THE LOLO-BITTERROOT PARTNERSHIP

A CITIZEN PLAN
FOR FISH, WILDLIFE & FORESTS

JUNE 2022

Flathead-Lolo-Bitterroot Citizen Task Force

Friends of the Bitterroot

Crossroads of the Northern Rockies Ecosystem

The Lolo and Bitterroot National Forests are located in the heart of the Northern Rocky Mountains, the largest assemblage of native wildlife and wildlands in the lower 48 states. Four million acres of wild America are home to a unique array of rare and endangered wildlife including the grizzly bear, wolf, lynx and wolverine. Migratory bull trout and cutthroat trout still roam the waters. Elk herds and moose seek refuge on these lands while bighorn sheep and mountain goats scale the craggy peaks and native birds fly the skies. Predator-prey relationships continue as they have for millennia. Yet more than 1.2 million acres of Wilderness-quality lands remain unprotected and vulnerable to damage from road building, logging, mining and excessive mechanized and motorized recreation. These special wildlands include the Rock Creek drainage, Great Burn, Ninemile, the southern Swan Range, Monture Creek, Blodgett Canyon, Sapphire and Blue Joint Wilderness Study Areas. A major defining feature is the Bitterroot Mountain Range, whose crest defines the western boundaries of the Lolo and Bitterroot National Forests.

The Lolo-Bitterroot region is **'Connectivity Central'** for wildlife. The Lolo National Forest has lands in three different Grizzly Bear Recovery Areas and is critically located between the Northern Continental Divide, Greater Bitterroot and Cabinet-Yaak Ecosystems. The western half of the Bitterroot National Forest is part of the vast central Idaho wildlands complex which is the largest assemblage of wildlands in the lower 48. It connects this ecosystem to the rest of the Northern Rockies through the Sapphire and Pintler Mountain Ranges including a key linkage for grizzly bears to and from the Greater Yellowstone Ecosystem.

The Lolo and Bitterroot National Forests, along with the Flathead National Forest were previously considered as the Western Montana Planning Zone (US Forest Service 2004). A Forest Plan Revision for the Lolo National Forest (2006) was never completed and since that time the Flathead National Forest has revised its Forest Plan. The Lolo and Bitterroot National Forests are a unique ecological entity and deserve to be considered together as part of a larger Northern Rockies landscape. This is the proper scale of analysis for identifying broader environmental trends including regional connectivity for wildlife and climate change.

Figure 1. Elk are a major Management Indicator Species on the Lolo and Bitterroot National Forests. U.S. Forest Service photo.

The Lolo-Bitterroot Partnership Plan is based upon three wide-ranging Management Indicator Species: grizzly bear, elk and bull trout. Meeting the habitat needs of these species will provide an umbrella under which numerous sensitive species can also be protected.

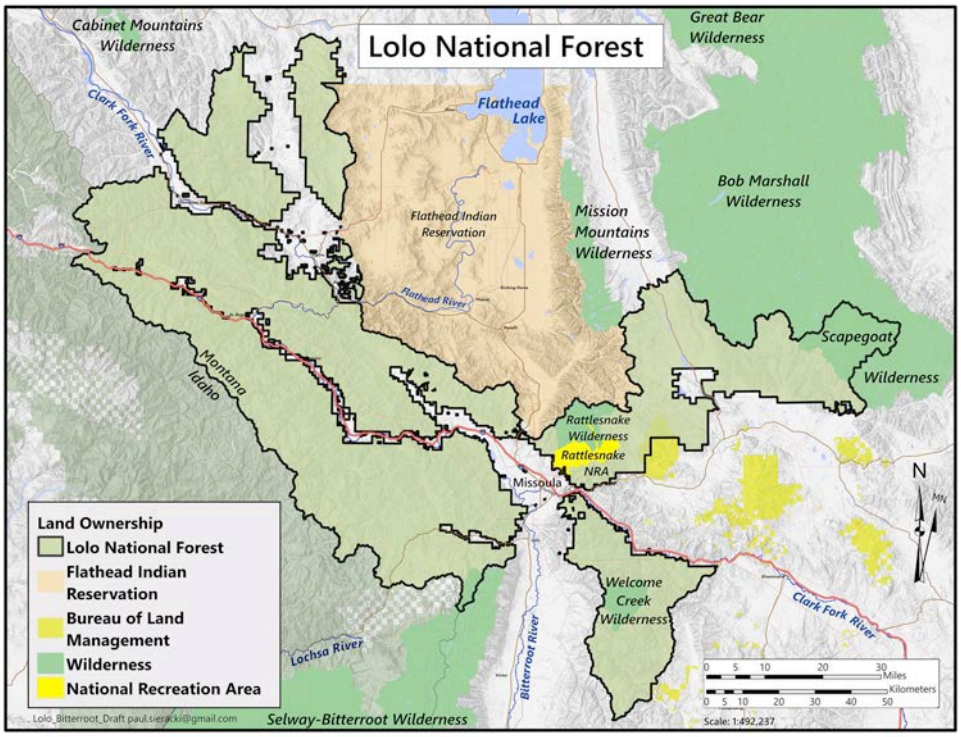

Figure 2. The Lolo National Forest, Western Montana.

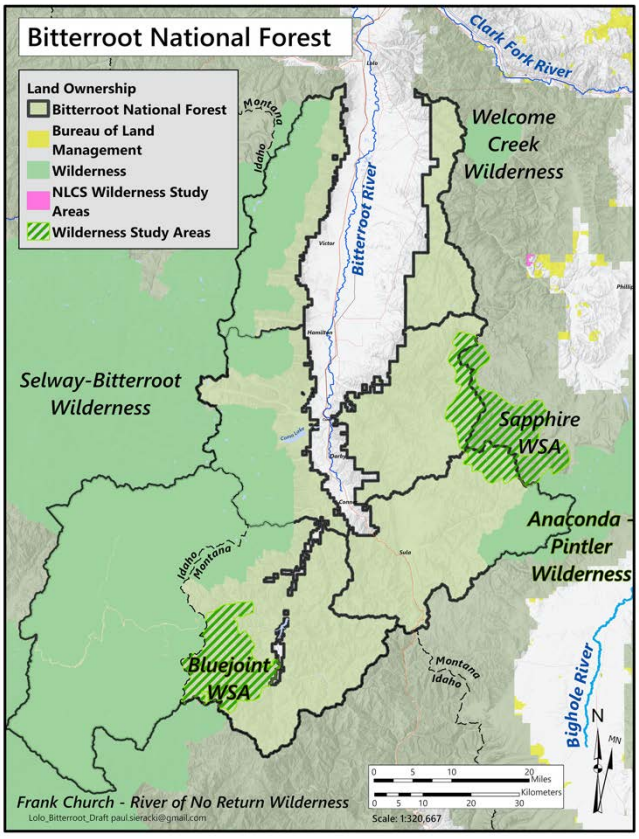

Figure 3. The Bitterroot National Forest, Montana/Idaho.

The Lolo-Bitterroot Partnership Is A Citizen Plan Focused on the Needs of Our Native Fish and Wildlife

• it is based on the best available scientific information and the law;

• it establishes and protects habitat linkages and restoration areas for wildlife including grizzly bears;

• it protects roadless areas, Wilderness Study Areas and streams as recommended Wilderness, National Wild and Scenic Rivers, Priority Watersheds and Riparian Habitat Conservation Areas for bull trout and westslope cutthroat trout;

• it protects and restores water quality for humans and native fish;

•it protects our remaining old growth forests;

• it allows natural processes such as fire and insects to play a natural role in shaping the landscape;

• it maintains high-quality opportunities for solitude and primitive recreation including hiking, backpacking, hunting and angling;

• it acknowledges climate change is real and forest ecosystem management must be responsive.

Demographic Connectivity & Restoration Areas

The long-term survival of grizzly bears (*Ursus arctos*) in the northern Rockies is dependent on connecting isolated populations with areas of protected habitats between the designated Grizzly Bear Recovery Areas (Allendorf et al. 2019) and linking the populations into a metapopulation would significantly reduce extinction risk (Boyce et al. 2001; Servheen et al. 2001; Craighead and Vyse 1996). Originally referred to as biological corridors, in 1990 the U.S. 9th Circuit Court of Appeals in *Marble Mountain Audubon v. Rice*. (U.S. 9th Circuit Court of Appeals. D.C. No. CV-89-1701-EJG) recognized the legal requirement to protect these areas, describing them as *"…avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas."*

Connectivity is a component of the National Forest Planning Rule of 2012 and a Demographic Connectivity Area was designated in the Ninemile area of the Lolo National Forest as part of the NCDE Grizzly Bear Conservation Strategy in 2018. As grizzly bears reoccupy native habitat in the Northern Rockies there is a need to designate additional Demographic Connectivity and Restoration Areas as part of National Forest management plan revisions or amendments.

The Proposed Demographic Connectivity and Recovery Areas (DCRAs) shown in Figure 4 are comprised of three major elements. These are Recommended Wilderness, Secure Core Grizzly Bear Habitat (secure core) and restoration areas within the matrix of roaded lands. The Flathead National Forest standards based upon scientific data maintain 68% of a Bear Management Unit as secure core areas at least 500m (1640 feet) from an open road and at least 2500 acres in size.

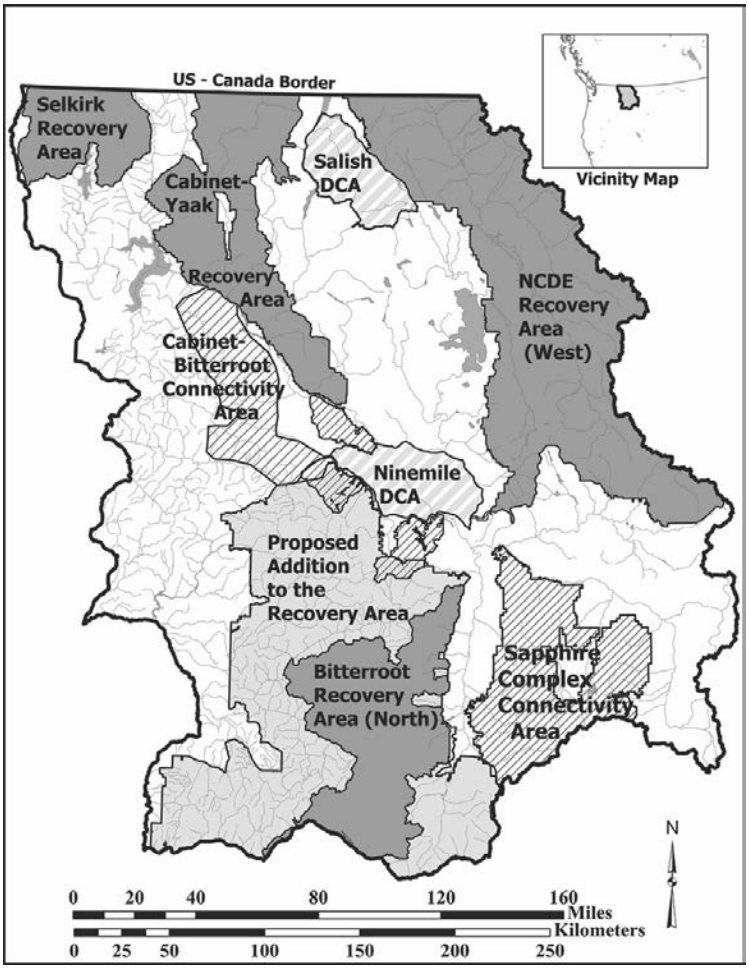

Figure 4. Demographic Connectivity & Restoration Areas in the Lolo-Bitterroot region.

The management in the Proposed DCRAs requires a minimum of 68% secure core with no loss of secure core. For example, if a unit has more than 68% secure core, that amount may be increased, but shall not be decreased. Moreover, the secure core areas do not shift over time. Rather, these are stable secure areas that grizzly bears and other wildlife can depend on from year to year. Bader and Sieracki (2022) and Proctor et al. (2015) and Mattson et al. (1996) have recommended that the larger secure core areas be spatially distributed within known dispersal distances for female grizzly bears. Bader and Sieracki (2022) wrote that: *"The availability of denning habitats within secure core areas is a fundamental requirement of the demographic model."* They found ample denning habitat for grizzly bears on the Lolo and Bitterroot National Forests including within the DCRAs as shown in Figures 5 and 6.

The threats in the roaded matrix must be mitigated through restoration as the cumulative impacts of multiple small and persistent threats increases extinction risk within a 100-year timeline, far shorter than previously thought (Kimmel et al. 2022). Within the DCRAs, Open Motorized Route Density shall be limited to 1mi/mi^2 which will require targeted road closures and decommissioning. Within the roaded matrix lands, road decommissioning will be focused on increasing secure core area size, to connect isolated secure core areas and to better represent different habitat types and seasonal food sources within secure core.

These standards would also be very important to other wildlife including elk, lynx and native plants. For example, elk require security habitat at least 0.6 miles from a road. Damschen et al. (2006) showed that *"habitat patches connected by corridors retain more native plant species than do isolated patches, that this difference increases over time, and that corridors do not promote invasion by exotic species. Our results support the use of corridors in biodiversity conservation."*

Livestock grazing on public lands is a potential conflict with grizzly bear recovery and connectivity. Grazing allotments within the DCRAs should be reviewed for early retirement.

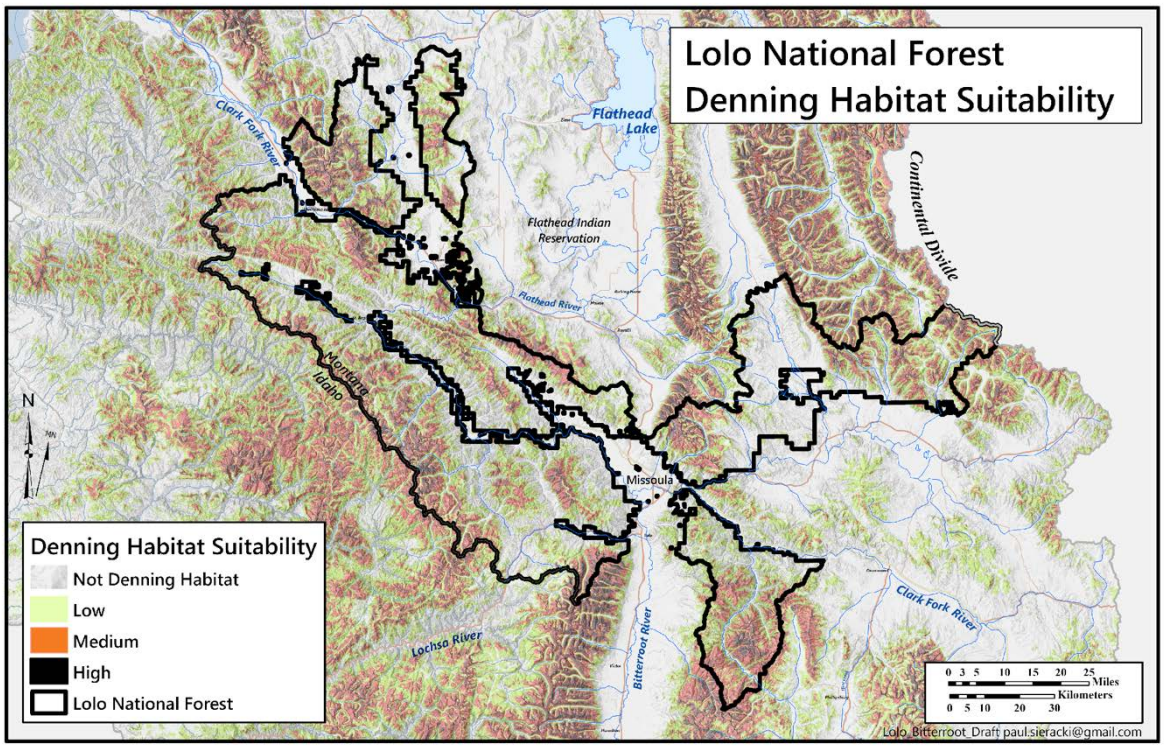

Figure 5. Suitable Grizzly Bear Denning Habitat on the Lolo National Forest. Source: Bader and Sieracki (2022).

***"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."* —Aldo Leopold, the father of modern wildlife biology.**

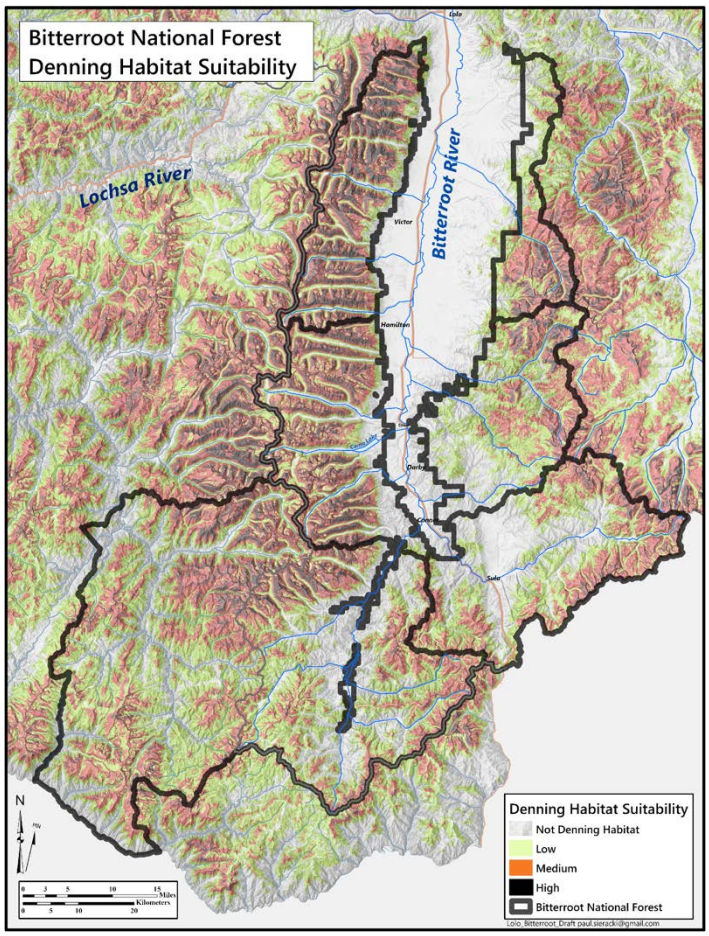

Figure 6. Suitable Grizzly bear Denning Habitat on the Bitterroot National Forest. Source: Bader and Sieracki (2022).

Proposed Grizzly Bear Management Units

In order to assess the existing baseline situation, proposed Bear Management Units (BMUs) were identified on the Lolo and Bitterroot National Forests in areas outside the Recovery Areas which have high value for connectivity and facilitating natural immigration into the Bitterroot ecosystem (Sieracki and Bader 2022) shown in Figures 7 and 8. Areas of the Beaverhead-Deerlodge National Forest that are part of the Sapphire-Pintler connectivity area and contiguous with the Lolo and Bitterroot National Forests were also mapped. This information will have future use for calculating baselines for roads, secure core, habitat productivity, denning habitat and other resources.

It is advantageous for government management agencies, non-governmental organizations and academic institutions to agree on specific boundaries for BMUs. Having the same measurement units will aid land management planning, site-specific analyses, consultations and scientific research with results that can be interactive.

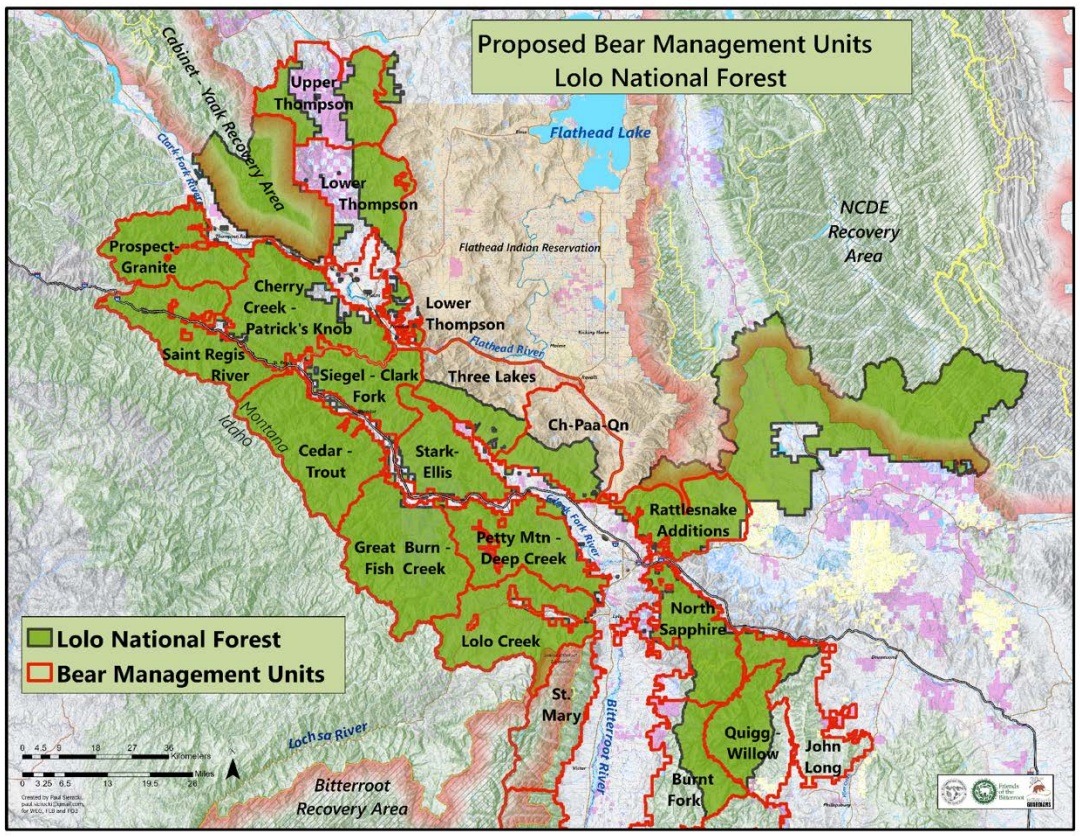

Figure 7. Proposed Bear Management Units, Lolo National Forest.

Moreover, identification of BMUs is a start point for multi-resource evaluation of grizzly bear habitat outside of the Recovery Areas which sets the stage for improved least-cost path analyses for female grizzly bears similar to Proctor et al. (2015). In addition to geographic area, each BMU can be assessed for total road and motorized route miles and densities, percent secure core habitat per BMU measured against the 68% standard and its spatial distribution as in Sieracki and Bader (2020), denning habitats, spring ranges and so forth. These data can inform proposals for habitat protection and connectivity based on reductions in the road network, additional seasonal restrictions on motorized access and re-creation of additional secure core areas. This information is particularly useful for grizzly bear recovery planning and National Forest Plan revisions, amendments and project-level analyses.

Sanitation

The two forests need to make more progress on sanitation issues at campgrounds and other recreation facilities including placement of bear-resistant garbage containers at every campsite, picnic area and other facilities on the forests. Information and education including signage is an important part of Bear Aware and Bear Smart strategies.

Wilderness Administration

The Lolo and Bitterroot National Forests include portions of two of the largest and most celebrated Wilderness areas in the entire National Forest System—the Bob Marshall Wilderness Complex and the

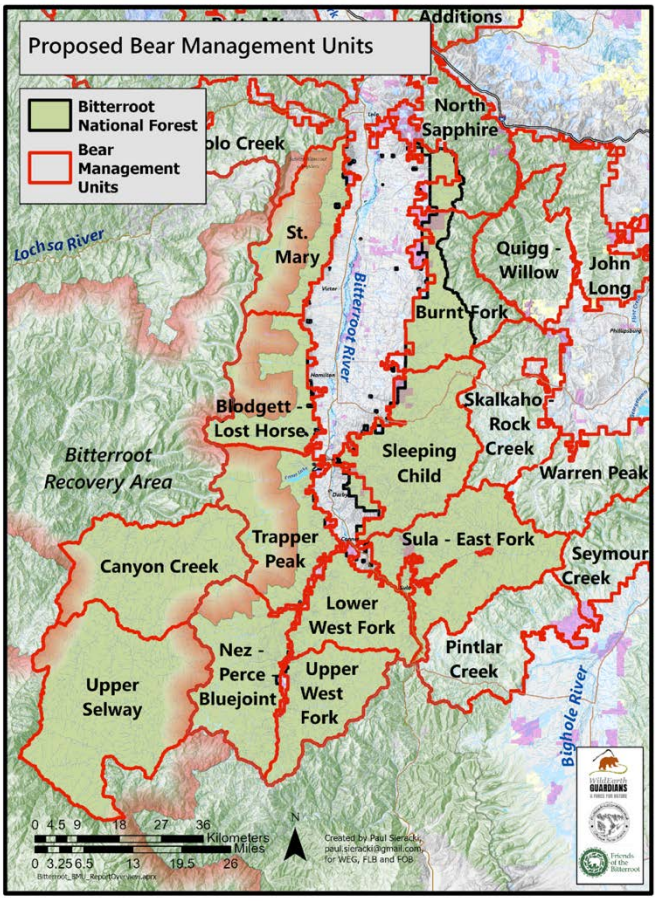

Figure 8. Proposed Bear Management Units, Bitterroot National Forest.

Selway-Bitterroot Wilderness. Other less well-known but remarkable Wilderness lands are in the Anaconda-Pintler, Rattlesnake, and Welcome Creek Wildernesses.

The direction found in Forest Service Manual 2320.6 "The Wilderness Management Model and the Wilderness Act," will guide wilderness stewardship. Wildernesses will be administered such that the forces of nature and not the actions of humans define their natural conditions. Management interventions that alter the free play of natural forces will not occur. Naturally ignited fires will be allowed to burn to the greatest extent feasible, with control actions focused on structure protection and public safety. Manager-ignited fire will not be used in Wilderness.

Wilderness will be administered to preserve outstanding opportunities for solitude and with a minimum of regulations on visitor use. The concept of "non-degradation," as described in Forest Service Manual (FSM) 2320.6, will be used to limit recreation impacts. Motorized and mechanized vehicles will be prohibited on trails leading from trailheads to wilderness boundaries to preserve wilderness recreation experiences and discourage vehicle trespass in Wilderness.

Commercial use will be allowed to the extent necessary for realizing the recreation or other benefits of Wilderness. When limits are necessary to protect wilderness conditions, commercial uses will generally be restricted before general public use.

Wilderness stewardship should in all cases adhere to Forest Service policy that states, "Where a choice must be made between wilderness values and visitor or any other activity, preserving the wilderness resource is the overriding value." FSM 2320.6.

Recommended Wilderness

Wilderness is a place that humans visit but do not remain. It provides opportunities for unequalled solitude, physical challenge, spiritual sustenance and renewal as well as breathtaking scenery and a laboratory for natural processes. Noss et al. (2019) wrote: *Wilderness designation is recognized as the "Gold Standard" for preserving wildlands and ecological values.* DiMarco et al. (2019) wrote: "*Wilderness areas act as a buffer against species loss, as the extinction risk of species within wilderness communities is – on average – less than half of that of species in non-wilderness communities."* Most

Bull Trout Strong Populations and Aquatic Strongholds were in wilderness habitat and wilderness provided the most secure habitat for grizzly bears (Bader 2000). Effective ecosystem protection in the Northern Rockies can be built upon a foundation of Wilderness habitat.

Inventoried Roadless Areas larger than 5,000 acres on the Lolo and Bitterroot National Forests are integral components of Landscape Connectivity and protection of the Northern Continental Divide and Bitterroot grizzly bear recovery regions. These are the "demographic stepping stones" of habitat for grizzly bears and they are also vital for other wide-ranging species including elk, lynx and wolverine.

The Recommended Wilderness shall, until Congress determines otherwise, be administered by the Secretary of Agriculture to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System. Mechanized and motorized use shall be prohibited.

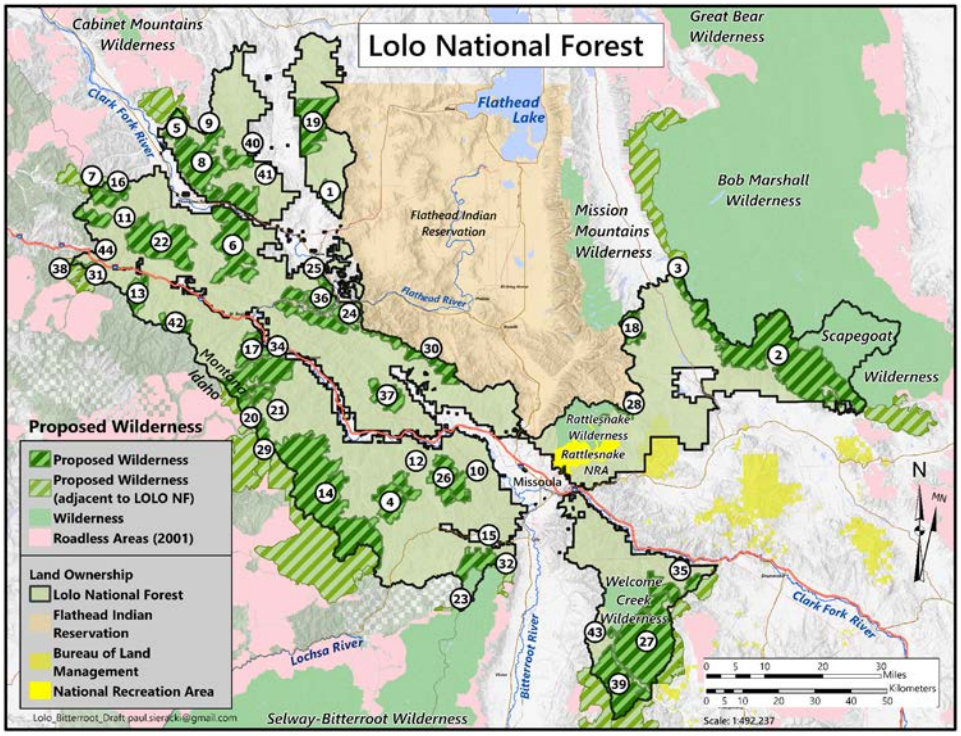

Figure 9. Proposed Wilderness, Lolo National Forest.

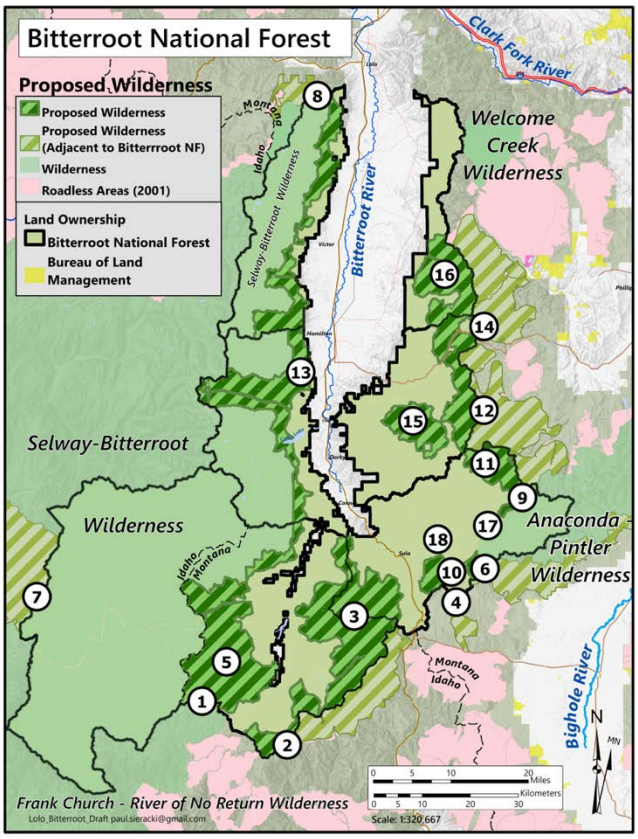

Figure 10. Proposed Wilderness, Bitterroot National Forest.

Recommended National Wild and Scenic Rivers

Water is the lifeblood of the Northern Rockies. The National Wild and Scenic Rivers Act was enacted to protect free-flowing streams on national public lands that have outstanding wild, scenic and conservation values. Designated stream segments are protected from dam construction and depending on category, can limit disturbance and development within a stream side corridor. This is important to the migratory native bull trout and cutthroat trout populations on the Lolo and Bitterroot National Forests.

The Lolo and Bitterroot National Forests contain the headwaters of several major rivers and streams including the Blackfoot and Bitterroot Rivers, Rock Creek, Rattlesnake Creek, Monture Creek and others. The Bitterroot National Forest Plan (1987) only found three streams eligible for designation. The Lolo National Forest, through Forest Plan Amendment 12 (1991) found nine streams eligible. These assessments are outdated and missed several key eligible stream segments on both forests.

Figure 11. Proposed North Fork Lost Horse Wild River, Bitterroot National Forest. Van Keele photo.

We recommend the following segments for designation as Wild and/or Scenic as shown in Figures 12 and 14 and listed in the Appendix. Each have outstanding Wild, Scenic and Conservation values. All of these streams are designated Critical Habitat for bull trout. Free-flowing streams are increasingly rare components of our public landscapes. These segments shall be managed to maintain their existing characteristics and eligibility until Congress determines otherwise.

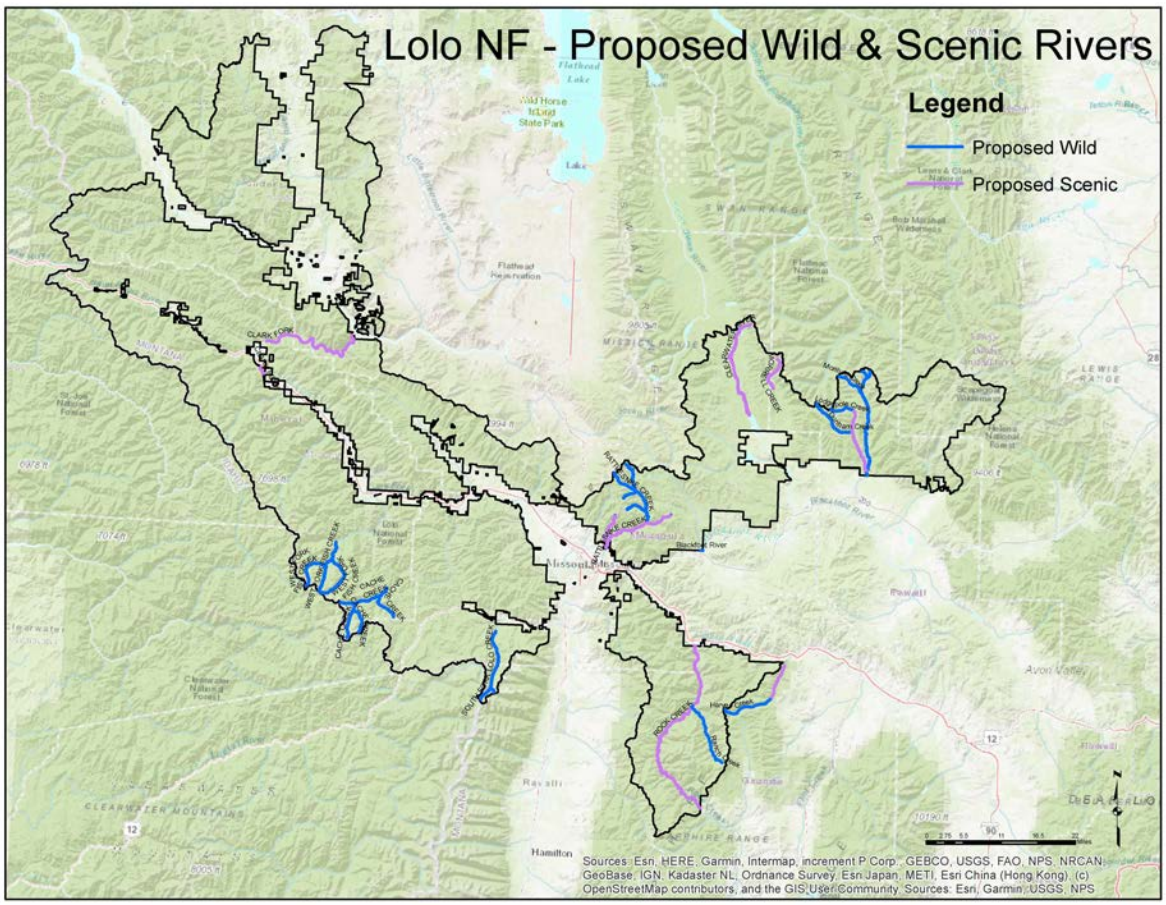

Figure 12. Proposed Wild & Scenic Rivers-Lolo National Forest.

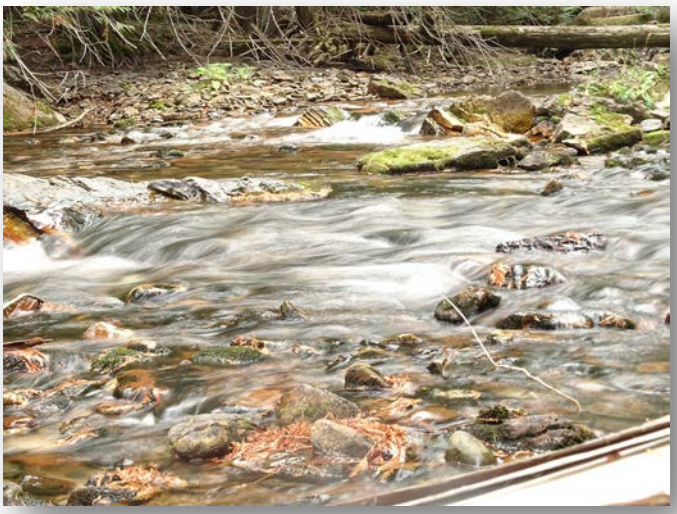

Figure 13. West Fork Fish Creek Proposed Wild River, Lolo National Forest. Paul Busch photo.

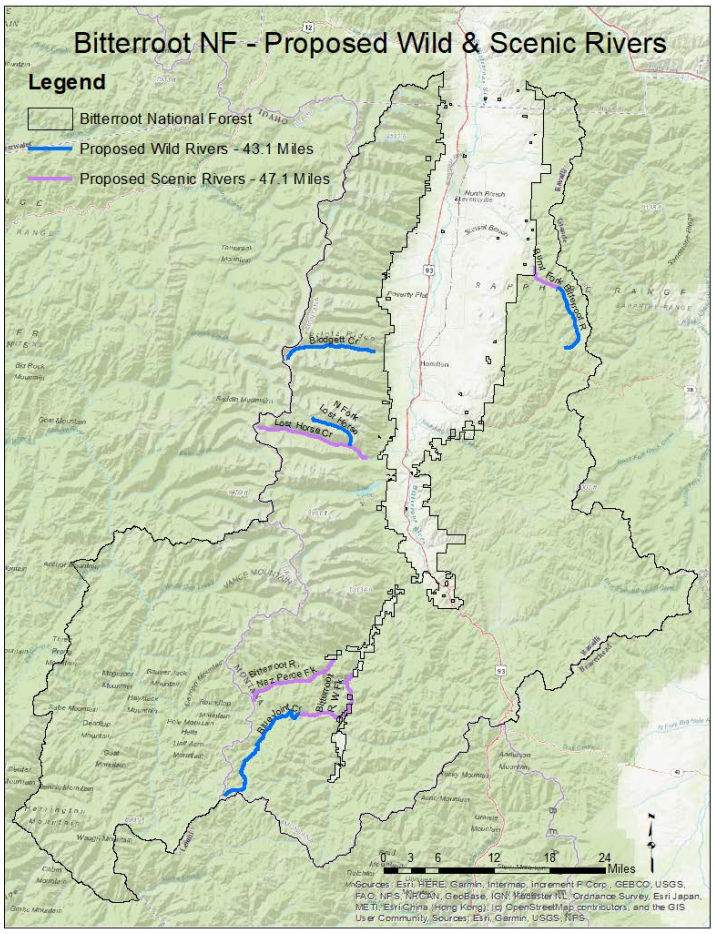

Figure 14. Proposed Wild & Scenic Rivers, Bitterroot National Forest.

Riparian Habitat Conservation Areas

The Lolo and Bitterroot National Forest Plans were amended in 1995 to apply The Inland Native Fish Strategy (INFISH) which established numeric, quantifiable standards for the protection of migratory fish. The portion of the Bitterroot National Forest in Idaho has anadromous fish which are protected under the PACFISH strategy. These include the protection of Riparian Habitat Conservation Areas (RHCAs) with a streamside buffer zone from either bank in which no ground disturbing activities including roadbuilding or logging may occur. The INFISH standards shall be kept in place and applied to all stream segments occupied by native bull trout and cutthroat trout on the Lolo and Bitterroot National Forests.

The Five Cs of bull trout protection also apply generally to cutthroat trout. These are Clean, Cold, Complex, Connected and Comprehensive. Large amounts of the Lolo and Bitterroot National Forests are designated as Critical Habitat under the Endangered Species Act. Bull trout critical habitat and cutthroat streams are shown in Figures 15 and 17. These specific standards are required to protect the Primary Constituent Elements of bull trout habitat:

• Fine sediments < 6.4 mm in diameter must be limited to less than 20% in spawning habitat (Espinosa 1996) and standards must be developed to maintain groundwater.

• All streams should average ≥ 90% bank stability and that cobble embeddedness in summer rearing habitat should be < 30% and < 25% in winter rearing habitats (Espinosa 1996). Additional indices include channel morphology including large woody debris, pool frequency, volume and residual pool volumes.

• Stream temperatures in current and historic spawning, rearing and migratory corridor habitats should not exceed 6-8 C for spawning, with the optimum for incubation from 2-4 C (McPhail & Murray 1979); 10-12 C for rearing habitat, with 7-8 C being optimal (Goetz 1989); migratory stream corridors should be 12 C or less.

• Establish a total and open road density standard that protects and restores native fish habitat by reducing sediment, restoring hydrologic upwelling, eliminating barriers and removing failed culverts.

Climate change is expected to have serious impacts on bull trout (Bell et al. 2021). In the face of climate change, retaining thermal cover in headwaters areas is important to native fish (Kirk et al. 2022) and standards need to be set for thermal cover in Priority Watersheds that extend to the entire watershed (Frissell 1999).

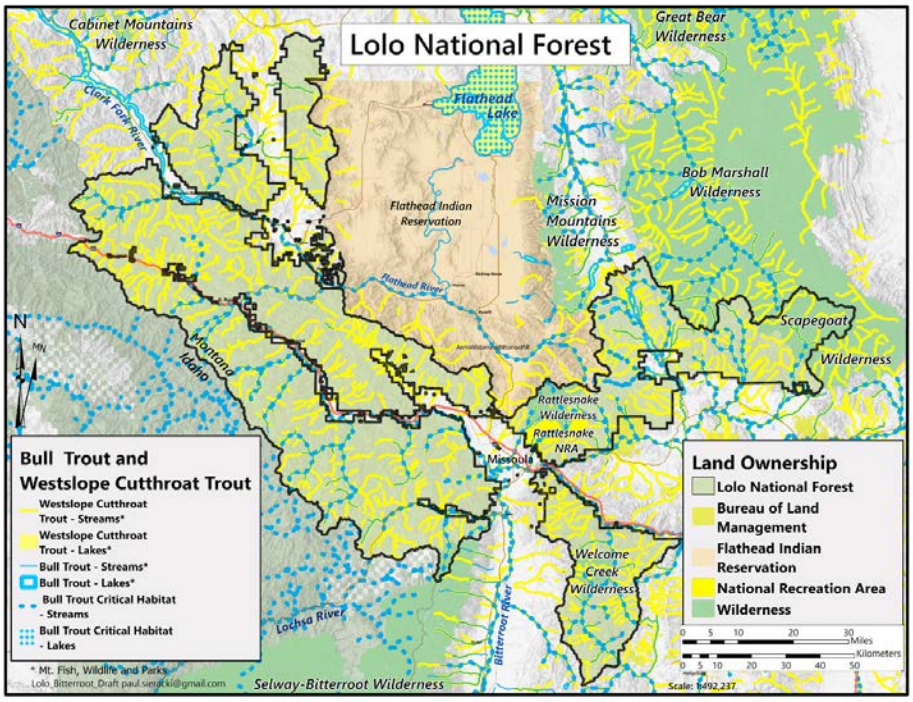

Figure 15. Bull Trout Critical Habitat and Westslope Cutthroat Trout Distribution, Lolo National Forest, Montana.

Figure 16. Rock Creek Proposed Scenic River. Mark A. Wilson photo.

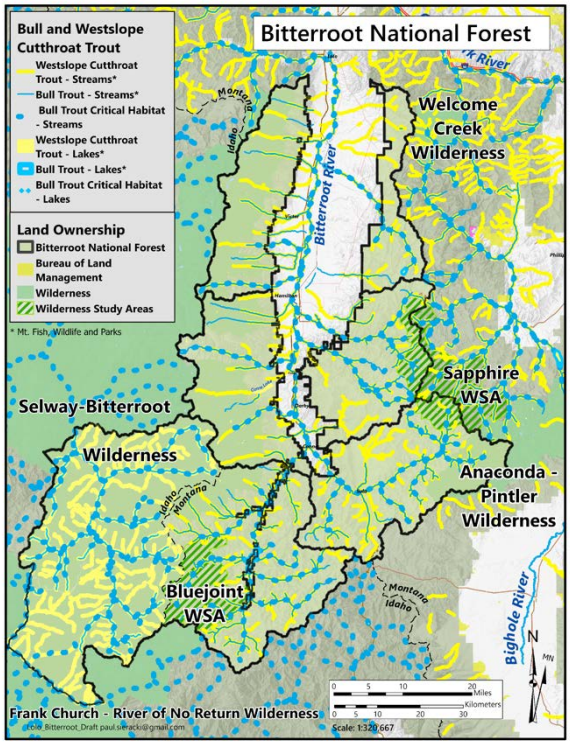

Figure 17. Bull trout critical habitat and westlope cutthroat trout distribution, Bitterroot National Forest.

Recreation Management and the Rattlesnake National Recreation Area

Recreation Management Generally

The existing Lolo and Bitterroot National Forest Plans do not measure or assess the environmental impacts from mountain biking and the forests have allowed this use and impact to increase without regulation. This is a particular concern in grizzly bear habitat that includes all of the Lolo and Bitterroot National Forests. Leading scientists have found that the risk of a human/grizzly bear encounter is 14 times higher while mountain biking than on foot (Mattson 2021). A Board of Inquiry Report chaired by the former National Grizzly Bear Recovery Coordinator (Servheen et al. 2017) on the death of a mountain biker who crashed into a female grizzly bear with cubs was well-publicized. Dr. Servheen has also said that mountain biking in grizzly bear habitat is particularly conducive to bear-human confrontations due to surprise encounters. *"High speed and quiet human activity in bear habitat is a grave threat to bear and human safety and certainly can displace bears from trails and along trails. Bikes also degrade the wilderness character of wild areas by mechanized travel at abnormal speeds."* Biologists with the U.S. Forest Service found all trail-based recreational uses have negative impacts on elk, with mountain bikes and ATVs causing the greatest flight response in elk (Wisdom et al. 2018).

Another recreation management issue affecting the entire Lolo and Bitterroot National Forests is the rapid increase in visitation over the past decade. Not only has the human population in Missoula and Ravalli Counties increased dramatically since the 1980s, non-resident use has exploded and this increase in use amongst all recreation activities has outpaced management response and mitigation of resource damage. On the Bitterroot National Forest, the Lake Como Recreation Area is now the most heavily used Forest Service Recreation Area in Region 1 and the combination of multiple forms of recreation create resource issues as well as overflow into other areas.

The Rattlesnake National Recreation Area

Public Law 96-476 established The Rattlesnake National Recreation Area and Wilderness in 1980. The NRA (25,000 acres) is the only NRA in Region 1 and is designated as Management Area 28 in the Lolo National Forest Plan. The baseline environmental condition in the NRA has changed significantly since the 1986 Forest Plan. For example, the area is now continuously Occupied Grizzly Bear Habitat and is part of the Demographic Monitoring Area for grizzly bears in the Grizzly Bear Conservation Strategy in the NCDE. A female grizzly bear with cubs has inhabited the area. Also, the 1986 Plan did not foresee the rising recreation use levels including mountain biking that have significant impacts on Forest resources including wildlife and soils. Nor did the Plan consider climate change science.

There are several necessary amendments to the Standards and Guidelines for the NRA.

1. *On page III-145 under C. Standards 3.* Change first sentence to "Tree removal shall be limited to individual trees to eliminate safety hazards to public users."
2. *Standards C. 4.* Remove current language and replace with "Earth disturbing management activities shall be prohibited."
3. *Standards C. 9.* Remove current language and replace with "INFISH standards for riparian area protection shall be applied to streams within the NRA. Rattlesnake Creek is designated as Critical Habitat for the Bull Trout."
4. *Standards C. 12.* Remove the first sentence and replace with "Natural fire plays an important role in shaping the landscape of the NRA and adjacent Wilderness. Wildfire suppression shall be limited to protection of structures on adjacent private lands."
5. *Standards C. 14.* Remove the entire language and replace with "Road construction or reconstruction shall be prohibited within the NRA."
6. *Standards C. 15.* Remove this section entirely.

Additional Recommendations

Mountain bike use is not addressed in the current Forest Plan. The Forest Service must complete an Environmental Impact Statement on recreational use in the NRA which identifies environmental impacts, the current baseline, and alternatives.

Bikes with electric motors ("e-bikes") shall be prohibited within the NRA. Removal of any biomass from the NRA shall be prohibited. Remove the co-designation of Trail 515 as a road while maintaining legal access to the Wilderness dams.

Rattlesnake Wilderness

The Forest Service will support the city of Missoula's efforts to breach dams in the Wilderness in a wilderness-compatible way, and to restore the natural wetlands and ecological function of the wilderness lakes. Remove the co-designation of Trail 515 as a road while maintaining legal access to the Wilderness dams. If the dams are breached or overland access is no longer needed, obliterate the road above the Franklin Bridge and recommend adding the portion of the "cherry stem" above Franklin Bridge to the Rattlesnake Wilderness and designate that portion of Rattlesnake Creek above Franklin Bridge as a Wild River.

Fire

An entirely new approach and paradigm for wildfire management is required on the Lolo and Bitterroot National Forests. The Lolo and Bitterroot National Forests are fire-adapted ecosystems dependent on wildfires for regeneration of habitat for a wide array of native species.

Figure 18. Fire is a regenerative force in forest ecosystems. Bob Clark photo.

In terms of private home protection, the best and newest available scientific data must be applied. Downing et al. (2022) found that most ignitions start on private lands and not National Forest lands. Co-author Dunn said: *"The main source of our communities' exposure to wildfire risk is clearly not our national forests*." The Forest Service has defined the Wildland Urban Interface (WUI) to include remote National Forest lands miles from the nearest privately-owned structures. Just one isolated structure can be buffered to a radius of two or more miles. Fire scientists have said that major timber sales with new roads are being disingenuously promoted by the Forest Service as addressing wildfire mitigation within the WUI. In Chaney; *Fire Strategy Stuck With Old Tactics, Experts Warn,* (Missoulian 1/20/22), fire experts explain that throwing money at treatments miles from structures won't work. The comments from the Missoula County Commission on the Wildfire Adapted Missoula document go into more specifics (Missoula County 2021) and DellaSala et al. (2022) call for *"surgical application of thinning and prescribed fire nearest homes."*

Another myth is that mature forests in protected areas have higher fire severity values. However, Bradley et al. (2016) found the opposite was true even though these forests have the highest overall levels of biomass and fuel loading.

Missoula County and Ravalli County have cumulatively added more than 65,000 people since the Forest Plans were adopted and have both seen an exponential increase in human dwellings and other structures within the forested private lands base by people who chose to live within the forest with its accompanying risks. The rapid increase in dispersed structures and its scope and scale accentuates the urgency for the Forest Service to be effective and efficient in its response.

The Lolo-Bitterroot Partnership Plan deconstructs the outdated and unscientific WUI concept and replaces it with a structure-based approach within the Structure Ignition Zone (SIZ) as defined by former Forest Service researcher Dr. Jack Cohen and others through decades of scientific research which finds that treatments for structure defense are only effective within an approximately 120-foot radius. The vast majority of the SIZ is on *private* lands and the Forest Service role is limited to cooperative programs with

private landowners to mitigate risks to structures on their own private lands. Missoula County has a cost-share program for residents who mitigate fuel risks on their private lands and the Forest Service should be a funding partner in this program while working to establish a similar cost-share program for Ravalli County.

Forest Service ignited fires are allowed but road construction or reconstruction is prohibited for the purposes of manager-ignited fires.

Mature and Old Growth Forests and Climate Change

The existing Lolo and Bitterroot National Forest Plans are not responsive to climate change. Old growth forests are complex ecological systems from the mycorrhizal fungi which form the foundation to the tops of the trees and the array of old-growth dependent species including cavity nesting birds. Nurse logs help propagate new trees and provide a medium for other plants.

In addition to filling an important ecological niche, mature and old growth forests play an important role in buffering against the impacts of climate change, including loss of native bull trout and cutthroat populations through increased water temperatures. Forested watersheds mitigate the thermal degradation of headwater fish assemblages under future climate change scenarios (Kirk et al. 2021). Cover plays an important role in regulating airshed temperatures which affects stream temperatures and the ability of bull trout to persist under climate change predictions (Rieman et al. 2007). Mature, intact forests retain snowpack longer and melt off is slower which preserves stream flows and recharges ground water throughout the longer, drier summers we are seeing and which predictions say we will continue to see.

Mature, intact forests also play an important role in carbon sequestration. Waring et al. (2020) concluded that *"Natural forests store more carbon than plantation forests, due to complex stand structures and accumulation of carbon belowground and in the forest floor. These features take centuries to emerge. Mature natural forests provide significant additional benefits and must be conserved, whilst regeneration of secondary natural forests is promoted."*

Moomaw et al. (2019) found that: *"Internationally, focus has been on preventing loss of tropical forests, yet U.S. temperate and boreal forests remove sufficient atmospheric CO_2 to reduce national annual net emissions by 11%. U.S. forests have the potential for much more rapid atmospheric CO_2 removal rates and biological carbon sequestration by intact and/or older forests."* Campbell et al. (2012) found that "fuel-reduction" treatments such as forest thinning result in high carbon loss.

The Lolo-Bitterroot Partnership proposes that there be zero harvesting in old growth forests on the Lolo and Bitterroot National Forests and that all mature forest be managed for retention and recruitment as future old growth. Specific forest overstory standards must be developed and applied to entire watersheds and not just riparian areas. Old growth functions best when connected to other old growth stands with linkages of mature forest and future mature forest.

Figure 19. Old growth forests are important to biological diversity and carbon sequestration. Indian Creek, Great Burn Proposed Wilderness. Adam Rissien photo.

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Appendix

Proposed Wilderness Lolo and Bitterroot National Forests

Area and Number	Forest	Acres
1-Baldy Mountain	Lolo	6,476
2-Bob/Scapegoat Additions	Lolo	118,469
3-Burdette	Lolo	16,018
4-Cataract	Lolo	9,441
5- Cherry Peak	Lolo	37,885
6- Clear Creek	Lolo	5,538
7- Cube Iron-Silcox	Lolo	36,997
8- Deep Creek	Lolo	7,669
9- Evans Gulch	Lolo	8,055
10- Garden Point	Lolo	6,322
11- Gilt Edge-Silver King	Lolo	10,052
12- Great Burn	Lolo	105,220
13- Lolo Creek	Lolo	14,335
14- Maple Peak	Lolo	6,472
15- Marble Point	Lolo	12,581
16- Marshall Peak	Lolo	9,068
17- McGregor-Thompson	Lolo	27,145
18- Meadow Creek	Lolo	6,928
19- Mt. Bushnell	Lolo	41,798

20- North Siegel	Lolo	9,174
21- Patrick's Knob	Lolo	16,970
22- Petty Mountain	Lolo	16,178
23- Quigg Peak	Lolo	67,265
24- Rattlesnake Addition	Lolo	2,880
25- Rawhide	Lolo	5,833
26- Reservation Divide	Lolo	16,908
27- Rolland Point	Lolo	6,472
28- Selway-Bitterroot Add	Lolo	3,864
29- Sheep Mountain	Lolo	37,836
30- Silver King	Lolo	12,935
31- South Siegel	Lolo	13,473
32- Stark Mountain	Lolo	12,601
33- Stony Mountain	Lolo	32,797
34- Sundance Ridge	Lolo	7,557
35- Teepee-Spring Creek	Lolo	13,901
36- Ward Eagle	Lolo	8,552
37- Welcome Creek Add	Lolo	1,063
38- Wonderful Peak	Lolo	1,321
39- Blue Joint	Bitterroot	64,764
40- Allan Mountain	Bitterroot	104,118
41- Beaver Lake	Bitterroot	7,369
42- Selway-Bitterroot Add	Bitterroot	114,953
43- Sleeping Child	Bitterroot	21,433
44- Stony Mountain	Bitterroot	44,052
45- Tolan Creek	Bitterroot	7,090

Proposed Wild & Scenic Rivers- Lolo and Bitterroot National Forests (miles)

Stream Name	Forest	Wild	Scenic
Blodgett Creek	Bitterroot	14.0	0
Blue Joint Creek	Bitterroot	14.7	4.4
Burnt Fork	Bitterroot	8.2	2.7
Lost Horse Creek	Bitterroot	0	15.0
North F. Lost Horse	Bitterroot	5.5	0
Nez Perce Fork	Bitterroot	0	18.0
West Fork	Bitterroot	0	7.0
Cache Creek	Lolo	9.0	2.0
S. Fork Lolo Creek	Lolo	12.0	0
W. Fork Fish Creek	Lolo	9.0	0
Morell Creek	Lolo	0	7.0
Rock Creek	Lolo	0	28.0
Rattlesnake Creek	Lolo	0	18.0
Monture Creek	Lolo	19.0	0
Dunham Creek	Lolo	6.5	4.0
Lodgepole Creek	Lolo	3.0	3.5
Harvey Creek	Administered by Lolo	6.0	5.5
Ranch Creek	Lolo	5.7	2.5

Cover photo: Michael Hoyt.

Wildlife collage: U.S. Forest Service, National Digital Library.

All maps except Lolo and Bitterroot Proposed Wild & Scenic Rivers by: Paul Sieracki.

Lolo and Bitterroot Proposed Wild & Scenic Rivers maps by: Marty Almquist.

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