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Working to protect and restore Western Watersheds

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Bureau of Land Management
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Same as EMC0525

Dear Brian,

Here are comments of Western Watersheds Project on the Draft PEIS Vegetation Treatment on BLM Lands in 17 Western States, the associated PER, Biological assessment Risk assessments and other documents. Comments below include information on the current environmental setting – including desertification of watersheds; chronic livestock and grazing management impacts; current information on wildlife species (including many special status and other declining species) focused on habitat loss and fragmentation of habitats and populations across native vegetation communities targeted by the EIS for large-scale treatment. We will be providing additional comments.

The EIS/PER lacks critical data and analysis necessary to assess the environmental impacts of the herbicide use and the massive array of wild land disturbance treatments proposed – chaining, fire, mowing, cutting, chopping, herbiciding and potential biomass export.

Unless the environmental setting in which the herbicide use and treatments would occur are fully revealed and assessed based on sound ecological and Best Availabel Science (please see Annotated Bibliography submitted with RNEA and Bibliography Attached to comments), BLM can not develop a reasonable range of alternatives, nor apply adequate analysis of impacts of the proposed action under any alternative. Nor can it ensure that the public lands, waters and native biota will de protected from unnecessary and undue degradation.

The **gross deficiencies** of the EIS/PER and associated analyses are illustrated in the cursory, limited, and scientifically invalid discussion of "Impacts of Herbicide Treatments on Wildlife and Habitat by Ecoregion", EIS at 4-106. As an example, in its limited and myopic analysis of wildlife effects of herbicide use and ignoring of the role of livestock grazing, EIS at 4-106 states *"long fire intervals have created decadent, climax sagebrush communities that dominate large areas of public lands. These communities have lost their perennial herbaceous understory as a result of competition from sagebrush"*. The EIS then proceeds to blame sagebrush for cheatgrass invasion.

These sweeping assertions indicting sagebrush and blaming old or mature sagebrush for cheatgrass invasion are based on one obscure citation (Perryman et al. 2003). This Perryman et al. citation (Perryman is an outspoken proponent of the public lands livestock industry in Nevada) is nothing more than an **opinion piece**. EIS at 6-28 shows the citation as: Eastern Nevada Landscape Coalition Position. Rangelands 25:30-34.

As discussed in the following comments and others provided, BLM abandons use of Best Available Science throughout the EIS/PER. Best Available Science shows that it is precisely the old growth or mature native plant communities such as the sagebrush damned by Perryman that are critical for persistence of a great many species of native wildlife across the lands where treatments are targeted Knick et al. 2003,Welch and Criddle 2003, Connelly et al. 2004, Dobkin and Sauder 2004); that it is disturbance by livestock or other human uses and not sagebrush that is causing any understory problems that may exist; and that it is precisely the loss, fragmentation and degradation of mature and old growth native vegetation communities due to human uses and BLM management paradigms identical to those of the proposed 'treatments" that have caused the weed problems this EIS is supposed to be addressing.

This demonstrates the unscientific analysis of the BLM's EIS/PER, why it must be scrapped, and why a Supplemental EIS soundly moored in current ecological science must be prepared.

Desertification and Watersheds

There is an extensive body of scientific literature on desertification of watersheds, including in the western United States. Desertification is defined as: "a change in the character of the land to a more desertic condition", involving "**The impoverishment of ecosystems as evidenced in reduced biological productivity and accelerated deterioriation of soils** and in an associated impoverishment of dependent human livelihood systems". See Sheridan 1981, CEQ Report 1981 at iii. Major symptoms of desertification in the U. S. include: declining groundwater tables; salinization of topsoil or water; reduction of surface waters; unnaturally high soil erosion; and **desolation of native vegetation** (Sheridan CEQ at 1). The existence of any one can be evidence of desertification.

As lands become desertified due to human disturbance such as chronic livestock grazing and trampling impacts to soils and vegetation, they become **less productive**, and activities such as livestock grazing become **less sustainable**. Continuing disturbance activities like livestock grazing while imposing a new aggressive treatment disturbance regime, may have drastic consequences, and push more sites across thresholds from which they can not recover. Plus, treatment disturbance may result in grazing becoming even less sustainable across the landscape. In many BLM lands, because of desertification and degradation processes that have already occurred, have already crossed the threshold between sustainability and, essentially, "mining" of increasingly **non-renewable** natural resources.

Desertification can be both a patchy destruction, often exacerbated by drought, as well as as **the impoverishment of ecosystems within deserts**. The EIS must assess the levels and degree of desertification that have occurred across the EIS area. This is necessary to understand the capability and suitability of these lands for livestock grazing, the productivity and carrying capacity of these lands for grazing, the current or likely future extent of cheatgrass and other hazardous fuels problems linked to desertification and livestock or other degradation, the need for treatments and the type of treatments that may best be applied, the risks associated with treatments, and the likely effectiveness or success of any treatments undertaken under the EIS/PER. The effects of alternatives, their ability to meet any objectives, and the ability of actions under the EIS to maintain, enhance or restore habitats and populations of special status and other important species and native plant communities depend on the current environmental conditions of the lands where they would be applied. For example, how has the extensive depletion of understories in many areas of Wyoming big sagebrush vegetation or Utah juniper affected the degree and rate of desertification processes across the EIS area, and altered the potential of a site to recover from any treatment disturbance that may be imposed under the EIS? How has this depletion affected livestock patterns of use, acres per AUM, invasion of hazardous fuels like cheatgrass, increased densities of woody vegetation, etc.? What are the acres per AUM across vegetation types at present, and how do they compare to stocking rates of good or better ecological condition communities? How many acres per AUM are required to sustain cattle or sheep in the lower salt desert shrub or Wyoming big sagebrush communities, and how does this compare to current stocking rates on these lands?

All BLM treatments proposed in the EIS have the potential to disturb native vegetation, soils, and watersheds, and open the door for accelerated erosion and further loss/desolation of native vegetation, i.e. accelerate desertification.

These degraded communities are extremely vulnerable to weed invasion --- especially with chronic grazing or motorized disturbance. As chronic grazing, roading (often linked to livestock facilities or management and other disturbance continues: Livestock and vehicles assist the spread of weeds via mud trapped in hooves and tires and/or on hides; Livestock transport weed seeds in their digestive systems, spreading them across the landscape in manure; Livestock trample soils and vegetation, and vehicles churn soil and smash vegetation, facilitating weed establishment; Livestock crush and trample microbiotic crusts that may inhibit weed establishment; Livestock may selecting native species over exotics, providing a competitive advantage to invasives species by eliminating competition with native species; Livestock can alter landscape variables (such as fire regimes) giving advantages to exotics. (Belsky and Gelbard 2000, Gelbard and Belnap 2003).

BLM has failed to assess the combined effects of desertification, livestock grazing and exotic species/weed increase and infestation in its hazardous fuels problems.

Even PRIA acknowledged that production on many BLM lands was below potential, and would decline even further. In the EIS/PER, BLM constructs a fantasyland. It ignores

chronic grazing as a cause of weed invasions and any need for treatment. It ignores consideration of any actions/treatments that could lessen the impacts or severity of grazing disturbance. It continues the current level of grazing while interjecting or superimposing massive treatment disturbance. This will ultimately result in even further loss of soil, microbiotic crusts, water, watershed integrity, wildlife habitat, and forage across the arid West.

Desertification symptoms in arid lands include: Sparsity of grass; presence of invading plant species - both native and non-native, in grass areas that have survived: plants are of poor vigor; topsoil losses - in many places, topsoil is held only by pedestals of surviving plants. Surface signs of soil erosion include: pedestaling, gullies, rills, absence of plant litter to stabilize soils.

Desiccation and erosion caused by livestock can cause water tables to drop, rilling, gullying and arroyo cutting to occur, and result in sediment flow from degraded areas (CEQ at 14). Grazing creates extremely dry site conditions for plants due to removal of litter, loss of soil cover, and trampling of the ground that prohibits rainfall from reaching plant roots (CEQ at 15).

Livestock grazing exacerbates any climate changes and shifts that may be occurring (CEQ at 16). This is of particular concern in the arid EIS landscape periodically plagued with severe drought, and which is facing increasing heat and aridity due to global warming. Such effects must be fully considered if BLM is to understand the impacts of any alternatives, treatments, management actions or disturbance under the EIS.

The near-absence of many species of larger stature native bunchgrasses from many areas of the EIS lands, especially those of Nevada, Idaho, Oregon and Wyoming where many of the treatments are proposed, such as the diminished state of the once abundant Indian ricegrass or bluebunch wheatgrass, signals an ecosystem stressed by livestock grazing (CEQ at 19).

BLM must fully assess the extent and degree of desertification of the affected lands, in order to understand the effects of herbicide use or any treatments. Aridity, absence of plant litter or safe sites in (post-treatment environments, after fire, or with chronic grazing and trampling impacts) makes germination of native species more difficult. Recovery of lower elevation areas will be exceedingly slow, especially considering the aridity of the lands where most treatments are to occur. Arid land recovers very slowly; massive soil erosion has occurred in many areas and is still occurring; exposed soils are less able to support plant life because of lower organic content; and invader species have become well established and have the competitive edge (Sheridan CEQ at 21, Fleischner 1994).

Even though it is well recognized that **"the way to end overgrazing is to reduce the number of livestock in the end"** (Sheridan CEQ at 22), political pressures from ranchers results in strong political opposition to reduced grazing. Political pressures have hamstrung implementation of the Taylor Grazing Act and continue strongly to this day on

BLM lands across the West. The EIS **does not** properly characterize the current setting, and never addresses the stress placed by current livestock numbers, or by BLM management paradigms aimed at retaining high stocking rates on arid land ecosystems to avoid political fallout. BLM fails to assess how stocking rates and management paradigms are out of step with current Best Available Science, and known impacts of livestock to soils and microbiotic crusts, and native plant communities. Example: micorbiotic crusts and nderstory impacts: Anderson 1991, Anderson and Holte 1981, Anderson and Inouye 2001, Belnap 1995, Belnap and Gillette 1997, Belnap et al. BLM Tech Bull. 2001, Belsky and Gelbard 2000, Beymer and Klopatek 1992, Donahue 1999, Fleischner 1994 review article, Freilich et al. 2003. Example: Forage utilization levels and associated stocking rates typically allowed by BLM greatly exceed those recommended even by current range science. See Galt et al. 1999, Galt et al. 2000, Gelbard and Belnap 2003, Hockett 2002, Holechek 1996b, Holechek et al. 1998, Holechek et al. 1999 a and b, Holechek et al. 2000, Holechek et al. 2001.

This EIS process provided BLM an opportunity to gain a better understanding of the actual capability and productivity of the vegetation and soils that meets the desires and needs of the public on these lands, and their ability to recover from large-scale aggressive new treatment disturbance.

Sagebrush, pinyon-juniper, salt desert shrub and other vegetation communities show signs of extensive changes and significant stresses, with livestock grazing and aggressive non-native weeds recognized as among important causal factors. Inter-linked grazing disturbance, weed invasion and altered fire cycles cause native plant communities to cross thresholds from which recovery is very difficult, if not impossible. On top of these degraded conditions and chronic livestock disturbance, the EIS and PER now seek to impose massive new disturbance without addressing the current environmental setting and ecological realities across the landscape.

EIS Must Reveal the Current Environmental Setting

Current information on the perilous status of habitats for native biota across much of the project area highlights the need for BLM through the EIS/PER to conduct current surveys. Systematic and comprehensive survey and assessment of species presence, habitat presence and quality and degree of fragmentation is necessary to: 1) Understand current status of habitats and species populations and thus determine which lands may need treatment – including a full range of PASSIVE treatments such as reduction in stocking rates or closure of roads (see RNEA); 2) Determine what type of treatments may be minimize site and habitat disturbance. Example: If high numbers of livestock are creating extensive soil disturbance and spreading weeds across wild land areas, then limiting livestock numbers and use must be a primary treatment method to limit weed spread. It has the least risk of new habitat fragmentation or new disturbance to native vegetation and soils that act to promote weed expansion; 3) Understand existing fragmentation before proposing to impose large-scale new disturbance that will further fragment habitats of species already declining from habitat fragmentation and disturbance.

Some of this information is already assembled, but the Weed EIS/PER preparers have ignored it. In fact, the recent Conservation Assessment for Greater Sage Grouse (Connelly et al. 2004) provided GIS maps and information on BLM lands and landscape-level fragmentation factors that could be readily built upon by BLM in a Supplemental Weed EIS. The data used in this mapping included information, for example, cheatgrass presence in understories, livestock facilities, and many other factors fragmenting species habitats. Instead of providing necessary information and mapping based on the information provided by THE INDIVIDUAL FIELD OFFICES, which BLM claims is driving this process, the EIS provides limited and near-meaningless mapping at such a scale that it can not be properly related to the proposed actions.

The EIS, PER, Biological Assessment, Risk Assessment and all other documents ignore the realities of the current ecological conditions and status of native biota across arid BLM lands. Instead, BLM blindly proposes more of the same activities that have caused these conditions and species declines in the first place! No effort is made to assess, in a biologically meaningful way, the direct, indirect and cumulative impacts of the EIS/PER on small, isolated populations of declining native special status and T&E species in fragmented landscapes.

Chronic Ecosystem Disturbance, Fragmentation and Imperilment of the Sagebrush Biome

The decline in sage grouse populations and other species dependent on arid land shrub habitats is a landscape-scale biological indicator that the loss of functions and values of sagebrush ecosystems are serious and widespread. These are also signs of desertification processes across the landscape.

A recent analysis, Dobkin and Sauder 2004,"Shrubsteppe Landscapes in Jeopardy: Distribution, abundances, and the uncertain future of birds and small mammals in the Intermountain West", examined bird and small mammal species in the sagebrush biome. The authors found that "very little of the sagebrush biome remains undisturbed", the **inherent resilience of the ecosystem has been lost and the ability to resist invasion and respond to disturbance has been compromised** (Dobkin and Sauder at 5). At least 60% of sagebrush steppe now has exotic annual grasses in the understory or has been converted completely to non-native annual grasslands (citing West 2000). More than 90% of riparian habitats have been compromised by livestock or agriculture.

The authors distilled a list of 61 species of birds and small mammals that are completely or extensively dependent on shrubsteppe ecosystems, and conducted an analysis of their distributions, abundances, and sensitivity to habitat disturbance to assess current state of knowledge and conservation needs of these species, with focus on Great Basin, Interior Columbia Basin and Wyoming Basin, based on BBS data and other studies.

The Columbia Plateau, Great Basin and Wyoming Basin are among the **least sampled** of all physiographic provinces covered by the Breeding Bird Survey. **Remarkably little** is

known about the actual distributions or population trends of small mammals. "Range maps created by connecting the dots among sites where a species has been captured do not paint a realistic picture, especially in the highly altered and fragmented shrubsteppe landscapes of today. For small terrestrial mammals ... our results support the view that many of these species now exist only as **small, disconnected populations isolated from each other ... it is completely untenable to assume species' presence based on simply on presence of appropriate habitat in shrubsteppe landscapes of the Intermountain West**". Also, the authors "**find no reason for optimism about the prospects in the Intermountain West of any of the 61 species" (at 3). "The results of our analyses present an overall picture of an ecosystem teetering on the edge of collapse** (citing Knick et al. 2003)".

Thus, the aggressive "treatments" to be conducted under all EIS alternatives, are identical to the practices and treatments currently identified as causing species declines and habitat fragmentation in the first place!

An untold number of livestock facilities (fences, spring projects, pipelines, trough systems salting sites, corrals, wells, windmills, water haul sites, etc.) have been constructed or placed on public lands – including across these allotments and surrounding lands. Roads almost inevitably grow up either as a direct result of facility construction/placement, or of continued facility use and maintenance. Then, roads become travel corridors for predators (Braun 1998, Federal Register 2003, Federal Register 2004, Connelly et al. 2004, Freilich et al. 2003, Connelly et al. 2004, Dobkin and Sauder 2004), and conduits for weed invasion (Gelbard and Belnap 2003). Many of these facilities have unforeseen effects, and exert influence over much larger areas than anticipated. For example, water developments may attract sage grouse predators and be "sinks" (Connelly et al. 2004).

Ecological changes have pushed many sagebrush landscapes beyond ecological thresholds for recovery. Cumulative effects of land use and habitat degradation are moving sagebrush habitats toward ecological collapse and dysfunction (Knick et al. 2003, Dobkin and Sauder 2004).

Sagebrush Mammal Summaries (based on Dobkin and Sauder 2004)

Eleven of 24 mammals in the report by Dobkin and Sauder (2004) are endemic to the IM West, representing a high degree of endemism. Many of the small mammal species whose status is reviewed in the report are important prey for raptors and some other special status species. In addition, the high degree of endemism is likely even greater than species-level ranges would indicate, and genetic analyses of upland and riparian small mammals may provide more examples of "cryptic" species like has now been found in endemic ground squirrels in Idaho.

Only one of the 19 species of small mammals for which adequate trapping data was available was found in more than 62% of potentially suitable localities. This analysis of field studies is the first comprehensive attempt to quantify presence or absence across a

region. The report found that **21 of the 24 small mammal species respond negatively to the effects of livestock grazing. Eleven of 18 small mammal species responded negatively to the presence of exotic plants**, with riparian mammal species exhibiting neutral responses if vegetation was thick enough.

Geographic patterns of species richness and community stability raise concern. Despite range maps showing occurrence over broad areas, many species of small mammals now exist only as small, disconnected populations isolated from each other by unsuitable habitats." Thus, **it is completely untenable to assume species' presence based simply on presence of appropriate habitat in shrubsteppe landscapes of the IM West**." This demonstrates why BLM must systematically conduct non-lethal site-specific surveys for small mammals in representative habitat types, and assess habitat conditions, across the allotments.

The report authors conclude: We find **no reason for optimism** about the prospects in the Intermountain West for any of the 61 species identified. **Sagebrush distribution is highly fragmented, and much less extensive than large-scale maps suggest. Extraordinary fragmentation and degradation of sagebrush-steppe landscapes has been caused by livestock grazing practices, purposeful removal of sagebrush and/or seedings through prescribed fire, mechanical treatment, biological agents and herbicides,** invariably done to provide forage for livestock, especially as native vegetation communities have become increasingly depleted, as well as ag-conversion, roads, mining and mining exploration fragmentation, powerline and pipeline corridors. Although sage grouse have been the flagship species for this ecosystem, and publicity over concerns have focused mainly on grouse, it is not just sage grouse that are in trouble. Sage grouse have become a surrogate for numerous species of animals and plants that depend on sagebrush communities, and many of these species may also use salt desert shrub communities.

Shrubland and grassland birds, representing an important component of the biodiversity of the western United States, are declining faster than any other group of species in North America (Saab and Rich 1997, Paige and Ritter 1999, USGS Great Basin Mojave-Desert Region, Dobkin and Sauder 2004). Species dependent on sagebrush ecosystems (Brewer's sparrow, Sage Sparrow, Sage Thrasher) may be important predictors of ecological collapse.

A review of field studies of small mammal response to livestock grazing (compared moderately to heavily grazed upland or riparian areas with exclosures), found **overwhelmingly negative responses** (decreased abundance or productivity) to the effects of livestock grazing for 12 species (Table 8): Upland: Paiute ground squirrel, Washington ground squirrel, little pocket mouse, Great Basin pocket mouse, Chisel-toothed kangaroo rat, desert woodrat, sagebrush vole, Riparian: Water shrew, Western harvest mouse, long-tailed vole, montane vole, western jumping mouse. 9 species have an extremely high likelihood for negative responses to livestock grazing (Table 8) are: Upland: Merriam's shrew, Preble's shrew, pygmy rabbit Idaho ground squirrel, Merriam's ground squirrel, Townsend's ground squirrel, Townsend's pocket gopher.

Riparian: Townsend's pocket gopher. Plus, negative responses to presence of exotic species have been demonstrated for eight upland species, and can be inferred with high likelihood for three others.

Virtually no areas in the IM West exhibited much riparian species diversity. For riparian birds, areas of highest species diversity were areas of **highest community stability**.

Patterns of high mammal species richness were concentrated within the three primary shrubsteppe ecoregions. Species richness was high in much of the Great Basin. Remarkably little is known about the actual distribution or conservation status of small-mammal species – there is no standardized survey. Alarmingly, there was **a high frequency in which species were missing from studies focused on suitable habitat.**

This should raise concern about the current actual extent of populations. It must be understood in the context of the high degree of fragmentation and altered disturbance regimes (Knick et al. 2003), the **"overwhelmingly negative response to livestock grazing"**, and the limited dispersal capabilities of small mammals (Dobkin and Sauder 2004). **"Our results support the view that many of these species now exist as small, disconnected populations isolated from each other by unsuitable habitats across which they cannot disperse".** Catastrophic decline of the largest population of northern Idaho ground squirrels illustrates this. The **combined effects of altered fire cycles**, (loss of fire here - as this species occurred in meadows in forest), **livestock grazing and exotic species introduction is the reality faced by many small mammal populations**.

Many species of small mammals exist as scattered, disconnected populations. One cannot assume species presence based simply on presence of appropriate habitat in shrubsteppe landscapes of the IM West.

Vole populations isolated from each other and tied to the riparian habitats among isolated mountain ranges are likely candidates for endemism to be found if genetic analyses are conducted. Several isolated subspecies of montane vole occur along the southernmost portion of the species range - likely isolated from conspecifics for millenia. Endemism among small mammals of the IM West, already high, is likely even greater. Many of the species have two or more described subspecies, and much of the described subspecific variation is based on morphological variations. Where thorough genetic analysis is conducted, there may be sufficient evidence to warrant elevation to full species.

A pattern of high species richness is much more concentrated for small mammals, and the number of endemics may represent more habitat specificity. The authors note that very little attention is paid to conservation needs of small mammals. Conservation efforts should integrate areas of high species richness for birds and mammals.

Across the IM West, **altered fire frequencies combined with ubiquitous grazing drives the loss of native plant community structure and composition on which birds and small mammals depend.** Grazing reduces competition from native grasses, and cheatgrass and other weeds flourish, with each successive fire promoting invader

expansion, resulting in self-perpetuating monocultures of exotic plant species with very short fire return intervals (Whisenant 1991, Anthony and Vitousek 1992, Billings 1994, Knick et al. 2003). Exotic plant dominated landscapes are uninhabitable for nearly all native bird and small mammal species (Dobkin and Sauder 2004). Shrub-steppe habitat has diminished greatly - at least 44% of potential habitat for Greater Sage-Grouse has disappeared (Schroeder et al 2004) and this study did not evaluate fragmentation of the rest!

Biome-wide, accelerated Oil and Gas development is occurring in Wyoming. This places landscape-scale fragmentation and soil disturbance on an even faster trajectory. Also, an astonishing number of fences and other livestock projects that serve to also fragment habitats are found across the sagebrush biome (see Connelly et al. 2004).

Sagebrush Bird Species Summaries (Dobkin and Sauder 2004)

There are significant declining trends for 16 of 25 upland bird species (64%) in the regions of the Intermountain West (Dobkin and Sauder 2004). Only 3 species showed a significant increasing population trend. 5 of 12 riparian species declined significantly over both the short and long term. "Birds that depend on native vegetation for their nests clearly are jeopardized by the loss or degradation of vegetation. Nearly all 25 upland species are obligate ground/shrub nesters, with 18 of the 25 species dependent on native shrubs for nesting and foraging.

Species richness for upland birds was concentrated in the three primary shrubsteppe ecoregions, with areas of highest species richness extending across the Columbia Plateau from southeastern Oregon to easternmost Idaho, the eastern two-thirds of the Great Basin, and southwestern Wyoming Basin. There was constancy in bird species composition in upland bird communities between 1968-1983 and 1984-2001. However, the community \composition of riparian bird communities varied substantially between periods, with a **decrease in species composition of riparian communities**. Plus, ecologically unsuitable habitats are now embedded in matrices of suitable habitats.

All of the upland bird species, and all the riparian species listed in Dobkin and Sauder (2004), Table 1 at 9 occur in the EIS Project area, and all of the small mammal species found in Table 2 at 10 are likely to occur in the Project area. For some species, such as loggerhead shrike, declines were especially severe in the three primary shrubsteppe ecoregions – with population losses across large geographic areas.

Geographic **patterns of species richness for birds found that areas of highest upland avian species richness correspond with areas of lowest shrubsteppe fragmentation.** Bird species "Entirely" dependent on sagebrush: Greater Sage-Grouse, Sage Thrasher, Brewer's Sparrow, and Sage Sparrow. Birds "Nearly" dependent: Gray Flycatcher, Gray Vireo, Green-tailed Towhee, Black-throated Sparrow.

As BLM's proposed "treatments" and herbiciding will INCREASE fragmentation (see also Knick et al. 2003, Connelly et al. 2004), these species habitats and populations will only be increasingly harmed in the short, mid and long terms.

Riparian birds have distributions that extend beyond the IM West, as do riparian mammals. Given the relative rarity and ecological importance of riparian habitats within shrub-steppe landscapes, the **high degree of instability in riparian bird community structure** found in the report, reflects **the poor condition of riparian habitats** across the Great Basin, Columbia Plateau and Wyoming Basin ecoregions (Dobkin and Sauder 2004, citing Saab et al. 1995, Dobkin et al. 1998, Tewksbury et al. 2002, Krueper et al. 2003, Earnst et al. 2004) **and the dewatering of riparian zones** (Dobkin and Sauder 2004, citing Rood et al. 2003), causing damage to avifauna and habitats.

This poor riparian condition contradicts BLM claims in the EIS of improved conditions. BLM has not provided the methodology and data upon which its rosy assertions on ecological conditions in the project area are based.

Upland Species (summarized from Dobkin and Sauder (2004):

* Greater Sage-Grouse. Causes of Declines: Habitat destruction, degradation and fragmentation, altered fire frequency (both lower and higher), livestock grazing converting shrubsteppe to annual monocultures are Threats. Range "improvements" and West Nile virus are threats.
* Ferruginous Hawk. Open areas, isolated trees, and edges of pinyon-juniper woodlands are used for hunting perches and nesting. "Prey abundance, particularly jackrabbits and ground squirrels, is correlated significantly with the number of breeding pairs in an area and with reproductive success. (Dobkin and Sauder 2004, citing Jasikoff 1982 and Deschant 2001 b) (at 36). Habitat destruction and degradation are greatest threats, and directly influence prey abundance, important to reproductive success. Ferruginous hawks can be particularly sensitive to human disturbance (at 37).
* Prairie Falcon. Open habitats with moderate grass cover and low-growing sparse shrubs. Nest-site availability and ground squirrel populations are important factors in habitat selection. Activities affecting ground squirrel abundance, include livestock grazing, frequent fires, ag conversion, poisoning. Disturbance near nest sites (cliffs) can reduce breeding success.
* Burrowing Owl. Requires low vegetation and a suitable nest burrow. BOs may expand other species burrows, but do not dig their own. Excavation by ground squirrels, marmots and badgers is important in nest burrow availability. Threats are habitat degradation and destruction, and shrub-steppe degradation by livestock or ag conversion. Pesticides can reduce populations of insect prey and fossorial mammals. Badgers, coyotes, birds of prey and vehicle collisions may also be problems.
* Gray Flycatcher. Shrub-steppe, mountain mahogany and pj. In shrubsteppe, gray flycatchers are associated with tall, dense sagebrush. Chaining or burning of sagebrush and pinyon/juniper areas is known to eliminate gray flycatchers (at 46). It is parasitized by the brown-headed cowbird. Habitat fragmentation likely increases nest parasitism and predation rates.

* Loggerhead Shrike. Shrubsteppe, open woodland, field edges, and occasionally riparian areas. Presence and abundance in shrubsteppe is positively correlated with the diversity, density and height of shrubs. Population declines in Columbia Plateau and Great Basin.
* Horned Lark. May be susceptible to trampling, and affected by invasion of annual grasses.
* Sage Thrasher. Habitat destruction, degradation and fragmentation are threats, including activities that destroy shrub cover (**fire, chaining, herbicide**) eliminate local populations. Although authors note that livestock grazing may increase shrubs, livestock grazing also alters shrub structure, especially that of taller sagebrush or other shrubs which are areas where sage thrashers nest.
* Virginia's Warbler. P-j, mountain mahogany, mixed deciduous shrublands. Habitat destruction, livestock grazing.
* Green-tailed Towhee. Shrublands and disturbed coniferous zones. In shrubsteppe, its presence and abundance are positively correlated with increased shrub species diversity, shrub cover, and taller shrubs. Threats are habitat destruction and degradation – livestock grazing and frequent fire have impacted shrubs. Simplification of shrub cover results in population reduction or elimination.
* Brewer's Sparrow. Its presence is positively correlated with total shrub cover, bare ground, taller shrubs, patch size, and habitat heterogeneity – and negatively correlated with grass and salt shrub cover. Large population declines have occurred the in Columbia Plateau and Great Basin. Cowbird host. Threats are habitat destruction and degradation. Activities that destroy shrub cover (fire chaining herbicide, etc). A cowbird host. Positive (increased shrubs – see previous comments about shrub structure) and negative responses to grazing.
* Vesper Sparrow. Inhabits short, patchy herbaceous vegetation, low shrub cover bare ground, forbs. Habitat destruction and degradation – frequent fires, in conjunction with invasive grasses, heavy livestock grazing (which increases shrub cover), and poor range conditions created by livestock grazing during drought increase rates of nest abandonment and failure. Cowbird host.
* Lark Sparrow. Threats are fire and livestock grazing converting lands to annual grass monocultures are threats.
* Black-throated Sparrow. Desert shrub, shrub-steppe, open pinyon-juniper. Correlated with moderate shrub cover, tall vegetation, shrub species richness, and dead woody vegetation. Drought reduces the number breeding attempts and clutch size.
* Sage Sparrow. Particularly associated with big sagebrush, or may be found in mixed shrub communities with greater shrub cover, abundant bare ground, sparse grass cover. Shows high site fidelity. Habitat destruction, degradation and fragmentation are chief threats, and are caused by frequent fire, livestock grazing, range "improvements" (shrub treatments, exotic grass plantings) – and these promote other impacts – predation and nest parasitism.
* Savannah Sparrow. It has been assumed that Savannah Sparrow populations benefit from conversion to annual monocultures. However, converted habitats may not be equivalent to native grassland habitats and may serve as population sinks.
* Grasshopper Sparrow. Livestock grazing degrades habitats. While benefits from natural fire, annual grass conversion resulting from fire is negative.

* Western Meadowlark. May be affected by fire.

Thus, for many of these birds, the very actions that BLM proposes under the EIS and PER are Threats, and when conducted in the past, have destroyed, altered and fragmented habitats. These threats (livestock grazing, herbiciding, chaining, fire, mowing and other alteration of sagebrush and other native vegetation communities) have not been honestly addressed by BLM in the EIS or PER. Since best Available Science recognizes them as Threats, (see also Knick et al. 2003, Connelly et al. 2004).

Other summaries of species trends support Dobkin and Sauder (2004). Many species with downward trends in population size are associated primarily or exclusively with shrub-steppe or riparian habitats. In shrub-steppe, this includes northern harrier, mourning dove, horned lark, loggerhead shrike, green-tailed towhee, vesper sparrow, sage sparrow (USGS Mojave-Great Basin at 33-51). Populations up in one area, down in another: rock wren, sage thrasher, Brewer's sparrow, black-throated sparrow, western meadowlark. Population sizes of mourning dove and loggerhead shrike, whose abundances are declining widely in western North America are also declining in the Great Basin. The preponderance of downward trends in shrub-steppe indicates continuing problems with the health of this community. In pinyon-juniper with a sagebrush and bunchgrass understory, species include common nighthawk, northern flicker, gray flycatcher, mockingbird, chipping sparrow, and Scott's oriole (USGS Mojave-Great Basin at 33).

BLM's EIS and PER, by proposing profligate use of **non-selective** fire, chaining or herbicides in pinyon-juniper or western juniper communities will kill shrubs, too. Nowhere does BLM provide a protocol for determining the best or most appropriate treatment methods to be used, or for avoiding old growth or mature plant communities. This is precisely the type of information and analysis that the EIS should have provided, but it has failed to do so.

Riparian species with downward trends: killdeer, violet-green swallow, warbling vireo, yellow warbler, lazuli bunting, savannah sparrow, song sparrow, yellow-headed blackbird, Brewer's blackbird. Downward trends in riparian species – are indicative of **continuing deterioration of riparian habitats** of the Great Basin (USGS Mojave-Great Basin at 34).

Again, this information on continued deterioration of riparian habitats in the Great Basin, where a large number of acres are proposed to be treated, contradicts BLM's rosy claims of improvement.

BLM Ignores Conservation Strategies

Landscape-scale conservation is also a critical component of ICBEMP scientific assessments (see Wisdom et al. 2000). The EIS ignores ecological understanding of the landscapes where massive herbicide and disturbance treatments are proposed.

Across much of the project area, especially Nevada, Idaho, Utah, Oregon, large browsers disappeared about 12,000 years ago. The largest ungulate was the pronghorn. Jackrabbits, cottontails, and rodents may have been the largest herbivores (Mack and Thompson 1982, Connelly et al. 2004). Microbiotic crust occurs in areas that are not, or lightly, grazed. As a result, livestock grazing and trampling impacts cause extensive, chronic and often irreversible harm to soils, vegetation and habitats of native species. This results in an alteration of composition, function and structure of plant and native animal communities (Fleischner 2004)

Salt desert communities: Invasive species have impacted shadscale and greasewood communities, and have altered their composition and function. Livestock grazing the most common disturbance that leads to weed invasions and altered fuels and fire regimes at these lower elevations. Cheatgrass and halogeton invades dry sites, exacerbated by livestock grazing. These communities are increasingly threatened by the proliferation of non-native annual grasses. Historically, **they did not burn.**

BLM's Standards and Guides and other recent Assessments and documents across the Project area are replete with descriptions of cheatgrass and other weeds being a growing problem. However, BLM nearly always grossly under-estimates the extent of cheatgrass or other weed infestations in the understory, and fails to undertake cuts in actual numbers of livestock grazed.

In fact, BLM often allows extra grazing on degraded lands (under the Temporary Non-Renewable Use) that may lead to further degradation, increased hazardous fuel problems, and introduction of even more aggressive exotic species.

Sagebrush semidesert is highlighted for conservation because of decline of sagebrush-obligate species. Species dependent include: sage sparrow, Brewer's sparrow, sage thrasher, sage grouse, pygmy rabbit, sagebrush vole, sagebrush lizard, pronghorn (Paige and Ritter 2000).

Fire regulates the density of fire-intolerant shrubs. Invasion of exotic annual grasses has increased fire frequency in stands, and resulting fires are causing a decline in abundance of sagebrush and other non-sprouting shrubs. In some areas, knapweed or other noxious weed species may be invading annual grass-dominated sites. Grazing decreases the importance of tall bunchgrasses and increases rabbitbrush, forbs and non-native grasses. Grazed sagebrush usually lacks altogether, or has no good condition microbiotic crusts. Large tracts of sagebrush semidesert and sagebrush-steppe are needed to adequately protect these systems.

Pinyon-juniper: Lower montane ecological systems – middle elevations, including pinyon-juniper, low montane shrubland, mountain mahogany. Half of the species inhabiting these sites are endemic to the region. The pinyon jay and juniper titmouse are "restricted specialists". More than half global population of gray flycatcher breeds in lower montane systems in the Great Basin.

Yet, it is WWP's experience that BLM constantly ignores the importance of these habitats, and knowingly conducts projects to purposefully destroy them so as to increase livestock forage on depleted lands. As an example, the very small areas of Utah juniper and Utah juniper and pinyon pine in SE Idaho are the only places in Idaho where several species of birds occur. A report (CD: Pinyon-juniper and Juniper Birds", prepared by Red Willow Research for the Idaho Department of Fish and Game), documented importance of intact riparian and pinyon-juniper habitats for several bird species of concern. Despite knowing the importance of these areas for several important or special status species, Burley office of BLM conducted a chaining (Jim Sage chaining) that destroyed portions of known special status species habitats in winter 2004-2005. This chained area is now dominated by cheatgrass.

Under ongoing BLM livestock management and paradigms that fail to use best available science, the aggressive proposed treatment actions of the EIS/PER will be carried out in just such a manner, and threaten still-intact habitats for these species.

PJ and juniper habitats are threatened by grazing and fire, many are in degraded condition, and are still being chained to create rangeland for livestock. The Jim Sage chaining (discussed above) used federal fire funds and it was in reality a livestock forage project – BLM claimed it reduced fuels, and improved livestock forage and wildlife habitats.

Larger tracts of lower montane systems with connectivity to lower elevation sagebrush semidesert or basin and desert scrub systems are more likely to harbor larger populations of bighorn sheep. The adjacent vegetation to pinyon-juniper woodlands is sagebrush steppe at lower and upper elevation margins and sagebrush or bitterbrush is found in abundance in openings or understories. EIS/PER treatment projects using indiscriminate methods such as fire or herbicides to kill pj – kill the shrubs, too.

Montane forest and woodlands. Montane islands in the Great Basin (and areas in eastern Idaho) may be important for resilience of natural communities and species responses to climate change. GBCB at 113, citing Wharton et al. 1990.

The Partners in Flight North American Landbird Conservation Plan (Rich et al. 2004) identifies a critical need for strategic approaches to landbird conservation, and describes overarching threats faced by landbirds, including: significant direct loss of major bird habitats (including loss of western riparian, pinyon-juniper and sagebrush habitats); fragmentation and degradation of remaining habitats due to intensified agricultural practices, inappropriate grazing, spread of exotic vegetation and other factors; failure to identify and properly protect or manage habitat used during spring migration, fall migration, and winter. Birds stressed during migration require quality habitats for food and cover; a steady, widespread increase in dispersed mortality factors. These factors collectively contribute to a **high proportion of population declines and anticipated future threats.**

The Plan describes the growing recreational importance of birds, and the economic importance of bird-associated recreational activities. Birds also contribute to the maintenance of ecosystems – from dispersing native plant seeds to consuming insect pests. Conserving habitat for birds will contribute to meeting needs of other wildlife.

The Plan stressed it does not advocate conservation based on single species only, and encourages planners to identify common issues or habitats among suites of high priority species. It assesses conservation vulnerability based on biological criteria. PIF Assessment Factors include: Population size, breeding distribution, non-breeding distribution, threats to breeding, threats to non-breeding, and population trend.

The EIS/PER fails to examine such current population attributes in relation to areas slated for Treatment, and assess outcomes of treatments on many high priority species.

Species of Continental Importance: Includes Watch List and Stewardship Species. Watch List: Greater Sage-Grouse, Swainson's Hawk, Short-eared Owl, White-throated Swift, Pinyon Jay, Brewer's Sparrow, Mountain Quail, Calliope Hummingbird, Black-capped Gnatcatcher, Virginia's Warbler. Stewardship Species: Gray Flycatcher, Western Scrub Jay ???, Sage Thrasher, Black-throated Gray Warbler, Green-tailed Towhee, Black-throated Sparrow, Sage Sparrow, Grasshopper Sparrow (?), Yellow-headed Blackbird, Rough-legged Hawk (winter?). Rosy Finch species (winter?).

Conservation of Stewardship Species will be a step towards maintaining broader suites of species within all biomes. LCP at 31 states: "**habitat loss remains the paramount factor for most species", and "habitats in danger of significant loss in the near future include western pinyon-juniper, sagebrush, and wetlands**. It describes the impacts of habitat fragmentation, and the growth in dispersed recreation such as OHV use.

Sadly, the series of Alternatives (Proposed and Preferred Actions) cast aside reasonable analysis of the impacts of the massive intervention and treatment disturbance put forth in the EIS/PER on these species, and the viability of habitats that will be drastically fragmented under the EIS actions.

Sage grouse are threatened by "extensive degradation of its sagebrush habitat by overgrazing and invasive plants" (LCP at 31). Livestock grazing "has had enormous effects on native vegetation – a century of selective removal of palatable plant species, soil compaction, water developments and livestock management activities" (LCP 2004, citing Saab et al. 2004. Habitat loss and fragmentation are also occurring on migration routes and in wintering areas.

Issues identified that transcend biomes, including:

- Habitat loss, degradation and fragmentation
- Forestry management
- Fire management strategies
- Wetland Issues

- Exotic or invasive species
- Resource extraction/energy
- Livestock grazing management
- Climate change
- Contaminants and pesticides
- Lack of information.

Lands slated for many of the treatments lie within the Intermountain West Avifaunal Biome, which is composed of 3 Bird Conservation Regions (BCRs). "Extensive mountain ranges and broad basins produce large elevational gradients that create a **complex and variable** environment - including coniferous forest, pinyon-juniper woodland, and cold semidesert shrubsteppe, and important wetland complexes. The IM West is center of distribution for many birds, and over half the Biome's SCSI have 75 percent or more of their population here. "**Threats and/or declining trends face Species of Continental Importance that use coniferous forest, pinyon-juniper woodland, shrubsteppe, and riparian habitats".**
For example:

* Coniferous forest: flammulated owl, Cassin's finch, others.
* Deciduous forest: Aspen forest is a declining habitat type SIC: Red-naped Sapsuckers, Mountain Bluebird.
* Woodland: Pinyon-juniper woodlands are especially characteristic of the southern portion of the IM West. **This habitat type supports the largest nesting-bird species list of any upland vegetation type in the West (Beidleman 2000),** cited in LCP at 53. SCI are Pinyon Jay, Gray Vireo and Gray Flycatcher. "**Degradation** of pj has been widespread and continuous since European settlement".

Shrub-steppe species comprise the largest number of Species of Continental Importance in this biome. Conversion has occurred for ag., and it has suffered large-scale invasion of non-native grasses and forbs, range developments, sagebrush eradication and changes in fire frequency. This has caused extensive loss and degradation of habitat, with subsequent population declines. **Cheatgrass has invaded over half of the existing sagebrush habitat.** It is the highest conservation priority in the Interior Columbia Basin (Saab and Rich 1997, Paige and Ritter 1999), and species include: Greater Sage-Grouse, Sage Sparrow, Sage Thrasher, Brewer's Sparrow, Green-tailed Towhee. "Montane shrublands embedded in the forests provide many species with valuable food and cover – and may be critical to hummingbirds during migration. Montane Shrubland SCI include: Dusky Flycatcher, Virginia's Warbler, Calliope Hummingbird, Green-tailed Towhee, Rufous Hummingbird, and Mountain Bluebird.

Riparian Habitats. Characteristics of riparian habitats vary widely depending on matrix and elevation, from cottonwood gallery forests to willow thickets. Nearly all riparian areas have been substantially degraded by development or alteration of many types – including de-watering, and alteration of flows, road construction, invasion of non-native species, logging, severe overgrazing, recreation.

Conservation issues include: Inappropriate livestock grazing, invasion of exotic plants change in fire intensity and frequency, logging practices affecting forest structure, and composition – especially mature, continued degradation of riparian habitat, **conversion of sagebrush and pinyon-juniper habitats, including through land management practices,** water diversion, alteration of flows, and spring development, recreational OHV use.

The EIS treatments (chaining, fire, chopping, herbiciding, and "biological control" livestock grazing) are identical to past activities that have caused the conversions that are dooming native species. The EIS has failed to both provide a baseline of information on past acreages converted, the habitat fragmentation that has resulted, and the direct, indirect and cumulative impacts of its proposed greatly expanded treatments on resulting new conversion.

Recommended actions: Retain large tracts of pinyon-juniper; ensure seed supply of seed-producing pinyon pine; Maintain/promote growth of native grasses and forbs in shrub-steppe, prevent large scale wildfire, restore with native plants following disturbance. Maintain water quality and quantity and vegetation in embedded springs, seeps and riparian areas. Restore degraded habitats and habitats that have been converted to non-native grasslands. Protect high quality riparian habitat. Restore natural flows and flooding regimes.

Nowhere does the EIS and PER provide any protocol, analysis, mitigation, SOP or other provisions or analyses that would retain large tracts of any vegetation type, ensure seed-producing pine, or promote growth of native grasses and forbs. In fact, as the EIS fails to address livestock disturbance impacts and effects on outcomes of any treatments, and fails to provide science-based limitations on post-treatment livestock grazing and trampling use, there is no certainty that native grasses and forbs will not deteriorate further. This is especially the case as the very treatments identified may weaken or kill native grasses and forbs, as well as microbiotic soil crusts.

Interfacing Communities/Natural Diversity and Inherent Complexity of Plant Communities. The habitat requirements of the ferruginous hawk illustrates the importance of understanding interfacing habitats. Ferruginous hawks typically nest in junipers at the edge of, or interfacing with sagebrush habitats. It is critical that BLM examine the already complex interspersion of plant communities across the landscape. Sagebrush communities often exist as complex mosaics with inherent natural diversity (Montana Department of Fish, Wildlife and Parks 1995, Welch and Criddle 2003).

BLM fails to address the inherent complexity and complex interspersion of vegetation across the landscape, and instead claims that its artificially imposed chaining and other disturbance is necessary to create more of a mosaic, or for greater diversity.

The ecological integrity of native plant communities is the foundation of healthy habitats for special status species, raptor prey species, and healthy watersheds and watershed processes that replenish aquifers for scarce desert springs.

Info and Analysis Needed on Species

BLM must conduct on-the-ground inventories of species, and habitat conditions and populations across the EIS area. BLM must use its current special status species list, Partner in Flight species lists, information from the Conservation Data Center, and other important recent summaries, such as Connelly et al. 2004 and Dobkin and Sauder 2004, and Wisdom et al. 2000, to examine species of concern and their habitat needs. It must conduct in depth surveys and analyses for species of concern, and collect thorough and up-to-date information on the quality and quantity of habitats across the EIS area.

BLM must carefully review these lists, and updated information, and assess habitat conditions for these species. BLM must conduct systematic baseline surveys for breeding birds, migrants, wintering species. BLM should work with experts to assess populations, genetic uniqueness, etc.).BLM must also fully consider the changing dynamics in wildlife populations – such as elk, and the high priority segments of the public place on this species, as well as antelope and mule deer.

Juniper and/or pinyon-juniper birds are of high conservation concern (USFWS 2002, Rich et al. 2004). Yet, pinyon-juniper habitats are among the **most consistently under-represented** habitat types in biological and ecological survey efforts (Red Willow Research 2004).

In the Great Basin Bird Conservation Region, high-priority Pinyon-Juniper species include: Pinyon Jay, Ferruginous Hawk, Plumbeous Vireo, Virginia's Warbler, and Black-throated Gray warbler. Pinyon-juniper and juniper woodlands/pygmy forest provide important breeding habitat for many wildlife species. Pinyon-juniper provides provides important food for birds and other wildlife. Avian species known to consume pinyon seeds include: Pinyon Jay, Steller's Jay, Black-capped Chickadee, Northern Flicker, Gray-eyed Junco, Black-billed Magpie, Clark's Nutcracker, Red-breasted Nuthatch, Pine Siskin, Juniper Titmouse, and Lewis Woodpecker (Martin and others 1951, cited in Red Willow 2004). Both pinyon nuts and juniper berries provide a vital food resource for birds. Juniper berries remain on trees in winter, and are important for Cedar Waxwing, Townsend's Solitaire, Pinyon Jay, Clark's Nutcracker, Western Scrub Jay, Grosbeak sp., American Robin (Martin and others 1951; Johnson 1998; PIF 2000). Townsend's Solitaires establish winter territories based on juniper berry presence and abundance.

Extensive alteration has occurred to pinyon-juniper and juniper in many areas – **chaining, spraying, and prescribed fire have been used to remove pinyon-juniper and juniper to plant livestock forage, especially at lower elevations on upper portions of alluvial fans and toeslopes of ranges.** Often, exotic crested wheatgrass was planted. Wildfires have consumed large acreages, including across southern Idaho, northern Nevada and northern Utah. Plus, large-scale die-offs of sagebrush have occurred. BLM must assess the integrity and continuity of communities, identify higher quality communities, and protect them from new disturbance under a broadened range of

Alternatives, and act to address and ameliorate ongoing, chronic disturbance of livestock grazing or other land use practices as part of the treatments assessed in a Supplemental the EIS. These areas will also provide reference areas for unfragmented habitats.

Wisdom et al. (2000) provide additional information on understanding animal species habitat needs. See Summaries for Species Groups 30-35 – two specific examples are provided below. Please apply information in this document to species and habitat needs analyses in the EIS area.

Examples:

Group 30. Ash-throated flycatcher and bushtit depend on a mix of source habitats. Retain contiguous blocks of mature juniper/sagebrush, especially old juniper with nest cavities. Consider site-specific ecological potential and response to management before removing juniper trees. Retain old growth, cavities, restrict pesticides, restore native understories, minimize likelihood of exotic invasion.

Group 31. Ferruginous hawk, burrowing owl, vesper sparrow, lark sparrow, western meadowlark, shirt-eared owl and pronghorn. Ferruginous hawk populations fluctuate in response to prey populations. Breeding populations of short-eared owls are nomadic, and may occur when rodent densities are high. Burrowing owls rely on burrows provided by burrowing mammals (ground squirrels, marmots, coyotes, badgers) and may be closely tied to these mammals. Broad-sale changes in source habitats – have dramatic "decreasing" and "strongly decreasing trends". Source habitat remains in northern Great Basin and Owyhee Uplands. Source habitat loss – tied to loss of big sagebrush. Ag. conversion, conversion to exotics. BO populations have declined as the result of pest control programs. Meadowlark and lark sparrow success, correlated with grass. Removal of grass cover may have detrimental effects, presence of livestock may attract brown-headed cowbirds and increase brood parasitism.

Juniper expansion may have benefited ferruginous hawks. Microbiotic crusts have been widely destroyed by livestock. Roads, human activities and domestic dogs. Recreational shooting of marmots or ground squirrels impacts burrowing owls, and pesticide use may lead to direct mortality.

Management implications. Most of habitat clusters 5 (Owyhee Uplands ERU) and 6 (northern Great Basin, Owyhee Uplands, Upper Snake ERU), with the potential risks to ecological integrity are: continued declines in herbland and shrubland habitats. Primary issues: Permanent and continued loss of shrubsteppe due to ag conversion, **brush control**, cheatgrass invasion; Soil compaction and loss of microbiotic crust; Adverse human disturbance.

Note: "Brush control" is exactly what hazardous fuels projects are aimed to do. This is a clear threat to many species that rely on mature native plant communities.

Strategy: **Identify and conserve large remaining areas (contiguous habitat) of shrubsteppe vegetation where ecological integrity is still relatively high, and to provide long-term habitat stability for populations and provide anchor points for restoration, corridors, and other landscape-level management. Restore grass and forb components. Restore microbiotic crusts, maintain burrows. Minimize adverse effects of human intrusion.**

In support of conserving shrub-steppe, identify large areas of high ecological integrity to be managed for sustainability, on large areas of federal land. Criteria for protect and enhance include: maintaining or increasing the size of smaller patches, preventing further habitat disassociation, protecting or increasing the size and integrity of corridors, all in connection with the location of core areas. Use fire suppression and prevention to retard the spread of cheatgrass. Restore cheatgrass monocultures. Restore native vegetation. Design livestock grazing to promote abundance of forbs and grasses in understory, encourage development of microbiotic crusts. Allow burrows to persist or expand (Wisdom et al. 2000).

BLM "Range"/Vegetation Data

BLM typically has very little current information on ecological conditions and the health of native plant communities across the landscape. The last comprehensive ecological inventories (SVIM) were conducted primarily in the late 70s and early 1980s. When BLM conducts its limited and narrow Fundamentals of Rangeland Health assessments and allotment evaluations, it typically relies on old data, and never re-visits the sites where ESI data had been collected. Key Area sites are located in only the most accessible areas, and are clustered in particular areas of the allotments, leaving vast land areas with no monitoring information at all collected. BLM also fails to collect necessary data on degradation caused by livestock facilities and management activities. Such information is critical to understanding sources of flammable cheatgrass or other weed invasion, causes of roading, the inter-relationship and cumulative impacts of grazing facilities and roading. Current, comprehensive data on condition of soils vegetation, and habitats must be systematically collected. Likewise, BLM relies heavily on wildlife species data in databases and not current inventories. We fear that unless compilation and assessment of this information is conducted at the level of the EIS/PER, data and analysis necessary to understand all direct, indirect and cumulative impacts of the proposed actions will never be done.

BLM can not ignore evidence that its limited old data does show - i. e, only a small fraction of larger size grasses present are present in most sites that should be dominated by these species. Thus, desertification has occurred, and "production" is greatly less than that of good or better condition sites, and this is typical of nearly all sites. BLM must also tie water developments, water hauling or other livestock management practices to site depletion and alteration of species structure, composition and weeds, hazardous fuels and fire problems.

As part of this process, BLM must revisit its limited monitoring sites (or at least a subset), and must also establish a series of new ESI and monitoring sites that represent te ecological condition of the lands.

BLM must also conduct comprehensive assessments, in representative sites grazed by livestock, and assess the role of livestock degradation in causing hazardous fuels or weed problems.

BLM Treatments Pose Grave Dangers to Native Species and Important Landscapes

BLM's EIS/PER involves large-scale vegetation manipulation proposals – ranging from massive burning and "treatment" of conifers and aspen communities to extensive fragmentation (aka burning "mosaics") across areas identified as some of the most intact remaining big sagebrush habitats in Interior Columbia Basin.

All of manipulation proposals pose serious risks to native species – and pose great threats of escalated weed invasion and permanent loss of plants, animals and biodiversity.

BLM must conduct a comprehensive analysis of pre-existing projects and disturbance across the landscape, and include analyses of treatments and disturbance factors across land ownership boundaries. BLM must also assess significant ecological problems that may have arisen in the wake of past manipulation, hazardous fuels or other treatments.

Plus, in our past experience with BLM, the agency has much exaggerated the needed scale of fire prevention treatment projects that may be necessary to protect plant communities or human habitations from large-scale fires. For example, in the Ely-Mount Wilson Urban interface near Ely, NV – only around 13% of the land area proposed by the Ely District was actually found necessary to be treated when BLM's own national-level fire experts, having assessed the situation, and developed a sane and reasonable approach.

As the acreage estimates for treatments proposed under the EIS are based on BLM District/Field Office estimates – with NO APPARENT SCIENTIFIC METHODOLOGY APPLIED for developing these estimates, BLM's great over-exaggerations about treatment needs in the past must be used as the lens through which the public views claims of treatment need in the EIS/PER.

Grazing Suitability and Capability Analysis

BLM must conduct a current livestock grazing capability and suitability analysis. BLM is aware that it has based livestock use areas and stocking rates on old adjudication processes – where AUMs claimed and then assigned in the adjudication process were often greatly inflated by ranchers. These "adjudicated" AUMs were not based on the ability of the land to sustain such high numbers of livestock and levels of use.

In the EIS capability and suitability analysis, BLM must examine:

Slope, distance to natural water, dispersion of "forage" across the landscape – i.e. many lands have been so depleted that it takes dozens of acres to support an AUM – so the costs (including in weight gain/loss of livestock) are often so great that grazing is a resoundingly losing proposition, areas inaccessible due to winter snow, summer desiccation, etc.

Directly relevant to the Weed EIS is an assessment of the Risk that continued livestock grazing may push habitats over ecological thresholds from which they can not recover. Examples: Continued heavy stocking and degradation of mountain big sagebrush opening the door to cheatgrass invasion of understory; continued heavy stocking and degradation of juniper leading to cheatgrass invasion of understory; continued heavy stocking and degradation of sagebrush leading to both juniper and cheatgrass invasion of sagebrush.

BLM must also determine, for example, if lands where taxpayers may spend hundreds of dollars an acre to restore native vegetation that has been destroyed by livestock are suitable for continued grazing following treatment.

Sagebrush and Other Habitat Assessments

Assessments of the quality of sagebrush, salt desert shrub, juniper, montane conifer, aspen and other important habitats across the project area are necessary because: habitats and populations of species continue to decline across vast areas; there are many sagebrush species of concern; threats to sagebrush are regional in scale; regional knowledge facilitates development of consistent, efficient and credible management strategies for a comprehensive set of species. Federal land managers have legal responsibilities for effective management of habitats for sagebrush-associated species of conservation concern.

Analysis procedures include: Ecoregion and spatial extent, identify species of conservation concern, delineate ranges, estimate habitat requirements, identify regional Threats and Effects, estimate and map the Risks posed by each threat, Calculate Species-Habitat effects from all risks and other steps. Other Analyses include: Fragmentation, connectivity and patch size analyses, Consideration of non-vegetative factors affecting species of concern, change detection studies. Regional knowledge provides essential context for land use planning.

We have reviewed, for example, local sage grouse plans, and they fail to provide information/conduct several necessary analyses at the appropriate scale, and fails to present necessary information to the public, and do not integrate necessary information to understand scale and extent of Threats (such as livestock grazing, cheatgrass presence in understory or domination, livestock facility fragmentation, etc.) and other habitat degradation or fragmentation effects – especially for mammals, reptiles and many migratory birds. They also completely fail to describe or map attributes necessary to understand the **quality of habitats** that do exist. For example, there is no mapping or other information that shows sagebrush habitats dominated by cheatgrass; no mapping or

other information to show where large understory grasses have been largely eliminated ad weakened, and replaced by small *Poas*, or squirreltail, etc.

Threats to Sagebrush and Other Shrub-Dependent Species and Habitats Must be Assessed

BLM must assess the following existing threats to native vegetation and special status species, T&E species, and other important biota across the project area:

Wells and windmills
Pipelines
Troughs
Pipelines
Roads (often linked to facilities)
Salting Sites
Weed Infestations
Powerlines
Fences
Aquifer depletion

Cheatgrass-dominated understories
Cheatgrass, few shrubs

Altered understory species composition
Altered understory species structure
Altered overstory species composition
Altered overstory species structure (see, for example, Katzner and Parker 1997, and Federal Register 68 (43): 10389-10409) describing impacts of livestock-altered or thinned sagebrush to pygmy rabbit)

Vegetation Treatments (chainings, seedings, railings, herbicidings, mechanical such as mowing) lacking key habitat components and associated roading

Grazing season/disturbance conflicts with nesting, birthing, wintering or other critical period in species life cycle
Grazing use levels fail to provide necessary habitat components (cover or food) based on nest available science
Livestock structural alteration of shrubs

Energy project siting (wind, geothermal, other) and associated roading and infrastructure such as utility corridors and lines
Mines and mining exploration and associated roading
Oil and Gas exploration and Development

OHV races
Areas of high OHV use

Unregulated motorized use
Road densities
Communication towers and other vertical structures

De-watering proposals (example – aquifer depletion and water export to Las Vegas), land disposal proposals.

Often overlooked threats from livestock facilities and structures include:

- Physical harm to species - obstacles such as fences that can cause injury or mortality;
- Structures cause species avoidance of areas, i.e. sage grouse avoid vertical structures.
- Providing elevated predator perches and nest predator perches (in the case of songbirds – brood parasite perches).
- Attract predators and act as sinks
- Attract brood parasites

All of these impacts may act directly, indirectly, cumulatively or synergistically with the effects livestock degradation associated with lands over broad areas surrounding these facilities may have to vegetation, soils and other habitat components. The end result is degradation and fragmentation of habitats for important and special status species.

This must be determined in a supplemental EIS **before** BLM can evaluate impacts of the large-scale disturbance that it seeks to impose under the Weed and Treatment EIS to many areas of still relatively intact native vegetation and species habitats.

The impacts of grazing on native wildlife, including species displaced by treatments into neighboring or sub-optimal habitats, must be assessed. For example, inundating sage grouse nesting or brood rearing habitats with large numbers of cattle or sheep during nesting season may cause: Removal of cover necessary to protect nesting birds and to hide and provide essential insect food for chicks; cause flushing of birds from nests – thus revealing nests to predators; cause separation of broods and increased vulnerability to predation; strip essential cover to hide hens and nests and conceal chicks from aerial vision-oriented predators and screen scent from ground-based predators. If this is coupled with loss of a significant portion of nesting habitat due to a BLM sagebrush Tebuthiuron "treatment", impacts will be magnified, and populations suffer significant losses.

BLM must Conduct Population Viability, Persistence, Extinction/Extirpation Models for species of Native Wildlife, Rare Plants, Special Status Species and T&E Species Under all Alternatives.

The Proposed Action would treat 6 million acres a year,with a potential of 60 million acres in 10 years. This will have a widespread, and drastic, impact on special status species habitats and populations

Altered Fire Cycles

BLM must study the extent of cheatgrass in understories, and areas already dominated by cheatgrass. BLM must assess the risk of cheatgrass invasion of understories with continued or extended livestock use or disturbance. BLM cannot gloss over the role of ongoing livestock grazing in continuing disturbance that spreads and promotes cheatgrass, medusahead and other weed growth; in retarding recovery and continuing weakening of native vegetation in plant communities that still have a significant component of native species present, etc.

BLM must assess how the presence of cheatgrass may affect special status species. For example, how do cheatgrass-dominated understories and interspaces affect reptile species occurrence and abundance - (lizards may be prey species for small mammals)? How does cheatgrass affect the pygmy rabbit? Which of BLM's proposed treatment disturbances maximize chances of increased cheatgrass dominance of undestories?

In any discussion of plant communities where BLM claims the fuels/fuel loading is too heavy, BLM must examine causes heavy fuels related to livestock degradation, topsoil loss and change in site potential, climate change, etc.

Altered Composition and Structure/Lost Productivity

Over large areas of the EIS lands, larger sized native bunchgrasses and forbs have been eliminated, or significantly weakened. Only smaller stature native grasses and weeds remain. How do these smaller stature grasses affect fire behavior, outcomes of various treatments, etc.? Appropriate stocking levels for any areas grazed must be based on the amount of forage present on a sustainable level, and Risk of exotic species invasions must be minimized. In addition, with extensive depletion over large areas, BLM must assess the diminishing returns – and increased ecological damage done by livestock having to roam over dozens if not hundreds of acres to sustain themselves/harvest an AUM. This may lead to more trampling impacts, more disturbance, more sites for weeds to take hold, and more livestock-vectored movement of weed seeds across the landscape. BLM must identify areas where grazing is unsustainable, or where it will cause harm to still-intact communities, as part of the capability and suitability analyses. What lands are really capable, or suitable, to be grazed post-treatment?

Grazing systems, grazing intensity and season of use: Financial returns from livestock production, trend in ecological condition, forage production, watershed status and soil stability are all closely associated with grazing intensity (Holechek et al. 1998). Short-term rest or deferment can not overcome periodic heavy use. The conflicts with wildlife habitat needs, including food, cover, nutritional composition, space, lack of disturbance and other factors, must be studied.

BLM fails to address shifted, intensified or increased use by livestock that may occur as livestock are shifted into untreated lands. Nowhere does the EIS mandate removal of livestock grazed on treated lands, not merely displacement of livestock and their impacts

to nearby areas. Increasingly, we are seeing BLM fail to reduce AUMs following fire, and Nevada BLM often takes no action whatsoever to limit livestock use of treatments. This all reduces the effectiveness of any treatments, and increases likelihood of increased weed proliferation in the wake of treatment or post-fire disturbance.

Range of Alternatives

As an additional comment on BLM's Range of Alternatives: Instead of structuring this process to develop a range of alternatives centered around the need to intensively alter and treat still relatively intact native vegetation, BLM must consider a range of alternatives that focus on restoring cheatgrass-infested lands, and protecting native vegetation as much as possible. Expansion of cheatgrass pushes communities across thresholds from which natural recovery is difficult - if even possible .livestock grazing as only one of many competing uses on these fragile and much-abused arid lands which are already undergoing accelerated habitat fragmentation.

See also discussion in other WWP comments.

Drought Impacts, Drought Coupled with Treatments

All impacts of livestock grazing on all elements of the EIS must be assessed during drought. How does drought affect productivity of vegetation? What are the additive, synergistic and cumulative impacts of grazing depletion and drought on loss of plant vigor, weakening, or death?

How much are plants of good vs. poor vigor affected by drought? What utilization levels are appropriate on drought-stressed vegetation? What stocking rates are necessary to prevent depletion during drought? How does drought affect fuels and fire danger in plant communities weakened by the combined effects of grazing and drought? Do they become vulnerable to cheatgrass and other weeds that increase fire dangers and cause fuels problems?

What are the impacts of treatments, and likelihood of success under drought conditions? How would the effects of a passive treatment (reduction in, or removal of livestock) compared to invasive disturbance treatments as proposed under the EIS?

Need To Understand Impacts Of Grazing and Other Uses On Sage Grouse And Other Special Status Species

Sage grouse depend on a variety of shrub-steppe habitats, and populations may move over large areas of land in the course of a year. Overhead cover of sagebrush and tall residual native grass cover are critical to successful sage grouse nesting (DeLong et al. 1995; Connelly et al. 2000; Hockett 2003; 69 Federal Register (77) 21489; Connelly et al. 2004). The sage grouse is reliant on sage-steppe communities, and its populations have plummeted westwide. Excessive livestock grazing strips required nesting cover that screens nests of ground- and shrub-nesting birds from ground and aerial predators, and

alters long-term diversity of native forbs that produce insects essential to the diet of sage grouse chicks. Sage grouse eat only sagebrush in winter, and require intact stands for winter survival. Physical breakage of sagebrush and nipping by livestock also alter and decrease sagebrush cover essential for sage grouse and other sagebrush species.

The "Guidelines to Manage Sage Grouse Populations and their Habitats" (Connelly et al. 2000), have been adopted by the Western Association of Fish and Wildlife Agencies (WAFWA) guidelines, and present well-established information on essential habitat components and management based on sage grouse needs. The WAFWA guidelines are now buttressed by the recent WAFWA Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats (Connelly et al. 2004). A link to this voluminous CA document is found at the NDOW Website: www.ndow.org/wild/sg/resources/assessment.shtm .

The WAFWA Guidelines and the recent WAFWA Conservation Assessment (Connelly et al. 2004) underscore the following points with respect to sage grouse biological and habitat needs:

- The great importance of herbaceous cover in nesting habitats (WAFWA at 968; CA at 4-4 to 4-8). Grass height and cover are important to nest success. Herbaceous cover provides scent, visual and physical barriers to predators. (WAFWA at 971; CA at 4-4 to 4-8);
- Successful sage grouse nesting occurs under larger bushes. Nesting habitat has greater canopy cover, taller live and residual grasses, more live and residual grass cover, and less bare ground (WAFWA at 970-971; CA at 4-4 to 4-8);
- Successful nests occur in stands with greater canopy cover (WAFWA at 971; CA at 4-4 to 4-8);
- Early brood rearing habitats should have greater than 15% canopy cover of grasses and forbs. After chicks hatch, these grasses and forbs produce insects for chicks to eat and canopy cover to screen them from predators. Later, forbs are eaten by maturing chicks. Forbs are also important in providing adequate pre-laying nutrients to hens (WAFWA at 971; CA at 4-8 to 4-9);
- As upland vegetation desiccates, hens with broods seek out late brood rearing habitats comprised of areas with succulent green forb vegetation, such as wet meadows and riparian areas (WAFWA at 971; CA at 4-9 to 4-11);
- Winter habitats have relatively dense sagebrush canopy cover, with sagebrush exposed above the snow (WAFWA at 972; CA at 4-14).

105. Habitat protection management actions for sage grouse are summarized in the WAFWA Guidelines, and include:

- Manage breeding habitats to support 15-25% canopy cover of sagebrush, 18 cm. or greater perennial herbaceous cover height (grasses and forbs) (WAFWA at 977);
- In late summer brood rearing habitats, "avoid land use practices that reduce soil moisture effectiveness, increase erosion, cause invasion of exotic plants, and reduce abundance and diversity of forbs" (WAFWA at 980);
- "Avoid developing springs for livestock water." If this must occur, "design project to maintain free water and wet meadows at the spring," as "capturing

water from springs using pipelines and troughs may adversely affect wet meadows used by grouse for foraging" (WAFWA at 980).

In addition, US Fish and Wildlife Service (69 Federal Register (77) at 21491) describes studies showing that losses of hens and nests are related to herbaceous cover surrounding nests. "Enhancing Sage Grouse Habitat, a Nevada Landowner's Guide" (Northwest Nevada Sage Grouse Working Group) also cites studies showing that sage grouse nests were least preyed upon when a residual cover of 7 inches or more of herbaceous vegetation was present.

Thus, there is strong scientific support for application of grazing use standards that provide for 7-9 inches of residual stubble height left uneaten on native grasses. Unfortunately, the livestock utilization levels now being applied across the nearly the entire EIS Project area **will not provide for necessary residual stubble heights and cover for sage grouse nesting**, even under normal circumstances – let alone under drought, or weakened or low vigor conditions, or shifted or increased livestock use onto untreated lands in the wake of widespread treatments.

As treatments are conducted under the EIS, wildlife including special status and T&E species will be faced with new habitat fragmentation on top of the management deficiencies on untreated BLM lands.

A recent EA from the BLM's Jarbidge Field Office (BLM Jarbidge EA, Ch. IV, pg. 88-89). The public lands of the BLM's Jarbidge Field Office are contiguous with the USRD area, and are sagebrush-steppe and other communities, with species of native bunchgrasses that are the same as the allotments here.

BLM has found that with 50% utilization levels, as allowed across the EIS lands, bluebunch wheatgrass is grazed to 4.5 inches, Idaho fescue is grazed to 2.0 inches, Thurber's needlegrass is grazed to 2.8 inches, bottlebrush squirreltail is grazed to 1.5 inches, and the exotic crested wheatgrass is grazed to 3.5 inches. All of these residual stubble heights are thus far less than the 7-9 inch stubble heights called for under the best scientific information available, such as the WAFWA guidelines discussed above; and demonstrate that grazing under BLM's current management will result in far more utilization and seriously inadequate cover for sage grouse. BLM's often woefully inadequate upland utilization levels and hand full of riparian stubble heights on permits across the project area are often not even required Terms and Conditions on grazing permits, so there is no assurance that compliance will occur.

In many areas across the EIS area, livestock grazing has caused depletion of larger-sized native bunchgrasses capable of providing grass heights sufficient to mask sage grouse nests and to protect nests and chicks from predation. These larger "decreaser" grass species have been replaced with smaller "increaser" grasses like small *Poas* (bluegrasses) or unpalatable weeds. The direct, indirect, synergistic and cumulative impacts of the many treatments under the EIS/PER must be assessed in relation to such livestock impacts to sage grouse and other species habitat components.

Harmful Impacts of Livestock Facilities: Habitat Degradation and Fragmentation

A growing body of scientific evidence demonstrates the negative impacts of fences and other vertical objects, as well as the increased fragmentation of sagebrush-steppe and other wild land habitats that result from placing vertical objects in sage grouse habitats. (Connelly et al. 2004).

BLM must conduct a full inventory and assessment of all existing livestock facilities and developments on lands identified by its Field Offices for treatment under the EIS/PER, including, all water haul and salting sites, and all vegetation treatments that have been conducted on these lands. The full array of direct, indirect, cumulative and synergistic impacts of these projects and activities must be assessed.

A substantial body of scientific information demonstrates the harmful impacts of fences and other range developments on sage grouse. Sage grouse evolved in an open landscape without vertical structures, and they naturally avoid using areas near these structures - which include fences and fence posts. Sage grouse habitats are fragmented by fences and other facilities associated with grazing (USFWS 69 Federal Register (77) at 21490). Fences and other facilities (as associated with wells, pipelines, troughs and water developments in the three allotments) provide perching locations for raptors, and associated roading that grows up along fences or in association with other livestock facilities provides both travel corridors for predators and conduits for weeds (69 Federal Register (77): 21490). Mechanical treatments and seeding with exotics degrades sage grouse habitat by altering structure and composition of vegetative community (69 Federal Register (77): 21488). Development of springs and other water sources to support livestock in upland shrub-steppe habitats can artificially concentrate domestic and wild ungulates in sage grouse habitats, and worsen grazing impacts (69 Federal Register (77) at 21489). Direct mortality of sage grouse from collisions with fences is described in the WAFWA guidelines at 977, and USFWS in 69 Federal Register (77) at 21492.

Sage grouse are a landscape-scale species, inhabiting large, interconnected expanses of sagebrush. A mosaic of fragmentation now exists across many parts of the landscape, including portions of these allotments, and BLM's Proposed Actions in the EIS/PER would extend and worsen fragmentation effects across the landscape. Causes of habitat fragmentation include vegetation treatments and removal of sagebrush, wild and prescribed fire, livestock facilities and zones of livestock concentration. There is mounting evidence of long-term negative effects of fire on sage grouse populations (WAFWA Conservation Assessment at 4-16, 7-28), 80% of the land area in the Great Basin is susceptible to displacement by cheatgrass (WAFWA CA. at 7-17 and Fig. 7.10). Wyoming and basin big sagebrush shrub cover types occupy large areas in the EIS lands and are the cover types most susceptible to displacement by cheatgrass (these areas comprise large portions of the three allotments). The ecological effects of livestock grazing may alter vegetation communities, water and nutrient availability and soils so that **lands cross thresholds from which the system can not recover** (WAFWA CA. at 7-29 to 32). Habitat treatments have consequences for the habitat dynamics and wildlife

use of habitats – and "each potentially decreases the suitability of sagebrush for wildlife" that depend on large, unfragmented sagebrush habitats" (WAFWA CA at 7-32). Evaluation of sagebrush communities primarily based on their ability to produce livestock forage (as in the case of these lands), may result in extensive alterations that are unsuitable for sage grouse and other species dependent on sagebrush habitats (WAFWA CA at 1-3).
Fences influence livestock and predator movement, facilitate spread of exotic plants, provide travel and additional access for human disturbances, increase mortality due to direct collisions, and increase predation rates by providing perches for raptors (WAFWA CA at 7-34 to 35).

Fences used to control grazing (or in the aftermath of the treatments that may result under various EIS/PER actions) modify the landscape by creating an artificial mosaic (WAFWA CA at 7-35), and allow more intensive grazing and loss of necessary habitat components such as residual grass cover for nesting. Intensified or more uniform use inside fenced areas results in patterns of unusable habitat across the landscape. Water developments influence the composition and relative abundance of plants (WAFWA CA at 7-35). Thus, infrastructure to support grazing programs including fences and water developments have both direct and indirect effects on the landscape (WAFWA CA at 13-9). Grouse may not commonly use water developments, and "water developments tend to attract other animals, and may serve as a predator "sink" for sage grouse, i.e. grouse fall victim to the many predators attracted to water developments (WAFWA CA at 4-12).

The Conservation Assessment describes impacts of disturbance of sagebrush habitats by vegetation treatments (at 13-6); depletion of native vegetation facilitating cheatgrass invasion (at 13-7); problems associated with blocks of crested wheatgrass and exotic seedings (at 13-7 to 8); landscape-level concerns – including that areas with larger patches of sagebrush remaining receive lower precipitation and are the least resilient to disturbance (such lower precipitation areas characterize much of the arid land area targeted for treatment). This highlights why careful management of these lands is crucial) (at 13-8 to 9).

An unknown array of livestock facilities has already been constructed throughout the three allotments (on both BLM and private lands) to facilitate, extend and concentrate livestock grazing. These facilities include wells, windmills, spring developments and water diversions, pipelines, troughs, stock ponds – at times dug into and destroying springs, fences and corrals. Some have fallen into abject disrepair – windmills lie crumpled on the ground, junk tanks and troughs are strewn across the landscape. Fences have improper spacing. Not only do these facilities concentrate large numbers of livestock with deleterious impacts to soils, vegetation and wildlife habitats in their vicinity and radiating outward over broad areas, unplanned roading is often directly related to construction or maintenance of these facilities. Plus, there are innumerable livestock salting or mineral supplement sites, too, which also result in zones of intensive livestock disturbance and incidental roading. All of these areas of livestock concentration, where heavy and severe livestock use has compacted soils and destroyed cover and food for wildlife, exhibit harmful impacts to vegetation and native wildlife

habitats. These developments and zones of intensive disturbance fragment habitats, and cover and food, for native species including sage grouse (Braun 1998; Freilich 2003; Connelly et al. 2004). Such projects have been constructed throughout habitats critical for sage grouse and other shrub-steppe species. New pipeline spurs incrementally constructed would extend and shift livestock use to new and less grazed areas, as the vegetation has been depleted by livestock around existing artificial or natural water sources (Sada et al. 2001).

BLM lands that are not close to livestock water sources often comprise the best remaining healthy native vegetation communities and are thus very important habitats for native sagebrush-steppe species – precisely because they have been far less altered by livestock impacts. On top of the existing network of facilities BLM treatments may foreseeably result in plans to construct dozens of new projects (fences and water sources to keep cattle off of EIS/PER treated lands), thus greatly expanding the zones of disturbance and intense livestock concentration into currently better condition habitats.

Networks of roads associated with livestock facilities (and which will likely grow dramatically as vegetation is burned or otherwise treated and thus cleared under the EIS) serve as conduits for exotic plant invasions (Gelbard and Belnap 2003), and travel corridors for predators (Braun 1998, Connelly et al. 2004). The development of a maze of roads fragmenting the landscape has resulted from the proliferation of livestock facilities across the landscape, and BLM past treatments. Roads grow up as lands are treated, or projects are constructed and maintained. Treated lands, cleared of woody vegetation, are also greatly subject to increased Off-road use, and new roading development from this activity.

Instead of attempting to rest to enhance habitats or jump start recovery through passive restoration techniques, or place strict use livestock use limits on areas susceptible to weed invasion such as degraded riparian areas, BLM relies overwhelmingly on new treatment and other disturbances and likely more harmful facilities, such as the construction of a series of fences, with accompanying development and de-watering of wetland areas through piping water to troughs. Large new areas of better condition habitats then become wastelands/weedlands as a result of intensified use.

An increasing body of science demonstrates that fences are harmful to sage grouse and many other species of native wildlife, and that sage grouse may avoid use of areas near fences. BLM's post-treatment actions may in fact further fragment habitats beyond removal of vegetation, and rendering patches of remaining untreated or native vegetation unusable by grouse, while creating extended wasteland areas in their surroundings, causing expanded environmental harm.

Instead of taking strong and decisive action to restore and enhance habitats and populations, BLM pursues a path of new and extended habitat alteration and fragmentation across the allotments under the guise of hazardous fuels, and restoring a "natural" fire interval that can no longer be considered natural under the chronic disturbance caused by livestock and in the face of exotic species invasions. .

Degradation, fragmentation and loss of sagebrush across landscapes has imperiled the sagebrush-steppe avifauna. Besides the many effects described for sage grouse, these habitat changes and fragmentation have been shown to affect abundance of shrub-steppe birds Paige and Ritter 1999, Knick et al. 2003, Connelly et al. 2004 at 1-3.

The habitat for many native wildlife species across the EIS lands is already fragmented. Fragmentation would continue and escalate with new livestock developments, livestock management practices that result in zones of livestock concentration, and other disturbances under the actions as laid out in the EIS/PER. Disturbance and depletion associated with livestock grazing and associated rangeland developments serve to break up and fragment the continuous cover of native sagebrush-steppe vegetation necessary for many sagebrush-dependent wildlife species survival (Knick and Rotenberry 1995; Knick et al. 2003; Freilich et al. 2003; 69 Federal Register (77), Connelly et al. 2004).

The Snake River Birds of Prey Area: Case Study in How NOT to Manage Lands

BLM must closely examine the woeful management failures of BLM in the Snake River Birds of Prey National Conservation Area to understand the consequences of continuing near status quo forage allocations, livestock project construction/water hauling, roading, etc. and the inability of the land to recover following fire or other disturbance under BLM's post-fire management and ESR activities. A 1996 USDI BLM/IDANG report details the ongoing destruction of habitat caused by fire, grazing and other human activity (including military training). The loss of sagebrush in the SRBOPA is clear to even the most casual observer driving through the area. A proliferation of exotic species – cheatgrass, medusahead, bur buttercup, and now white top, rush skeletonweed, and other noxious weeds - have occurred in the wake of the excessive livestock seasons of use and numbers that have been authorized here in the past and under new 10-year grazing permits issued by BLM that continue these same stocking rates and use levels. The grazing levels and management paradigms in the SRBOPA (high allowable utilization of 50%, and many harmful grazing practices) are similar to BLM grazing management across the EIS area), and also include continued construction of new livestock projects or providing water in arid uplands through facilities and water hauling.

Over the years since the BOPA NCA has been designated, we have watched as BLM has continued to allow grazing during periods of the year that are known to be harmful to native bunchgrasses and forbs, to allow use at high levels, including during drought years, and generally continue management in a manner biased towards the livestock industry. Hazardous fine fuels have only increased. The situation has only worsened with each new fire, and the failure of BLM to take necessary measures - especially passive measures such as removal of livestock coupled with native seedings, to restore these NCA lands.

The SRBOPA situation should be used by BLM as an example of how fire and subsequent grazing management failures and out-dated management paradigms affect sagebrush lands.

The calamitous weedland situation of the SRBOPA also illustrates the failure of the EIS/PER to reveal to the public how the proposed actions will be carried in landscapes of national significance, and how these important areas may be protected from unnecessary and undue degradation under EIS/PER actions. For example, BLM has been touting the use of livestock to graze firebreaks in cheatgrass. Is this action, under the EIS/PER's flawed definition of "biological control" likely to be used widely in the SRBOPA, instead of undertaking necessary restoration action accompanied by large-scale livestock reductions or cessation of grazing?

Current BLM Illustrate the Realities of Current BLM Management

Species such as the loggerhead shrike or pygmy rabbit that require structurally diverse sagebrush cover and mature or old growth sagebrush communities are greatly at risk of undergoing extensive and accelerated habitat loss under BLM's treatment scenario. BLM fuels treatments target old growth and mature sagebrush that are essential to many sagebrush-dependent species. Examples: January 2006 Winnemucca BLM proposal to herbicide, burn, mow and otherwise disturb 40,000 acres of sagebrush in the Little Owyhee allotment over the next 10 years. See Nevada BLM *Sage Notes* 2004, killing old growth Wyoming big sagebrush in occupied pygmy rabbit habitat to plant crested wheatgrass as livestock forage and claiming it is a fuelbreak in the Spruce and Valley allotments. See also Elko BLM 2005 Spruce Veg Treatment EA, proposing burning, chaining in Spruce Mountain.

USDI BLM. 2005, Elko District's Draft Sheep Complex, Big Springs and Owyhee Grazing allotments Sensitive Bird Species DEIS illustrates the failure of BLM at the Activity Plan level, to address habitat needs of important and special status species. Here, **despite a Federal Court order** to consider the habitat needs of sensitive bird species in livestock grazing decisionmaking, BLM proposes harmful new facilities and crested wheatgrass seedings and sagebrush mowing in the midst of mature and old growth sage grouse, burrowing owl, pygmy rabbit and other important and special status species habitats. The veg. treatments, livestock facilities, lax grazing requirements and stocking with cattle and sheep 28-50% above the levels that have been grazed here in the past. Sadly, this is the reality of the current situation on arid BLM lands across the West, and is the real environmental setting/management paradigm landscape, that BLM must consider in assessment of the environmental risks and harms of actions proposed in the EIS/PER. Plus, researchers tied to ag interests and land grant colleges are acquiring large federal fire fund and other grants to manipulate and treat sagebrush, pinyon-juniper and other vegetation, and BLM is authorizing large acreages of new "research" killing of sagebrush and pj under categorical Exclusions. See Ely District BLM Butte Valley proposal. These impacts are completely unassessed in the EIS/PER.

We are attaching an electronic version of a Petition to List the Pygmy Rabbit and associated bibliography as an example of the critical importance of mature, old growth and structurally complex native vegetation to declining important and special status species across the arid West, and to illustrate the high level of loss and fragmentation of

sagebrush and other habitats across the West. BLM's EIS/PER aggressive treatment disturbance to mature and old growth plant communities will only serve to accelerate habitat fragmentation and degradation.

The EIS never reveals that the primary plant communities being dubbed hazardous fuels and targeted for 'treatment" across BLM and Forest Service lands across the West are primarily old growth and mature native vegetation communities upon which many rare and declining species rely. Thus, the treatment and herbicide actions that disturb these vegetation communities instead of having BLM's claimed rosy outcomes, will further endanger sagebrush and juniper dependent species, and have deleterious watershed-level impacts affecting such species as Lahontan cutthroat trout or bull trout. Without providing necessary data on not just broad vegetation types where it contemplates treatment, but also how it characterizes "hazardous fuels" and vegetation to be targeted, no honest Weed EIS analysis or adequate BA for spraying and treatments can be provided.

This all demonstrates why BLM must abandon its myopic analysis and limited alternatives that would radically alter large areas of the arid West that still contain largely native vegetation, and instead develop a range of new alternatives focused on passive restoration of remaining better condition communities. This is essential to maintain, enhance or restore public lands, native vegetation and special status species and T&E habitats. If BLM proceeds on the aggressive disturbance and herbicide campaign laid out in the EIS/PER, native species and T&E species will only suffer further declines.

Sincerely,

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Please apply the following literature, and the RNEA Bibliography, to these and other WWP comment submissions. Also: *Attached Electronically to these comments is an ESA Listing Petition and accompanying Bibliography for the Pygmy Rabbit.*

Relevant Literature

Anderson, L. D. 1991. Bluebunch wheatgrass defoliation: effects and recovery. USDI Bureau of Land Management Technical Bulletin 91-2. Salmon, ID.

Anderson, D. C., K. T. Harper and R. C. Holmgren. 1982. Factors influencing development of cryptogamic soil crusts in Utah deserts. Journal of Range Management 35(2):180-185.

Anderson, J. E. and K. E. Holte. 1981. Vegetation Development over 25 years without grazing on sagebrush-dominated rangeland in southern Idaho. Journal of Range Management 34(1):25-29.

Anderson, Jay E. and Richard S. Inouye. 2001. Landscape-scale changes in plant species abundance and biodiversity of a sagebrush steppe over 45 years. Ecological Monographs 71(4):531-556.

Belnap, J. 1995. Surface disturbances: their role in accelerating desertification. Environmental Monitoring and Assessment 37:39-57.

Belnap, J. and D. A. Gillette. 1997. Disturbance of biological soil crusts: impacts on potential wind erodibility of sandy desert soils in southeastern Utah. Land Degradation and Development 8:355-362.

Belnap, J., R. Rosentreter, S. Leonard, J. H. Kaltenecker, J. Williams and D. Eldridge. 2001. Biological soil crusts: ecology and management. USDI BLM. Technical Reference 1730-12.

Belsky, A.J. 1996. Review of the scientific assessment of western juniper woodlands (of the Pacific Northwest). Eastside Ecosystem Management Program EIS.

Belsky, A.J. 1996. Viewpoint on western juniper expansion: is it a threat to arid western ecosystems? J. Range Management. 49. 53-59. www.onda.org/library/papers/index.html.

Belsky, A. J. and D. M. Blumenthal. 1997. Effects of livestock grazing on stand dynamics and soils of upland forests of the Interior West. Conservation Biology 11: 315-327. www.onda.org/library/papers/index.html

Belsky, A. J., A. Matzke, and S. Uselman. 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. Journal of Soil and Water Conservation 54:419-431.

Belsky, A. J. and J. Gelbard. 2000. Livestock grazing and weed invasions in the arid west. Oregon Natural Desert Association. Bend, OR. [available on-line at www.onda.org/library/papers/index.html]

Beymer, R. J. and J. M. Klopatek. 1992. Effects of grazing on cryptogamic crusts in pinyon-juniper woodlands in Grand Canyon National Park. Am. Midland Naturalist. 127:139-148.

Billings, W. D. 1994. Ecological impacts of cheatgrass and resultant fire on ecosystems in the Western Great Basin, in S.B. Monsen and S.G. Kitchen, eds. Proceedings - ecology and management of annual rangelands. USDA Forest Service. General Technical Report INT-GTR-313. Intermountain Research Station. Ogden, UT.

Braun, C. 1998. Sage grouse declines in western North America: what are the problems? Proc. Western Assoc. State Fish and Wildlife Agencies 78.

Chaney, E., W. Elmore, and W. S. Platts. 1990. Livestock grazing on western riparian areas. Report prepared for the U.S. Environmental Protection Agency by Northwest Resources Information Center, Inc. Eagle, ID.

Chaney, E., Elmore, W. and W. S. Platts. 1993. Managing change: livestock grazing on western riparian areas. Northwest Resource Information Center. Eagle, ID.

Clary, W. P. and B. F. Webster. 1989. Managing grazing of riparian areas in the Intermountain region. General Technical Report INT-263. USDA Intermountain Research Station.

Collopy, M.W. and J. Smith. 1995. National status and trends; the Pacific Northwest (Draft). UDI/NBS Forest and Rangeland Ecosystem Science Center, Corvallis, OR.

Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2001. Guidelines to manage sage grouse populations and their habitats. Western Association of Fish and Wildlife Agencies. Wildlife Society Bulletin 2000, 28(4):967-985.

Connelly, J. W., S. T. Knick, M. A. Schroeder and S. J. Stiver. 2004. Conservation assessment of greater sage grouse and sagebrush habitats. Western Association of Fish and Wildlife Agencies. Cheyenne, Wyoming. [available on-line at www.ndow.org/wild/sg/resources/assessment.shtm]

Conservation Biology Institute. 2000. Importance of BLM roadless areas in the western US. Full report can be viewed at *www.consbio.org*.

Coulter, I. Davidison, L. Dickson. N. Edelson, R. Eliot, R. M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Philips, J. E. Saliva, B. Syderman, J. Trapp, J. Wheeler, and K. Wohl. 2002. Waterbird Conservation for the Americas: the North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas. Washington, DC.

Donahue, D. 1999. The western range revisited: Removing livestock from public lands to conserve native biodiversity. University of Oklahoma Press, Norman, OK.

DeLong, A. K., J. A. Crawford, and D. C. DeLong. 1995. Relationship between vegetation structure and predation of artificial sage grouse nests. J. Wildlife Management. 59(1):88-92.

Dobkin, D. S. and J. D. Sauder. 2004. Shrubsteppe landscapes in jeopardy. Distributions, abundances and the uncertain future of birds and mammals in the Intermountain West. High Desert Ecological Research Institute. Bend, OR.

Duff, D. A. 1977. Livestock grazing impacts on aquatic habitat in Big Creek, Utah. *In* Proceedings of the workshop on livestock and wildlife –fisheries relationships in the Great Basin.

Dyksterhuis, E. J. 1949. Condition and management of range land based on quantitative ecology. Journal of Range Management 2:104-115.

Eddleman, L. L., P. M. Miller, R. F. Miller, and P. L. Dysart. 1994. Scientific assessment of western juniper woodlands (of the Pacific northwest). Eastside Ecosystem Management Program. EIS.

Everett, R.L. 1987. Plant response to fire in the pinyon-juniper zone. p.152-157 in R. L. Everett, ed. Proceedings – pinyon-juniper conference. USDA Forest Serv. Tech. Rep. INT-215.

Everett, R.L. 1987. (ed.) Proceedings – pinyon-juniper conference. USDA Forest Serv. Gen. Tech. Rep. INT-215.

Everett, R. L. and W. Clary. 1985. Fire effects and revegetation of pinyon-juniper woodlands p. 33-37 in Rangeland Fire Effects: a symposium. USDI. BLM. Boise.

Federal Register. November 30, 2001. Endangered and threatened wildlife and plant; emergency rule to list the Columbia Basin distinct population segment of the pygmy rabbit (*Brachylagus idahoensis)* as endangered. 66, 231: 59734-59749.

Federal Register. November 30, 2001. Endangered and threatened wildlife and plants; Proposed rule to list the Columbia Basin distinct population segment of the pygmy rabbit (*Brachylagus idahoensis)* as endangered. Vol. 66, 231: 59769-59771.

Federal Register. July 15, 2002. Endangered and threatened wildlife and plants; Listing the plant *Lepidium papilliferum* (slickspot peppergrass) as endangered. Vol. 67, 135: 46441-46450.

Federal Register. July 17, 2002. Endangered and threatened wildlife and plants; reopening of the comment period on the proposed listing of the Columbia Basin Distinct Population Segment of the pygmy rabbit (*Brachylagus idahoensis*) as endangered . Vol. 67, 137: 46951.

Federal Register. March 5, 2003. Endangered and threatened wildlife and plants: Final Rule to List the Columbia Basin Distinct Population Segment of the Pygmy Rabbit (*Brachylagus idahoensis*) as Endangered. Vol. 68, 43: 10388-10409.

Federal Register. March 5, 2003. Endangered and threatened wildlife and plants; Final Rule to list the Columbia Basin Distinct Population Segment of the pygmy rabbit (*Brachylagus idahoensis*) as endangered. Vol. 68, 43:10389-10409.

Federal Register. April 21, 2004. Endangered and threatened wildlife and plants; 90-day finding for petitions to list the greater sage grouse as threatened or endangered. Vol. 69(77):21484-21494

Fleischner, T. 1994. Ecological costs of livestock grazing in western North America. Conservation Biology 8:629-644.

Freilich, J. E., J. M. Emlen, J. J. Duda, D. C. Freeman and P. J. Cafaro. 2003. Ecological effects of ranching: a six-point critique. BioScience 53(8):759-765.

Galt, D., G. Mendez, J. Holechek and J. Joseph. 1999. Heavy winter grazing reduces forage production: an observation. Rangelands 21(4):18-21

Galt, D., F. Molinar, J. Navarro, J. Joseph and J. Holechek. 2000. Grazing capacity and stocking rate. Rangelands 22(6):7-11

Gelbard, J. L. and J. Belnap. 2003. Roads as conduits or exotic plant invasions in a semiarid landscape. Conservation Biology 17 (2):420-432.

Gerber, M.F.. J.C. Munger, A. Ames and J. Stewart. 1887. Reptiles and amphibians in deep canyons: the Big Jacks and Little Jacks Creek drainages of Owyhee County, Idaho. BLM Technical Bulletin 97-1.

Gilbert, B. N. 2003. Motorized Access on Montana's' Rocky Mountain Front: A synthesis of scientific literature and recommendations for use in revisions of the travel plan for the Rocky Mountain division. Coalition for the Rocky Mountain Front.

Gifford, G. F. 1973. Runoff and sediment yields from plots on chained pinyon-juniper sites in Utah. J. Range Management. 26: 440-443.

Gifford, G. F. 1987. Myths and fables and the pinyon-juniper type. P. 34-37 in Everett, R.L. ed. Proceedings – pinyon-juniper conference. USDA Forest Serv. Gen. Tech. Rep. INT_215.

Gifford, G. F. and R. H. Hawkins. 1978. Hydrologic impact of grazing on infiltration: a critical review. Water Resources Research 14: 305-313.

Groves, C. 1994. Idaho's amphibians and reptiles: description, habitat and ecology. Nongame Wildlife Leaflet No. 7. Idaho Department of Fish and Game. Boise, ID.

Haferkamp, M. R., P. O. Currie, J. D. Volesky and B. W. Knapp. 1992. Mortality of crested wheatgrass and Russian wildrye during drought. J. Range Management. 45(4):355-357.

Hockett, G.A. 2002. Livestock impacts on herbaceous components of sage grouse habitat: a review. Intermountain Journal of Science 8(2): 105-114.

Holechek, J. L. 1996a. Financial returns and range condition on southern New Mexico ranches. Rangelands 18(2):52-56

Holechek, J. L. 1996b. Drought and low cattle prices: hardship for New Mexico ranchers. Rangelands 18(1):11-13

Holechek, J. L., H. de Souza Gomes, F. Molinar and D. Galt. 1998. Grazing intensity: critique and approach. Rangelands 20(5):15-18

Holechek, J. L., H. Gomez, F. Molinar and D. Galt. 1999a. Grazing studies: what we've learned. Rangelands 21(2):12-16

Holechek, J. L., M. Thomas, F. Molinar and D. Galt. 1999b. Stocking desert rangelands: what we've learned. Rangelands 21(6):8-12

Holechek, J. L., H. Gomez, F. Molinar, D.Galt and R. Valdez. 2000. Short-duration grazing: The facts in 1999. Rangelands 22(1):18-22.

Holechek, J. L., R. D. Pieper and C. H. Herbel. 2001.Range Management: Principles and Practices, Fourth Edition. Prentice-Hall, New Jersey. 587p

Holmes, A. L., G. A. Green, R. L. Morgan, K. B. Livezey. 2003. Burrowing owl nest success and longevity in north central Oregon. Western North American Naturalist 63(2):244-250.

Hutchings, S.S. and G. Stewart. 1953. Increasing forage yields and sheep production on Intermountain winter ranges. U.S. Department of Agriculture Circular 925. 63p.

Katzner, T. E. and K. L. Harlow. 1998. Long-distance movements from established burrow sites by pygmy rabbits (*Brachylagus idahoensis*) in southwestern Wyoming. Northwestern Naturalist 7:72-74.

Katzner, T. E., K. L. Parker and H. H. Harlow. 1997. Metabolism and thermal response in winter-acclimatized pygmy rabbits (*Brachylagus idahoensis*). Journal of Mammalogy 78(4):1053-1062.

Kay, C. E. and D. L. Bartos. 2000. Ungulate herbivory on Utah aspen: assessment of long-term exclosures. J. Range Management 53: 145-153.

Knick, S. T. and J. T. Rotenberry. 1995. Landscape characteristics of fragmented shrubsteppe habitats and breeding passerine birds. Conservation Biology 9:1059-1071.

Knick, S. T. and J. T. Rotenberry. 1997. Landscape characteristic of disturbed shrubsteppe habitats in southwestern Idaho (U.S.A.). Landscape ecology 12:287-297.

Knick, S. T., J. T. Rotenberry, and B. Van Horne. 1999. Effects of disturbance on shrub steppe habitats and raptor prey in the Snake River Birds of Prey National Conservation Area, Idaho. Pages 98-99. *In* P.G. Entwhistle and others. Proceedings: sagebrush steppe ecosystems symposium.

Knick, S.J. and J.T. Rotenberry. 1999. Spatial distribution of breeding passerine birds habitats in a shrub steppe region of southwestern Idaho. Studies in Avian Biology 19: 104-111.

Knick, S. T. and J. T. Rotenberry. 2002. Effects of habitat fragmentation on passerine birds breeding in intermountain shrubsteppe. Studies in Avian Biology 25:130-140.

Knick, S. T.,D. S. Dobkin, J. T. Rotenberry, M. A. Schroeder, W. M. Vander Haegen and C. V. Riper. 2003. Teetering on the edge or too late? Conservation and research issues for avifauna of sagebrush habitats. Condor 105:61-634.

Krueper, D., J. Bart and T. D. Rich. 2003. Response of vegetation and breeding birds to the removal of cattle on the San Pedro River, Arizona (U. S. A.). Conservation Biology 17(2):607-615.

Kushlan, J. A., M. J. Steinkamp, K. C. Parsons, J. Capp, M. . Cruz, M. Coulter, I. Davidison, L. Dickson. N. Edelson, R. Eliot, R. M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Philips, J. E. Saliva, B. Syderman, J. Trapp, J. Wheeler, and K. Wohl. 2002. Waterbird Conservation for the Americas: the North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas. Washington, DC.

Lesica, P. and F.W. Allendorf, 1995. When are peripheral populations valuable for conservation? Conservation Biology. 9(4): 753-760.

Lesica, P. and T.H. DeLuca. 1998. Long-term harmful effects of crested wheatgrass on Great Plains grassland ecosystems. Journal of Soil and Water Conservation. 51 (5)408-409.

Loft, E. R., J. W. Menke, J. G. Kie. 1991. Habitat shifts by mule deer: the influence of cattle grazing. J. Wildlife Management 55(1):16-24.

Lusby, G. C. 1979. Effects of grazing on runoff and sediment yield from desert rangeland at Badger Wash in western Colorado, 1953-1973. Geological Survey Water Supply Paper. 1532-1. U. S. Government Printing Office.

Mack, R. N. and J. N. Thompson. 1982. Evolution in steppe with few large, hoofed mammals. American Naturalist 119:757-773.

McLean, A. and A. L. van Ryswyk. 1973. Mortality in crested wheatgrass and Russian wildrye. J. Range Management. 26(6): 431-433.

McLean, A. and E.W. Tisdale. 1972. Recovery rate of depleted range sites under protection from grazing. Journal of Range Management 25:178-184.

Montana Department of Fish, Wildlife and Parks. 1995. Ecological implications of sagebrush manipulation. Montana Department of Fish, Wildlife and Parks. Booklet. 49 pages.

Monsen, S. B. 2000. 1994. The competitive influences of cheatgrass on (*Bromus tectorum*) on site restoration. Pages 35-40. *In* S.B. Monsen and S.G. Kitchen, compilers. Proc. Ecology and Management of Annual Rangelands. Gen. Tech. Rep. INT-313. USDA Forest Service. Intermountain Research Station. Ogden, UT.

Nachlinger, J., K. Sochi, P. Comer, G. Kittel and D. Dorfman. 2001. Great Basin: An ecoregion based conservation blueprint. The Nature Conservancy of Nevada.

Nature Conservancy. 1999. Owyhee Canyonlands. Conservation Focus. (Unpublished).

Neel, L. Nevada Partners in Flight Conservation Plan. 1999.

Nevada Natural Resources Status Report. 2002. State of Nevada. Wildlife and habitat. Plants. Fungi. [available on-line at www.dcnr.nv.gov/nrp01/bio02.html]

Nevada Natural Resources Status Report. 2002. State of Nevada. Non-native flora and fauna. Non-native flora. Non-native fauna. [available on-line at www.dcnr.nv.gov/nrp01/bio09.htm]

Noss, R. Undated. Ecological effects of roads.

Noss, R.F. 2002. Context matters: considerations for large-scale conservation planning. Society for Conservation Biology. Conservation in practice 3:3 10-19.

Noss, R. F. and A. Cooperrider. 1994. *Saving Nature's Legacy: Protecting and Restoring Biodiversity*. Defenders of Wildlife and Island Press. Washington, DC.

Noss, R. F. and B. Csuti. 1997. Habitat fragmentation. Pages 269-304. *In* G.K. Meffe and C. Carroll, eds. *Principles of Conservation Biology*. 2nd edition. Sinauer Associates. Sunderland, MA

Noy-Meir, I. 1974. Desert Ecosystems: higher trophic levels. Annual Review Ecology and Systematics 5:195-214.

Ohmart, R. D. 1996. Historical and present impacts of livestock grazing on fish and wildlife resources in western riparian habitats. Pages 245-279 in P. R. Krausman, ed., Rangeland Wildlife. Society of Range Management, Denver, CO.

Owyhee Canyonlands Coalition. 2001. Owyhee-Bruneau Canyonlands: Objects of specific interest.

Paige, C. and S. Ritter. 1999. Birds in a sagebrush sea. Partners in Flight, Western Working Group. Boise, ID.

Pellant, M. and C. Hall. 1994. Distribution of two exotic grasses on intermountain rangelands: status in 1992. Pages 109-112. *In* S. B. Monsen and S. G. Kitchen, compilers. Proc. Ecology and Management of Annual Rangelands. Gen. Tech. Rep. INT-313. USDA Forest Service. Intermountain Research Station. Ogden, UT.

Peters, E. F. and S. C. Bunting. 1994. Pages 31-36. *In* S. B. Monsen and S. G. Kitchen, compilers. Proc. Ecology and Management of Annual Rangelands. Gen. Tech. Rep. INT-313. USDA Forest Service. Intermountain Research Station. Ogden, UT.

Peterson, J. G. 1995. Ecological implications of sagebrush manipulation. MDFWP. Wildlife Management Division. 49 pps.. On-line version: www.fwp.state.mt.us/insidefwp/library/sagebrushbulletin.asp

Pickford, G. D. 1932. The influence of continued promiscuous burning on spring-fall ranges in Utah. Ecology 13 (2): 159-171.

Platts, W. S. 1991. Influence of forest and rangeland management on anadromous fish habitat in western North America. USDA Forest Serv. Gen. Tech. Rep. PNW-124.

Platts, W. S. 1992. Livestock grazing: Influences of Forest and Rangeland Management on Salmonid fisheries and their habitats. AFS Society Publication 19:389-423.

Pyke, D. A. 1999. Invasive exotic plants in sagebrush ecosystems of the Intermountain West. Sagebrush Steppe Ecosystems Symposium. Boise, ID.

Pimentel, D. L. Lach, R. Zuniga, and D. Morrison. Environmental and economic costs associated with non-indigenous species in the United States... http://news/cornell.edu/releases/Jan99/spcies_costs.old.html

Provenza, D. and J. H. Richards. 1984. Interseeding crested wheatgrass ranges. Utah Science. 73-77.

Quigley, T.M. and S.J. Arbelbide, eds. 1997. An assessment of ecosystem components in the Interior Columbia Basin and portions of the Klamath and Great Basins. Gen. Tech. Rep. PNW-GTR-405.

Quigley. T.M. and H. Bigler Cole. 1997.Highlighted scientific findings of the Interior Columbia Basin Ecosystem Management Project. Gen. Tech. Rep. PNW-GTR-404. USDA/USDI. Portland, OR. 34 pages.

Red Willow Research. 2004. Western burrowing owl (*Athene cucularia*) 2004 Nest Site Survey Project Update. Report prepared for BLM Shoshone Field Office.

Red Willow Research. Bird Survey. XXX.

Rich, T. D. C. J. Beardmore, H. Berlanger, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn. W. C. Hunter, E. E. Inigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosneberg, C. M. Rustay, J. S. Wendt, T. C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, NY

Ricketts, T.H., E. Dinerstein, D.M. Olson, C.J. Loucks, W. Eichbaum, D. Dellasala, K. Kavanaugh, P. Hedao, P.T. Hurley, K.M. Carney, R. Abell and S.T. Waters. 1999. Terrestrial ecoregions of North America: a conservation assessment. World Wildlife Fund. Washington, DC.

Rosenberg, K. V. 2004. Partners in Flight Continental Priorities and objectives defined at the state and bird conservation region levels. Cornell Lab of Ornithology. Ithaca, NY.

S. K. Rust and C. L. Coulter. 2000. Composition, structure and distribution of Utah juniper plant associations. Cooperative Challenge cost-share Project. IDFG/BLM. Conservation Data Center, Idaho Department of Fish and Game. Boise, ID.

Saab, V. and C.A. Groves 1992. Idaho's migratory landbirds: description, conservation, habits. IDFG Non-game Wildlife Leaflet #10. 16 pages.

Saab, V. and T. Rich. 1997. Large-scale conservation assessment for neotropical migratory land birds in the Interior Columbia River Basin. USDA Forest Service General Technical Report PNW-GTR-399. Pacific Research Station, Portland, OR.

Sada, D. W., J. E. Williams, J. C. Silvey, A. Halford, J. Ramakka, P. Summers, and L. Lewis. 2001. A guide to managing, restoring, and conserving springs in the western United States. USDI BLM. Technical Reference. 1737-17.

Sada, D. W. and D. B. Herbst. 2001. Macroinvertebrates and environmental characteristics of Owens Valley Springs, Inyo County, California (Draft). Report submitted to City of Los Angeles Department of Water and Power, Bishop, CA.

Sada, D. W. and K. Pohlmann. 2003. U. S. National Park Service Mojave Inventorying and Monitoring Protocols: Level I. Desert Research Institute.

Sharp, L. A., K. Sanders and N. Rimbey. 1992. Variability of crested wheatgrass production over 35 years. Rangelands 14(3):153-168.

Schmidt, L. J. 1987. Present and future themes in pinyon-juniper technology. P. 474-489. In. R.l. Everett, ed. Proceedings – pinyon-juniper conference. USDA Forest Service Gen. Tech. Rep. INT-215.

Schwan, H.E., Donald J. Hodges and Clayton N. Weaver. 1949. Influence of grazing and mulch on forage growth. Journal of Range Management 2(3):142-148

Stewart, K. M., R. T. Bowyer, J. G. Kie, N. J. Cimon and B. J. Johnson. 2002. Temporo-spatial distributions of elk, mule deer, and cattle: resource partitioning and competitive displacement. Journal of Mammalogy 83(1):229-244.

Siegel, N. S., L. A. Shipley and R. D. Sayler. 2002. Ecology and conservation of pygmy rabbits in the shrub-steppe of eastern Washington. Society for Conservation BiologyAnnual Meeting. Britain. July, 2002. Abstract.

Soule, M. E. (ed.). 1986. *Conservation Biology: The Science of Scarcity and Diversity.* Sinauer Associates, Sunderland, MA.

Soule, M. 1999. An unflinching vision: networks of people for networks of wildlands. Wild Earth 9(4): 38-46.

Stohlgren, T. J., Y. Otsuki, C. A. Villa, M. Lee and J. Belnap. 2001. Patterns of plant invasions: a case example in native species hotspots and rare habitats. *Biological Invasions* 3:37-50. Kluwer Academic Publishers, Netherlands.

Thomas, C .D. 1993. Extinction, colonization and metapopulations: environmental tracking by rare species. Conservation Biology 8: 373-378.

USDI. BLM/IDARNG. 1996. Effects of military training and fire on the Snake River Birds of Prey National Conservation Area. Res. Proj. Final Report. USDI Geological Services Division. Snake River Field Station. Boise, ID.

USDI BLM. 1999. Owyhee Resource Management Plan. ROD. Lower Snake River District BLM. Boise, ID.

USDA/USDI 1996. Integrated scientific assessment for ecosystem management in the interior Columbia Basin and portions of the Klamath and Great Basins. T.M. Quigley, R.W. Hayes and R.T. Graham, eds. General Technical Report PNW GTR-382. Pacific Northwest Research Station. Portland, OR.

USDA/USDI 1996. Status of the Interior Columbia Basin: summary of scientific findings. Gen. Tech. Rep. PNW-GTR-385. Portland, OR.

USDI BLM. BLM's War Against Weeds in Nevada. [available on-line at www.nv.blm.gov/Resources/noxious_weeds_revised.htm]

USDI BLM. 2003. Issuing grazing permits and forage allocations. EA ID-097-03-040. Jarbidge Field Office. Twin Falls, ID.

USDI BLM. 2004. *Sage Notes.*

USDI BLM. 2005. Elko District. Categorical Exclusion. Owyhee sagebrush mowing.

USDI BLM. 2005. Elko District. Spruce Allotment EA.

USDI BLM. 2005. Elko District. Draft Sheep Complex, Big Springs and Owyhee Grazing allotments Sensitive Bird Species DEIS.

USDI BLM. Ely District. Categorical Exclusion. Butte Valley Fire Sciences Project.

USDI BLM. 2006. Winnemucca District. Scoping letter for sagebrush treatments in the Little Owyhee allotment.

USGS. Undated. Great Basin-Mojave Region.

Vale, T. R. 1975. Presettlement vegetation in the sage-bunchgrass area of the Intermountain West. Journal of Range Management. 28: 32-36.

Van Haeveren, B. P., E. B. Janes and W. L. Jackson. 1985. Nonpoint pollution control on public lands. Journal of Soil and Water Conservation. 92-95.

Van Poollen, H.W. and J. R. Lacey. 1979. Herbage response to grazing systems and stocking intensities. Journal of Range Management 32:250-253.

Welch, B. L. and C. Criddle. 2003. Countering misinformation concerning big sagebrush. Research Paper RMRS-RP-40. Ogden, UT. USDA, Forest Service, Rocky Mountain Research Station, 28 p.

Whisenant, S. G. 1990. Changing fire frequencies on Idaho's Snake River Plains: ecological and management implications. In E.D. McArthur, E.M. Romney, and P.T. Tueller, eds. Proceedings of the symposium on cheatgrass invasion, shrub die-off, and other aspects of shrub biology and management. USDA Forest Service General Technical Report INT-276. Intermountain Research Station, Ogden, UT.

Winder, J.A., C.C. Bailey, M.G. Thomas and J. L. Holechek. 2000. Breed and stocking rate effects on Chihuahuan Desert cattle production. Journal of Range Management 53(1):32-38.

Wisdom, M. J., R. S. Holthausen, B. C. Wales, M. A. Henstrom, W. J. Hann, M. G. Raphael, R. S. Holthausen, R. A. Gravemeier, and T. D. Rich. 2000. Source habitats for terrestrial vertebrates of focus in the interior Columbia Basin: broad-sale trends and

management implications. USDA Forest Service General Technical Report. PNW-GTR-485.

Zimmerman, G. T. and L. F. Neuenschwander. 1984. Livestock grazing influences on community structure, fire intensity, and fire frequency within the Douglas fir-ninebark habitat type. Journal of Range Management 37(2):104-110.

Zoellich, B.W. 1999. Stream temperatures and elevational distribution of redband trout in southwestern Idaho. Great Basin Naturalist 59(2): 136-143.

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