerlodge National Forest

Species	Status	Habitat/Range	Status in Project Area
Canada Lynx (<i>Lynx Canadensis</i>)	Threatened	Resident, transient – secondary/peripheral lynx habitat	Not known, Possible
Grizzly bear (<i>Ursus arctos horribilis</i>)	Threatened	Resident, transient; Alpine/subalpine coniferous forest.	Known, Resident
North American Wolverine (<i>Gulo gulo luscus</i>)	Proposed	High elevation alpine and boreal forests that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season.	Known, Resident
Monarch Butterfly (<i>Danaus plexippus</i>)	Candidate	Open grasslands, foothills, valley bottoms, roadsides, pastures, and suburban areas with sufficient milkweed for breeding and/or sufficient nectar resources from flowers during breeding and migration.	Not Known, Possible

Determination This alternative May Affect, Is Likely To Adversely Affect the grizzly bear due to the potential effect in the springtime to denning females with cubs of the year.

Determination The Greenhorn Vegetation project may impact wolverine individuals or habitat but would not likely jeopardize the continued existence of the wolverine

Determination The Greenhorn Vegetation project may impact bighorn sheep individuals or habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Determination The Greenhorn Vegetation project may impact greater sage-grouse individuals or habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Table 72. Past, present, and reasonably foreseeable activities in the analysis area

Activity	Time Frame	Comments
Livestock grazing and allotment management	Past/Ongoing/Future	Livestock grazing and associated grazing infrastructure development including fencing and water developments
Fire suppression	Past/Ongoing/Future	Activities include direct damage to vegetation and indirect effects on plant succession
Wildland fire	Past/Ongoing/Future	Wildfire may affect sagebrush habitat in the project area
Recreational vehicles	Past/Ongoing/Future	Vehicle use will continue to introduce invasive plants

Reasonably foreseeable activities that will happen on a regular/throughout the year basis

- Livestock grazing and allotment management including water developments and fencing
- Recreational machines, ATV, motorcycles, mountain bikes, and vehicles that will do much more than introduce and spread weeds. The effects on wildlife are well known

I object that these activities have not been evaluated in the Greenhorn project area.

Venerable trees species and Climate Change

Recent Climate Change Assessments have concluded that the GYE and Gallatin NF will experience continued warming temperatures, decreasing springtime snowpack, and decreasing late season soil moisture. The predictions are based upon the best Global Climate Models downscaled to local topography using current climate trends from SNOTEL data (see Chang and Hansen 2015). The climate will become hotter and drier at lower elevations and hotter with similar precipitation at higher elevations (Romme and Turner 1992, 2015). These changes will result in a longer, warmer, and drier growing season than present and forests will change in species composition and also be replaced by sagebrush (Hansen et al. 2015). The patterns of change in temperature and precipitation are not uniform across the landscape but vary according to local topography, soils, and weather patterns.

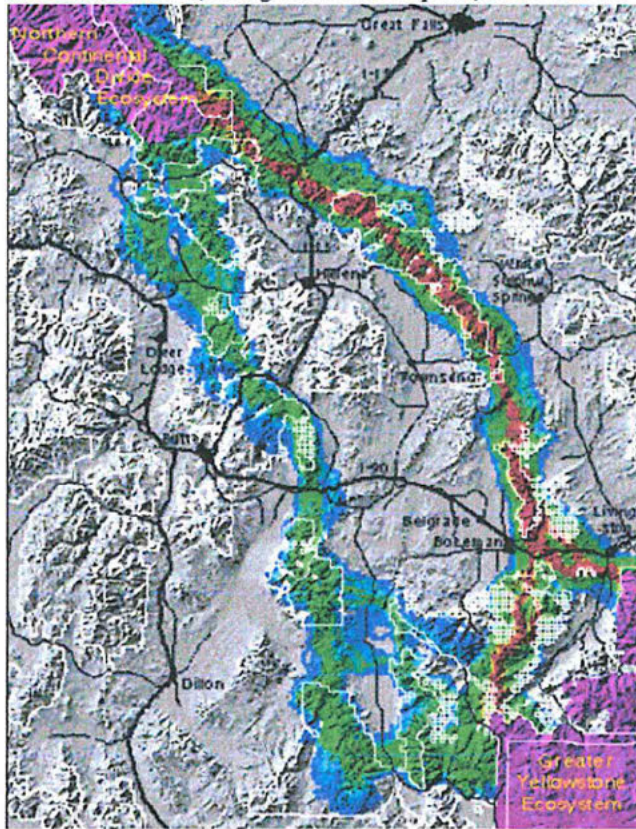
These changes are already occurring. Current long-term snowpack declines are found across the western U.S. and are being caused by temperature increases. (Tercek et al. 2015). Temperatures at all elevations have warmed significantly since 1985; elevations below 6,500 feet have also become significantly drier (Chang and Hansen 2015). Higher elevations have shown no significant change in precipitation yet, but as they continue to warm there should be earlier snow melt leading to more prolonged drought stress later in the growing season. This warming is associated with earlier spring snowmelt, warmer summer conditions, and a longer growing season and fire season (Romme and Turner 2015). By 2040, conditions like those in 1988, when the big Yellowstone fires occurred, will be fairly common (David Thoma, pers. comm.)

As climate change progresses there will be significant changes in the forests of the Gallatin Mountains and some shifts in the distribution of the wildlife species using them. Whitebark pine is the most vulnerable of the tree species and has already suffered catastrophic losses due to outbreaks of mountain pine beetle fueled by warming temperatures (Logan et al. 2010). In addition the amount of area with the climatic conditions suitable for its growth is predicted to drop from 21% of the GYE to 11% or less. Remaining suitable climate area for limber pine, aspen, douglas-fir, lodgepole pine, Engelmann spruce, and subalpine fir will also decrease greatly, while conditions and suitable areas for sagebrush and juniper will increase (Hansen et al. 2015). Climate conditions will change enough that other species such as ponderosa pine will have favorable conditions in the GYE.

Climate change will drop climatic conditions suitable for growth from 21% of the GYE to 11% for the Whitebark pine and also decrease for other species. With that change, how can this 17,092 acres vegetation treatment be considered?

Connectivity

The first connectivity model for grizzly bears was published by Walker and Craighead in the Proceedings of the ESRI Users Conference (Walker and Craighead 1997). The primary movement route, using a least-cost-path, between the GYE and the NCDE includes the HPBH



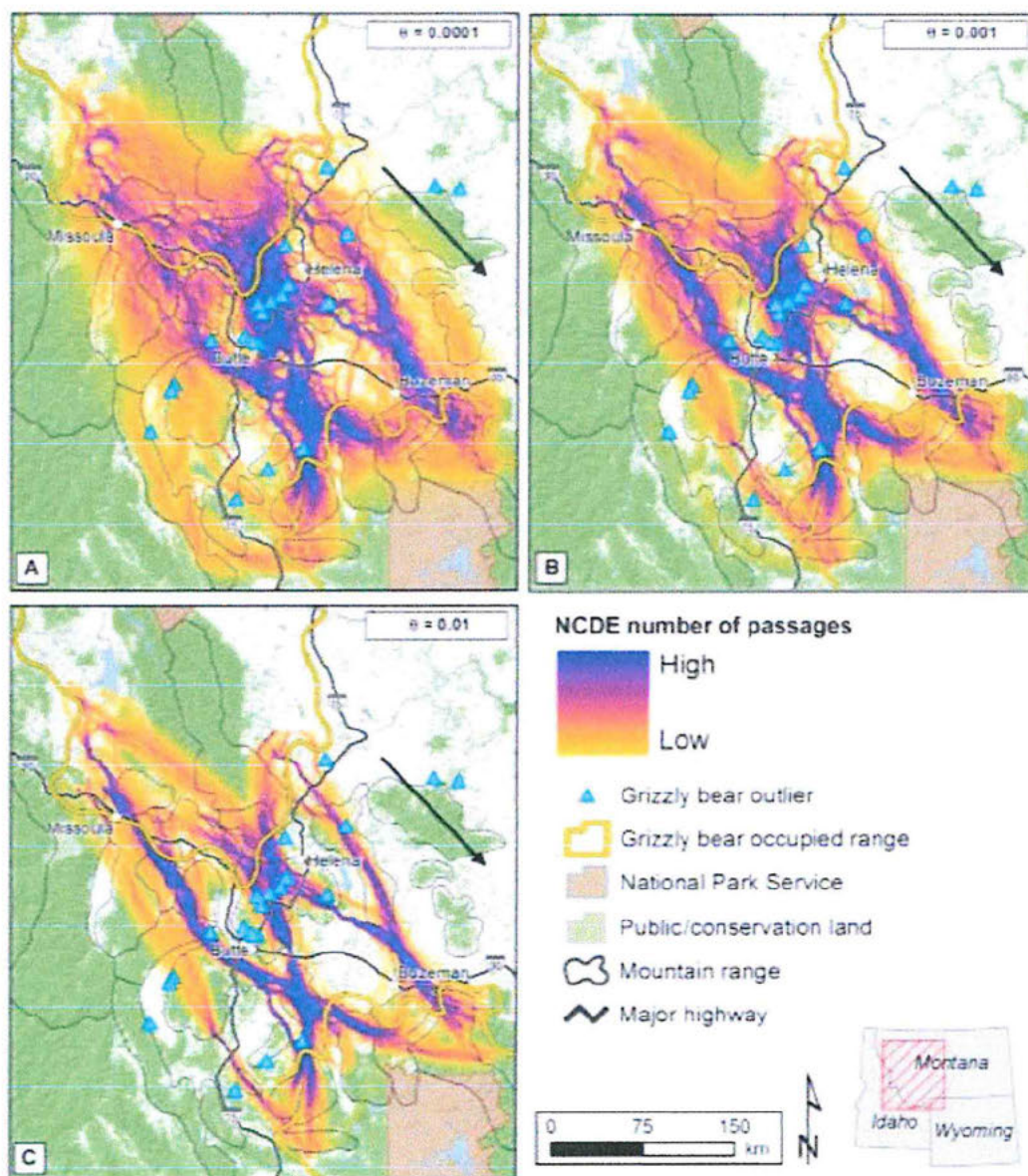
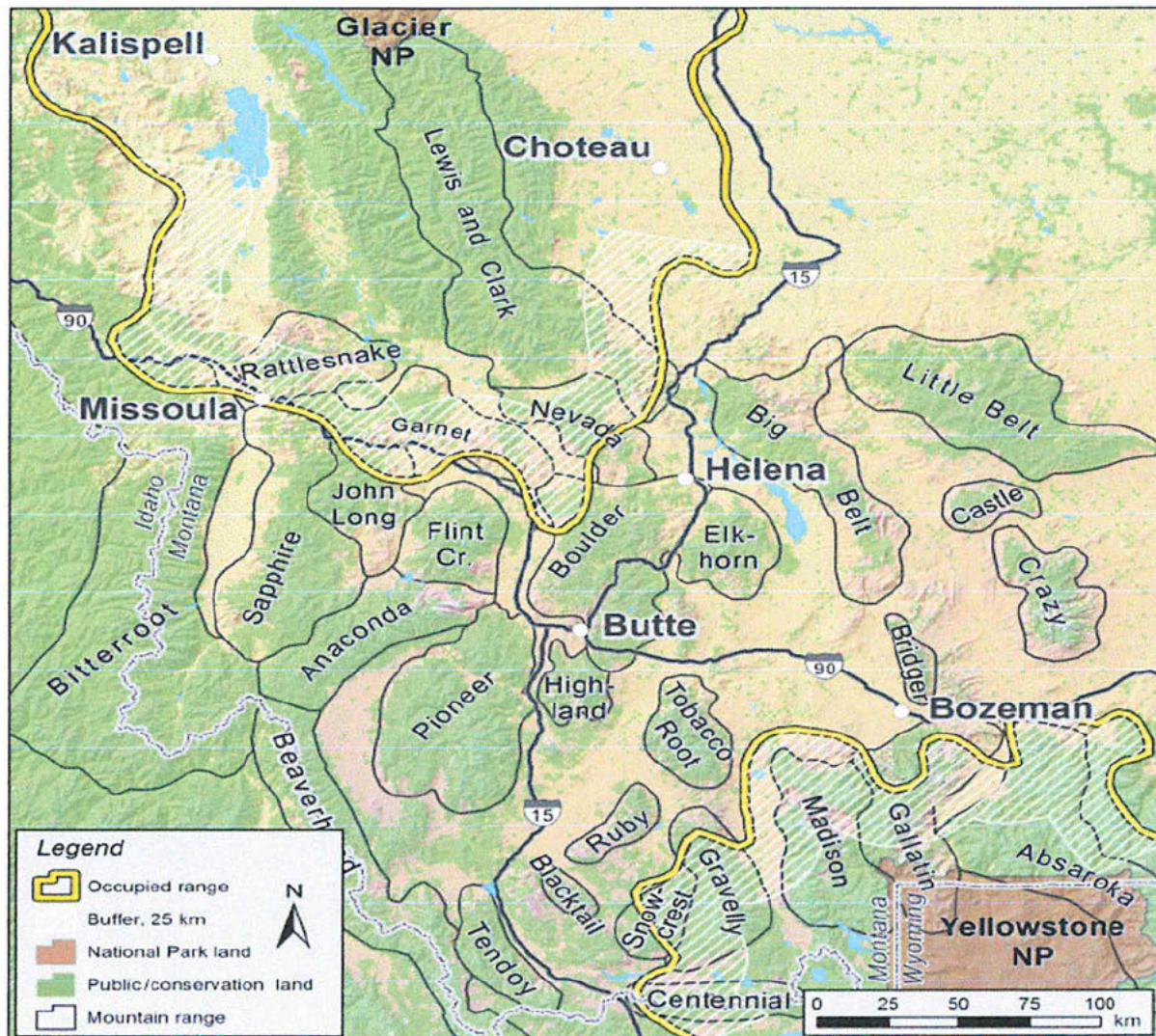


Fig. 2. Randomized shortest path (RSP) predictions of male grizzly bear movements from the Northern Continental Divide Ecosystem (NCDE) to the Greater Yellowstone Ecosystem (GYE) based on GPS movement data for males monitored in the NCDE, 2000–2015. Color gradient is based on cumulative values of RSPs for 100 pairs of origin–destination nodes, representing the average number of net passages for each grid cell. Three levels of θ are shown, representing different trade-offs between exploration and optimal exploitation of the landscape: (A) $\theta = 0.0001$, (B) $\theta = 0.001$, and (C) $\theta = 0.01$. Locations of 21 confirmed records of grizzly bear presence are shown as blue triangles. Black arrow indicates direction of paths. Occupied range based on data through 2014 (Bjornlie et al. 2014, Costello et al. 2016).



Occupied Range map shows the importance of the area and its' close proximity to the Northern Continental Ecosystem, and genetic connectivity of the grizzly, as ordered by the court.

Climate Change-in the latest GYE report, big changes are possible and mitigations measures need to be in place, the most protective, Wilderness – below is the link to the 6/2021 report. Also below is a piece from the MSU website.

07/23/2021 BOZEMAN — A climate report for the Greater Yellowstone Area co-authored by Montana State University Regents Professor Emerita Cathy Whitlock has been gaining traction around the world since it was published June 23. **The Greater Yellowstone Climate Assessment, a collaborative effort between MSU, the U.S. Geological Survey and the University of Wyoming, is a comprehensive look at climate change in the area using data from 1950 to 2018.**

Since 1950, the report states, average temperatures in the Greater Yellowstone Area have gone up 2.3 degrees Fahrenheit and snowfall has decreased by 25%. If the trend continues, that average temperature could rise another 10 degrees by the end of the century and drastically change the landscape. Whitlock, a paleoecologist who has spent more than four decades studying environmental change, has been on the faculty of the Department of Earth Sciences in the College of Letters and Science at MSU since 2004

"We are now moving into a climate that seems even warmer and drier than those periods," Whitlock says in the article. "That's crazy. It's possible that this whole geyser basin and the plumbing is going to change." Geysers aren't the only thing at risk as temperatures rise

"As trees die off due to the hotter climate, forests may shrink in the coming decades, which will have a cascading effect: less forest and fewer tree roots mean more grass and more erosion," the article states. "Drier grass means fewer nutrients for large mammals. Less water also hurts everything from migratory and aquatic species to grazers like bison, who face decreased nutrients from dry plants." The article ends with a plea and a bit of hope from Whitlock, who is noted for devoting much of her career to sharing the changes she sees in her research with the public in hopes of fueling positive change. "What we do in the next decade is critical," she says to conclude the article. "We have new technologies, we can solve this. We just need the will to do it."

Dr. Cathy Whitlock, a professor in MSU's Department of Earth Sciences one of the lead authors, of **The Montana Climate Assessment** has said the reason for the report was to deliver a regional assessment of likely climate-related outcomes in Montana pertaining to forestry, **agriculture and water.**

Dr. Whitlock coauthored a report which was prepared in late 2017 by the Montana Institute on Ecosystems, overseen by leading scientists at both Montana State University in Bozeman and the University of Montana in Missoula. Research informing the report's conclusions was underwritten by a \$20-million grant from the National Science Foundation, an independent federal agency and one of the most respected scientific bodies in the world.

In 2017, Whitlock said Montana had experienced an average rise of between two- and three-degrees since 1950. She and colleagues concluded that temperatures going forward would warm between four and six degrees more by the middle of the 21st century.

To put this in perspective, even a small rise in temperature can result in “average” low precipitation years plunging into full-on drought conditions; meanwhile, “normal” drought conditions can quickly escalate into the severe category when streams feeding rivers run bone dry or are reduced to trickles. It also affects the “recharge” of underground aquifers that are fed by surface water which normally passes nearly unseen through the landscape.

In the three decades that followed the 1990s, when climate change data first started to accumulate and droughts became called “the new normal” in the West, impacts to farmers’ crops and ranchers’ livestock inflicted billions of dollars in negative economic impact and costs associated with federal disaster relief. Already there are five counties in NE Montana that are in drought.

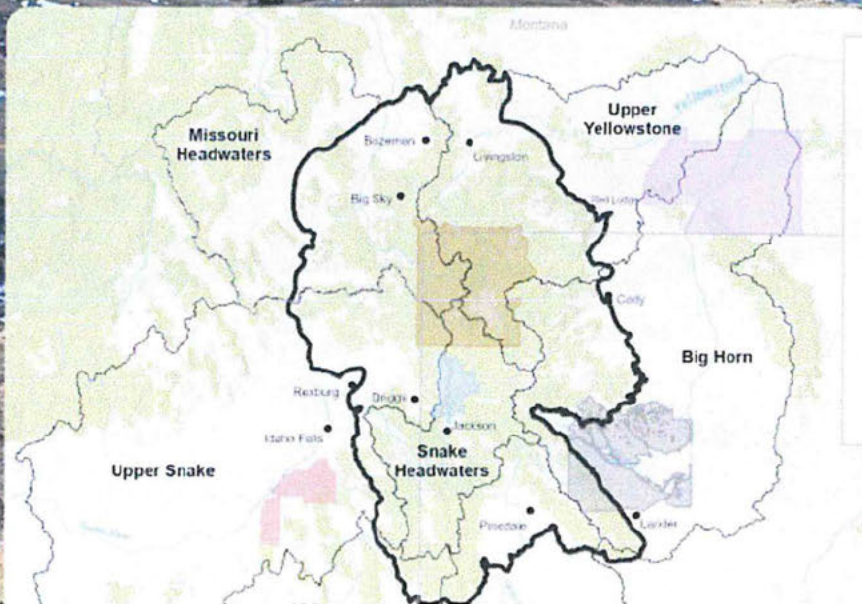
Climate Change is real and happening in Montana. Montana needs to plan for it now. One plan is to change from water loving, shade seeking cattle and transition to a native wildlife species that is more adaptable, bison. The science shows that bison don’t linger in riparian areas, destroying them, bison will seek forage much further from a water source, bison are not a shade loving species (cattle destroy the shade they seek-eat young seedlings-woody plants do not establish and the riparian area supports a much drier vegetation pattern like sage which is not of as high a value to wildlife).

If this vegetative treatment is being done for livestock stakeholders and those who agree with them, the science does not support this action, and I object.

EXECUTIVE SUMMARY

GREATER YELLOWSTONE CLIMATE ASSESSMENT

*Past, Present, and Future Climate Change
in Greater Yellowstone Watersheds*



The major findings for the Upper Missouri Watershed show

- Warmer
- 40% loss of snowpack
- 36% less June-Aug runoff

That will have huge changes to the ecosystem. The Forest Service needs to analyze and determine; What will be the most resilient?

Table ES-1: Major findings of the *Greater Yellowstone Climate Assessment* for the Greater Yellowstone Area (GYA) and Hydrologic Unit Code 6 (HUC6) watersheds based on observations for the 1950-2018 historical period and projected changes to the year 2100. (RCP stands for Representative Concentration Pathways.)

HUC6 Watershed	Change between 1950-2018				Trends to 2100 compared to 1986-2005 (based on MACAv2_METDATA ¹ for RCP4.5)				
	Temperature	Snowfall		Peak stream flow	Temperature	Precipitation	Snowpack ²	Jun - Aug runoff	Growing season length ³
GYA	2.3°F warmer	23 inches less	25% loss	8 days earlier	5.3°F warmer	9% increase	40% loss	35% less	...
Upper Yellowstone	2.0°F warmer	1.3 inches more	1% gain	12 days earlier	5.2°F warmer	9% increase	44% loss	36% less	35 days longer
Big Horn	0.89°F warmer	7.3 inches less	14% loss	1 day earlier	5.3°F warmer	9% increase	38% loss	32% less	40 days longer
Upper Green	3.0°F warmer	32 inches less	44% loss	4 days earlier	5.4°F warmer	10% increase	38% loss	33% less	40 days longer
Snake Headwaters	1.1°F warmer	16 inches less	11% loss	15 days earlier	5.5°F warmer	9% increase	39% loss	38% less	29 days longer
Upper Snake	2.3°F warmer	33 inches less	32% loss	12 days later	5.4°F warmer	8% increase	41% loss	39% less	32 days longer
Missouri Headwaters	2.6°F warmer	4.1 inches more	4% gain	9 days earlier	5.3°F warmer	9% increase	43% loss	36% less	28 days longer

I object that the Forest Service to not fully address climate change to the degree required.

I object that the Forest Service does not evaluate the effects of drought. Drought and the effects it has on the ecosystem should be a huge thoroughly evaluated. The projections in the chart above show warmer, less snowpack, less runoff which indicate more drought to come.

Drought alters recovery of Rocky Mountain forests after fire

Date:

March 21, 2016

Source:

University of Wisconsin-Madison

Summary:

A changing climate is altering the ability of Rocky Mountain forests to recover from wildfire, according to a new study. When warm, dry conditions lead to drought in the years following fires, it impedes the growth and establishment of vulnerable new post-fire seedlings. The study also shows that forest recovery has been negatively affected by increased distances between burned areas and the sources of seeds that typically replace trees lost to fire.

I object that the Forest Service has not evaluated the long term affects this huge vegetation removal and fire will have on the forest. Most

ecologists want forests to help mitigate the effects of climate change, but this project seems to do the opposite.

I object that the Forest Service has not adequately addressed mitigation, effects of drought, the future of our forests, and the impacts to wildlife, especially the threatened and endangered species that occupy the area.

1. It is not like we have turned the corner and climate mitigation is no longer needed, as shown in the annual review below.

Annual Review of Environment and Resources Three Decades of Climate Mitigation: Why Haven't We Bent the Global Emissions Curve?

Isak Stoddard,1Kevin Anderson,1,2Stuart Capstick,3Wim Carton,4Joanna Depledge,5Keri Facer,1,6Clair Gough,2Frederic Hache,7Claire Hoolohan,2,3Martin Hultman,8Niclas Hällström,9Sivan Kartha,10Sonja Klinsky,11Magdalena Kuchler,1Eva Lövbrand,12Naghmeh Nasiritousi,13,14Peter Newell,15Glen P. Peters,16Youba Sokona,17Andy Stirling,18Matthew Stilwell,19Clive L. Spash,20and Mariama Williams

[environ.annualreviews.orghttps://doi.org/10.1146/annurev-environ-012220-011104](https://doi.org/10.1146/annurev-environ-012220-011104)

The big message of the 2021review is;

Despite three decades of political efforts and a wealth of research on the causes and catastrophic impacts of climate change, global carbon dioxide emissions have continued to rise and are 60%higher today than they were in 1990.

2. It is not like our weather patterns have changed

Drought

Data from the U S Drought Map for a week in mid August shows;

2012	abnormally dry, moderate, severe
2013	extreme
2014	abnormally dry
2015	abnormally dry, moderate drought
2016	abnormally dry
2017	abnormally dry
2018	abnormally dry
2019	no drought
2020	abnormally dry, moderate drought

2021 exceptional/extreme drought

3. It is not like these vegetation treatments will help our forest, which is a mitigation measure for helping to manage climate change. The forests will likely not come back, as shown in the University of Wisconsin study. That mean wildlife will lose habitat.
4. There is a whole new science (within the last few decades) that places a new and more critical emphasis on the protection of our forests. Our forests and every forests of the world have a new role to play in keeping our planet in equilibrium from the release and capture of carbon, one we think scientists are just beginning to understand. The forest's role in fighting or mitigating climate change is important and should be a consideration.
5. There will be a huge amount of habitat lost. This map shows the impacted grizzly habitat. The project area is west of the Gravelly Road and east of the road are roads. Grizzly are impacted by roads, and on the west side habitat reduction projects that total 17,092 acres.

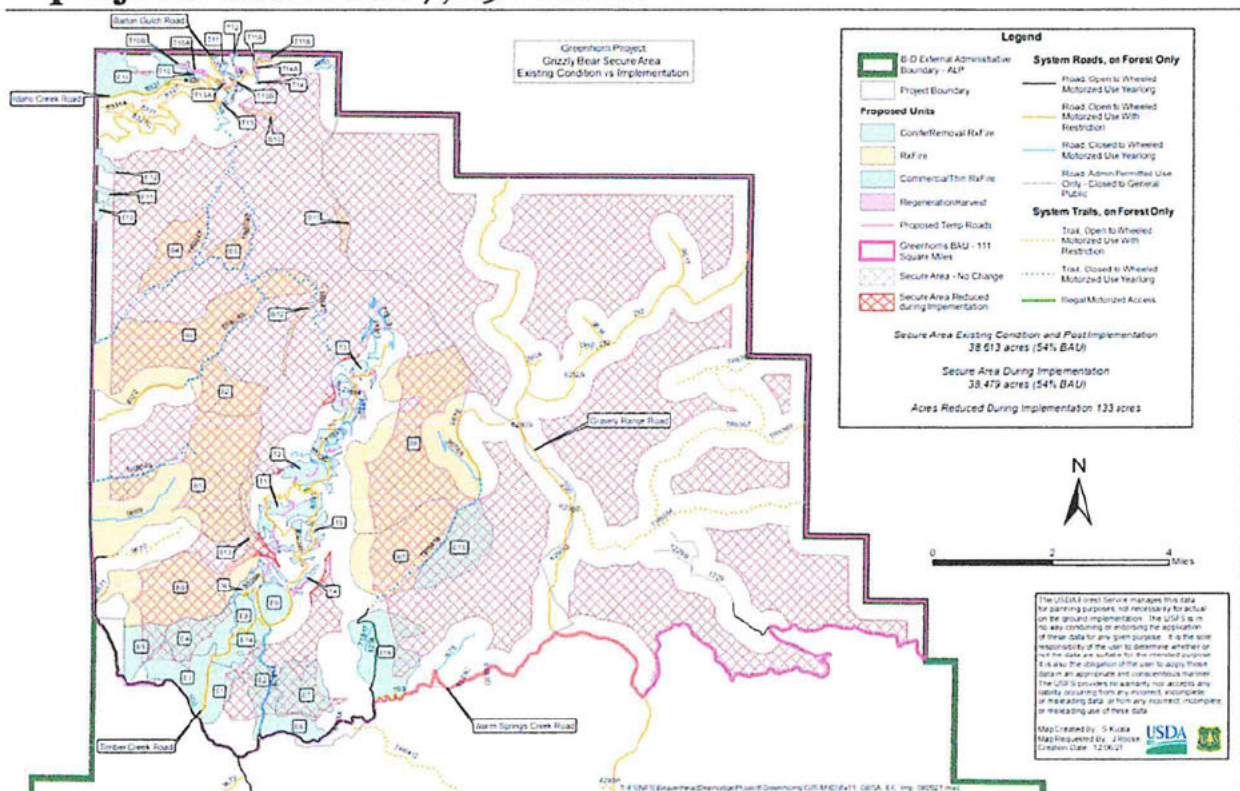


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			Total	1,047
Stand clearcut and prescribed fire	Regenerate stand to increase diversity of stand age classes to enhance landscape resilience	Lodgepole pine	T10A	6
			T10B	8
			T13A	10
			T13B	5
			T14A	7
			Total	36
Total Acres for all Treatments				17,092

The Sheep Mountain Roadless Expanse includes approximately 42,000 acres. The landscape is characterized by broad, sweeping valleys and high, barren mountains and ridges.

I object that important wildlife habitat will be taken away and It appears that the high, barren mountains and ridges will be left for wildlife

The climate is dry, and vegetation consists of a mix of open parks and timber stringers, combined with relatively dense patches of vegetation where streams, springs, and slopes combine to provide higher amounts of moisture and shade

I object that winter grounds were not kept for wildlife. Winter range is currently identified by MTFWP for elk and other wildlife should be evaluated for threatened, endangered and species of conservation concern.

GWA did a wildlife winter use project and the results of that do not support the Greenhorn project land use designations;

GWA wanted to see how wildlife used the high areas in the Gallatin Range during the winter, so we placed a camera in the Windy Pass area on 9/5/2020. GWA collected the camera on 7/20/2021. Roughly 1000 pictures were taken. Our goal was to see what wildlife utilized the area which is 8600ft.

GWA viewed all of the shots and made the following monthly wildlife count.

September	2 deer
October	0
November	0
December	0
January	0
February	0
March	1 Fox on 3/31
April	fox on 6 sightings
May	fox on 9 sightings
June	fox on 5 sightings, 2 bear cubs, 1 wolverine, 1 moose with calf, 11 elk
July 1-20	22 deer, 7 elk, 1 fox

GWA concluded that many species of wildlife do not use high elevation habitat for year round habitation. This shows that wildlife must need the lower elevation areas for much of the year

I object that a semi-arid climatic area is not closely studied and given special considerations

The closest town, Virginia City, receives 15.7 inches of precipitation a year which is semi-arid

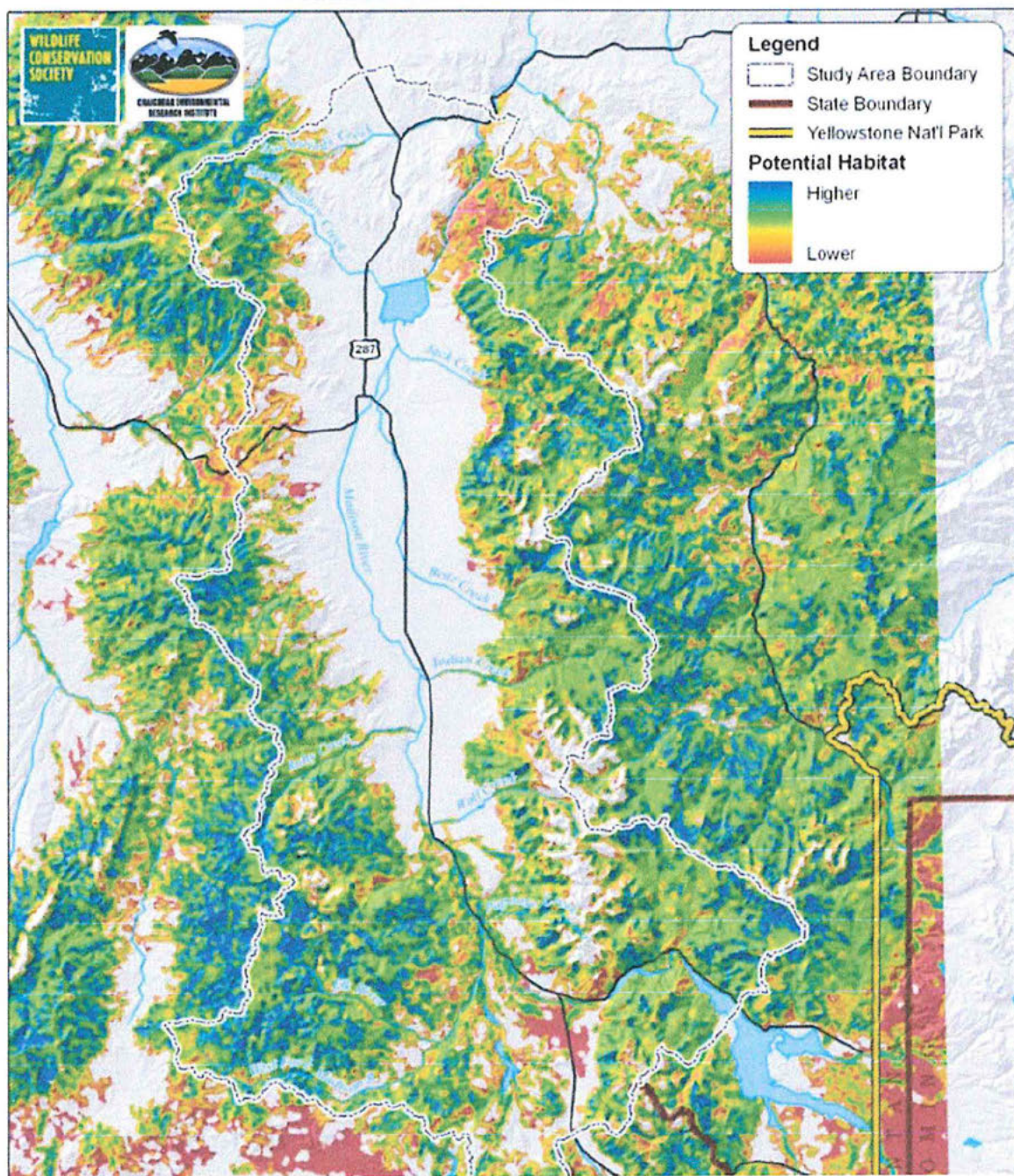
Importance of IRA designation of the project area

Habitat for Threatened, Endangered, Proposed, Candidate and Sensitive Species Dependent on Large Undisturbed Areas of Land	The Roadless Expanse plays an important role in providing large, relatively secure habitat for wildlife due to limited access, especially when combined with adjacent IRAs. The IRA provides secure habitat for wildlife enhancing linkages and connectivity across the landscape in between GYA and forests to the west and north. The entire IRA is considered occupied habitat for grizzly bear. Wolverine and Canada lynx habitat exists in the IRA. Westslope cutthroat trout inhabit some stream segments.
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The short and potential long term habitat changes I believe will not provide secure habitat and for connectivity to the north and west for the grizzly, wolverine, and Canada Lynx.

The entire IRA is occupied habitat for the grizzly. It is also important habitat as documented in A Wildlife Conservation Assessment of the Madison Valley, Montana. By Brent L. Brock, Eric C. Atkinson, Craig Groves, Andra Toivola, Tom Olenicki and Lance Craighead

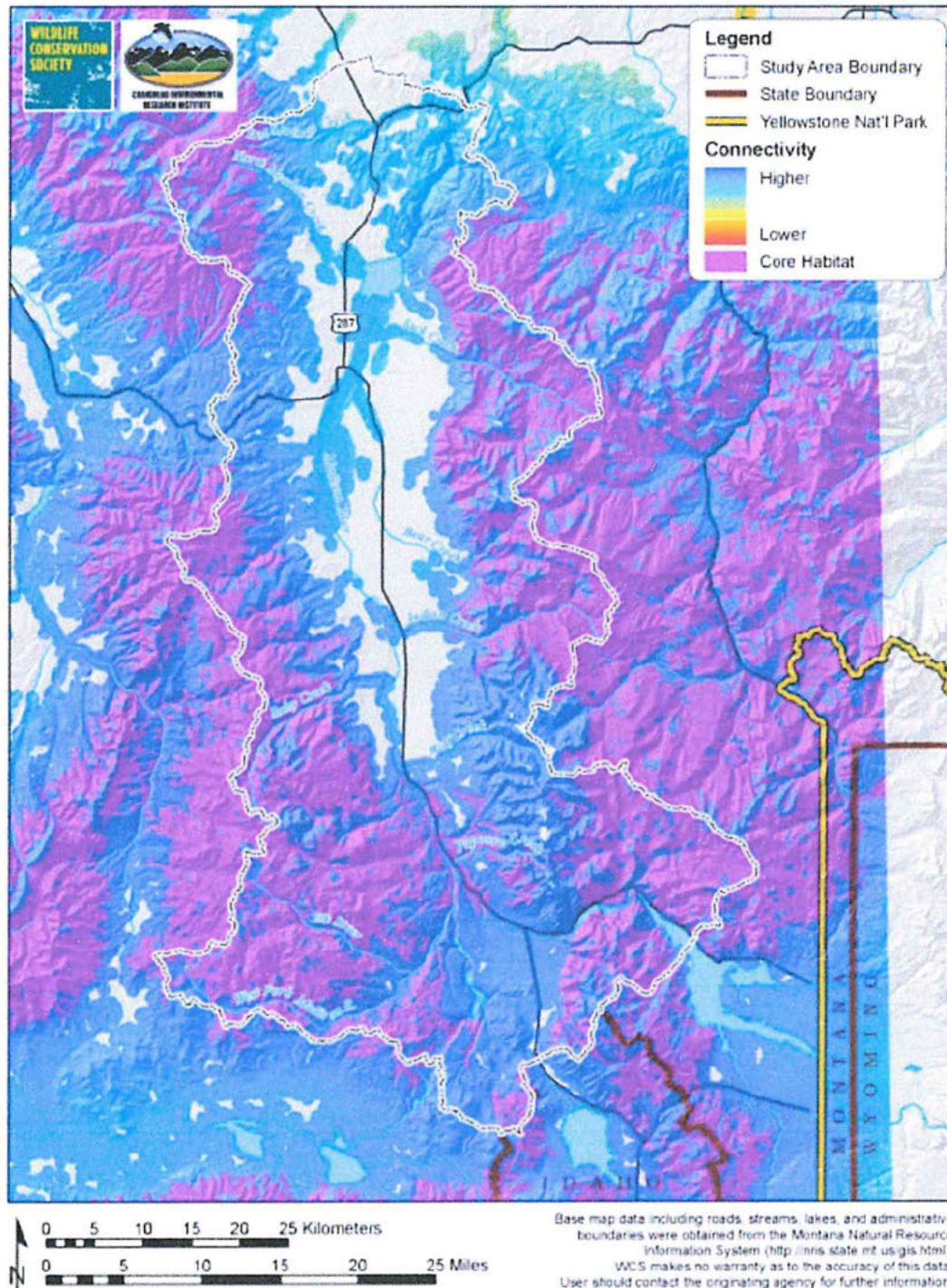
GRIZZLY BEAR POTENTIAL HABITAT



Special Attributes of the Sheep Mountain IRA

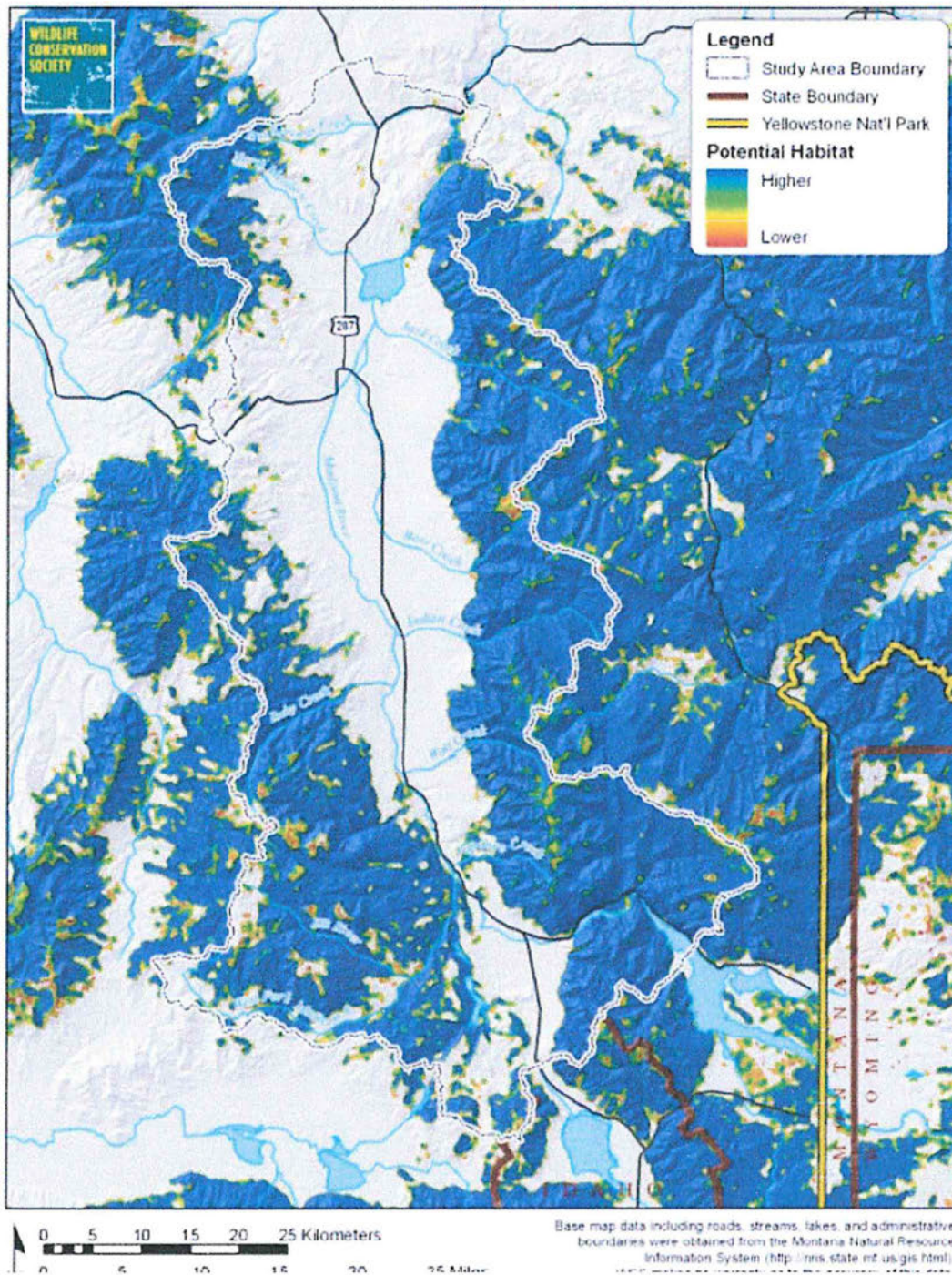
The Sheep Mountain IRA is an important part of a wildlife connectivity corridor as shown in the same assessment.

GRIZZLY BEAR POTENTIAL LANDSCAPE CONNECTIVITY



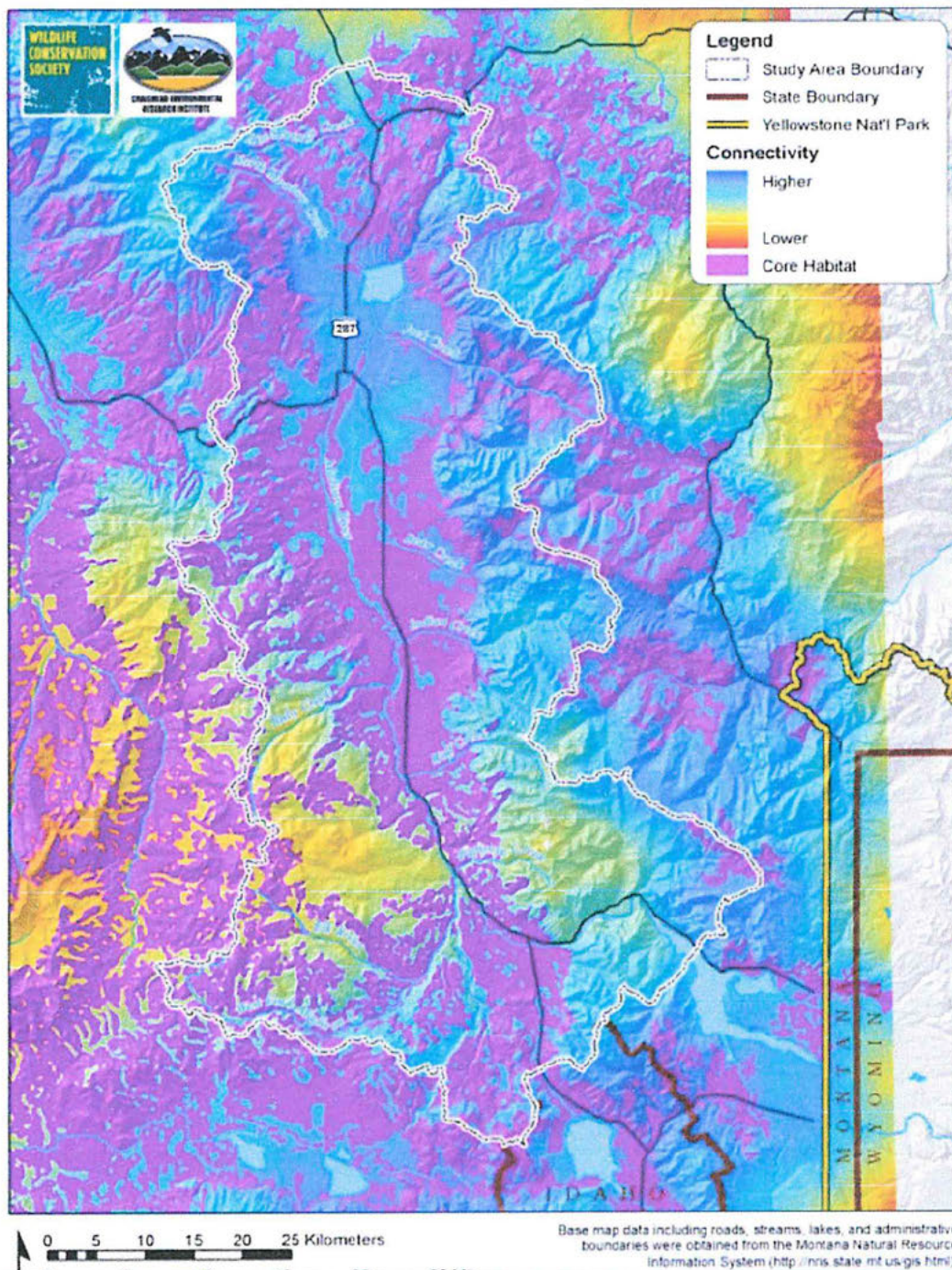
Besides the grizzly, it is high value wolverine habitat

WOLVERINE POTENTIAL HABITAT



A valuable elk habitat. Please note the core habitat is where there will be vegetative treatment in elk winter range. Where will elk go?

ELK POTENTIAL LANDSCAPE CONNECTIVITY



Please note that core elk habitat is in the Greenhorn project.

Alternative 2: Proposed Action

Mitigation Measures and Design Features

No commercial timber harvest, road construction or reconstruction in Inventoried Roadless Areas (IRAs) is proposed. Vegetation objectives are met through other methods such as prescribed burning and non-commercial thinning. This is an explicit part of the project design to protect roadless characteristics and meet requirements of the 2001 Roadless Area Conservation Rule (RACR).

I object that this vegetative project follows the rules, it does not protect wildlife, mitigate effects of climate change and drought. Treating 17,092 acres is not benign.

Vegetation objectives

Table 95. Effects on roadless characteristics, Sheep Mountain Roadless expanse

Roadless Characteristics	Is there an effect? (Yes/No)	Direction of effect? (Improving/ Stable/ Downward)	Describe the actual effect.
High Quality or Undisturbed Soil, Water and Air	Yes	Stable	Air resources may be negatively affected in the short-term while implementation (burning) activities occur however coordination with the Montana-Idaho Airshed group ensures good smoke dispersal
Sources of Public Drinking Water	No		There are no sources of public drinking water in the project area.
Diversity of Plant and Animal Communities	Yes	Improving	Restoration and maintenance of the composition and structure of vegetation communities will increase the diversity of plants and some animals such a neo-tropical migratory birds within the IRA. (EA pages 1-6). Targeted vegetation will improve over the long-term maintaining diversity by retaining these declining species such as aspen.

The 17,092 acres of treatment in a time of climate change, which the Forest Service has not addressed and has only two references cited both of which are from 2008 is wholly inadequate. I do not see how the structure and vegetative communities will increase. The harm to the grizzly, elk and wolverine must be evaluated with a biological opinion by the USFWS, and an EIS level evaluation must be done.

Ryan, M. G., D. M. Kashian, E. A. H. Smithwick, W. H. Romme, M. G. Turner, and D. B. Tinker. 2008. Carbon cycling at the landscape scale: The effect of changes in climate and fire frequency on age distribution, stand structure, and net ecosystem production. Final Report. Report Final Report JFSP Project Number 03-1-1-06.

Westerling, A. L., and B. P. Bryant. 2008. Climate change and wildfire in California. Climatic Change 87:S231-S249

I object the at Forest Service does not use current climate change science. The two references above are the only climate change references presented.

Roadless Characteristics	Is there an effect? (Yes/No)	Direction of effect? (Improving/ Stable/ Downward)	Describe the actual effect.
Habitat for Threatened, Endangered, Proposed, Candidate and Sensitive Species and Species Dependent on Large Undisturbed Areas of Land	Yes	Improving	Restoration and maintenance of the composition and structure of vegetation communities will improve habitat for TES species within the IRA as described in the wildlife and botany analysis (EA pages 56-58, 63-72). Implementation of prescribed burning using helicopters and incidental chainsaw slashing of small diameter conifers may temporarily disturb wildlife including Grizzly bear if present during implementation however design features are in place to minimize this possibility, and this will be relatively short term. Commercial thin units are close to existing roads and past harvest where avoidance by some wildlife species already occurs. Security of core habitat in the IRA is not affected in the long term.

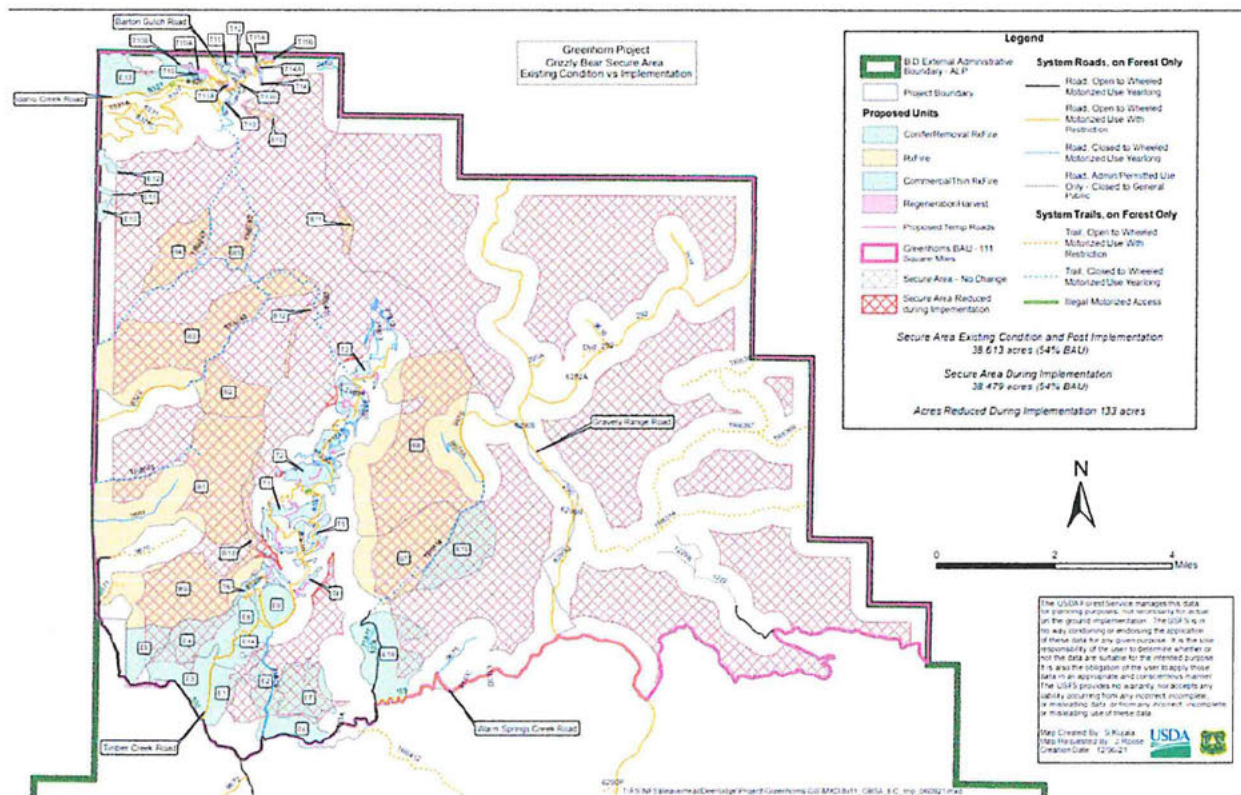
I object, this is a wholly inadequate assumption to make and is not backed by data

Wilderness Quality or Attribute	Is there an effect? Yes or No	Which direction is the effect? Improving, Stable or Downward Trend?	Describe the actual effect.
Natural	Yes	Improving	Restoration and maintenance of the composition and structure of vegetation communities will increase the diversity of plants and some animals including TES species within the IRA. (EA pages 1-6, 56-58, 63-72). Targeted vegetation will improve over the long-term maintaining diversity by retaining these declining species such as aspen. Ecological processes in the Roadless Expanse will be affected by commercial thinning and regeneration harvest, and this effect will be noticeable for up to a few decades. However, the core of the Roadless Expanse, consisting of 30,000-plus acres in the Sheep Mountain IRA will continue to appear to be affected largely by forces of nature as only minor chainsaw slashing of small diameter conifer trees will occur in preparation for the prescribed fire.

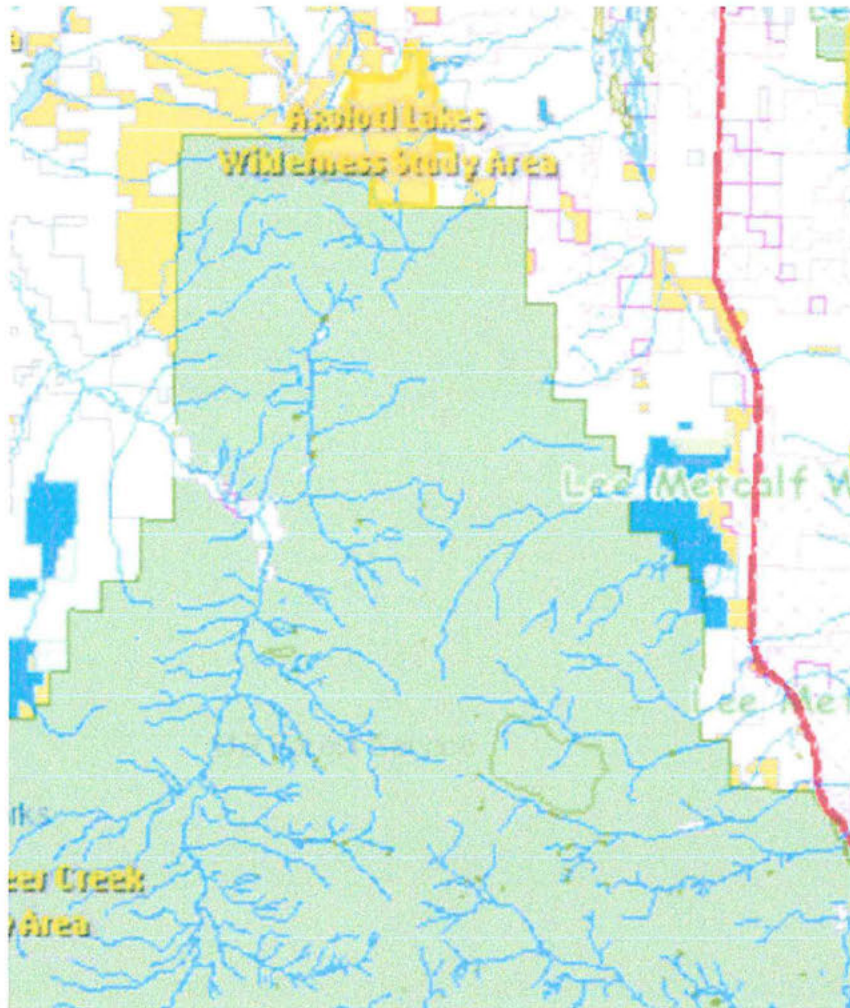
I object to this vegetative project, commercial thinning and regeneration harvest and burning 17,092 acres will change the Sheep Mountain IRA, the Forest Service says for decades, but maybe forever. What are the effects for wildlife?

- 1. Huge loss of critical habitat**
- 2. Habitat that may change from a mixed forest to grassland?**

3. An essential wildlife corridor that is basically eliminated because of land use changes.
4. The climate is **dry**, and vegetation consists of a mix of open parks and timber stringers, combined with relatively dense patches of vegetation where streams, springs, and slopes combine to provide higher amounts of moisture and shade
5. The closest town, Virginia City, gets 15.7 inches of precipitation a year-a semi-arid category.



At the northern end of the IRA is a Wilderness Study Area, which is managed at wilderness and shows how important the area is.



At the northern end of the IRA is a Wilderness Study Area that adds to the importance of the area for wildlife. The IRA and the WSA should be wilderness. Another factor at this narrow end of the Greenhorn project is human development. I have flown and photographed the area and will share photos. Development is noticeable. Wilderness would stop development.

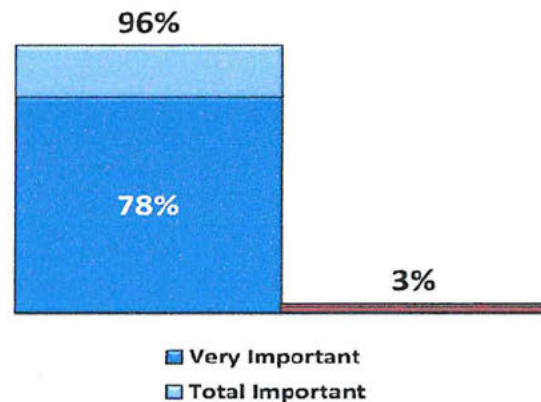
I object that wildlife migration is not evaluated in relation to climate change, human development of the area and how that narrows the migration routes, and I object that Montanans wishes and values have not been considered.

There is very strong support from Montanans to aid wildlife migration. Montanans want large blocks of public lands managed and conserved with an emphasis on conserving wildlife migration routes.

There is very strong support for efforts that would aid migrating wildlife.

<i>Ranked by % Strongly Support</i>	Strongly Support	Total Support
Constructing wildlife crossing structures, such as over-passes or under-passes across major highways that intersect with known, concentrated migration routes	63%	87%
Providing incentives to private landowners like ranchers who voluntarily agree to conserve some of their land in migration routes as wildlife habitat	54%	86%
Identifying large blocks of existing public lands that would be managed and conserved, with an emphasis on conserving wildlife migration routes	49%	81%

Montanans universally recognize that migration of wildlife is very important.



Please do not go forward with the Greenhorn Vegetative Project, it is not in the best interest of Montana and the wildlife we treasure.

Nancy Schultz, Gallatin Wildlife board member

[REDACTED]