WEC_00100

February 14, 2008

DOE West-wide Corridor PEIS
Argonne National Laboratory
9700 S. Cass Ave., Bldg. 900, Mail Stop 4
Argonne, IL 60439

Dear DOE,

Here are amended comments by Western Watersheds Project and the Idaho Wildlife Federation on the West-wide Energy Corridor PEIS. This EIS would authorize 6,055 miles of Energy Corridors that are 3300 feet (3/4 of a mile wide) ripped across some of the most remote areas of the American West. 61% of the project area has existing rights-of-way (either utility and/or transportation –DEIS at 2-43) – but large portions do not. Plus, a road right-of-way is nowhere near ¾ mile in width as these corridors are. In many areas with existing rights-of-way (Nevada, Oregon critical sagebrush habitats for example), roads or powerlines may currently exist, but they are relatively small (two lane) and do not open the door to colossal development of public lands as the Westwide corridors will.

WWP has also previously submitted comments as part of this process. We ask that all those comments be carried forward, and applied to this EIS. Plus, we are Attaching comments and letters on SWIP, Browns Bench/China Mountain, Cotterell wind development, and other energy projects that demonstrate the very significant ecological problems with the type and manner of large industrial development in wild land or remote areas of public lands and critical sage grouse and pygmy rabbit habitats that this EIS is designed to facilitate.

We are dismayed that DOE could not be bothered to provide sufficient Hard Copies of the EIS. Sufficient copies were not printed to be provided to the public, and that some parties - even government agencies – are being charged for documents. This appears designed to limit both public agency and private landowners and citizens whose interests are affected by this mega land grab that lays down a network to facilitate fragmentation and mega energy company exploitation of some of the West's most important wild and currently undeveloped landscapes. 100-001

Critical information is absent from many of the maps. The DEIS fails to show all existing powerline, utility or other corridors in or near these areas, and across the Interior West. This is necessary to understand the full level of cumulative effects of additional development, and to rationally develop a range of reasonable alternatives. It also fails to show a plethora of highly foreseeable proposed new energy lines that may be punched across critical sage grouse habitats (examples: Ruby, Spectra Energy Bronco, etc). 100-002

There is no requirement that any energy company or utility use the DOE corridors – in fact a company could get a right-of-way right beside this ¾ mile swath. In our discussions of SWIP leg with BLM officials, we have been infirmed that MULTIPLE corridors may need to be designated – just in that area alone if all the industrial energy developments of public lands that is anticipated happens. Why designate this massive corridor if additional mushrooming corridors, even in the same area can be obtained at any time? Or –if distance separation is needed between various energy conduits in the corridor and ¾ mile won't even suffice – DOE must also fully address this issue. 100-003

WEC_00100

We are dismayed at either the purposeful gross mistakes and inaccuracies of the DEIS or purposefully misleading presentation – all, apparently, designed to underestimate the impacts of corridor designation and bias outcomes. For example, DEIS at 3-91, Table 3.5-6 claims that only 15 or so "named streams and canals" in Idaho are crossed by Corridors. This is wildly off. What scale of map is this based on? A view from the Moon? For example, the Corridor in Owyhee County crosses many more named streams. The title of the Table is "Aquifer systems" - aquifer systems do not in any way adequately reflect the number of perennial and intermittent streams these Corridors cut across. When this deficient info is carried forward into a summarized effects analysis (EIS-25), it is clearly mis-represented as the number of perennial and intermittent drainages and canals. As will be discussed later, the same applies even to the estimation of foreseeable wind energy development sites, which is grossly under-estimated in association with the Corridor. 100-004

The DEIS fails to consider an adequate range of alternatives, including those focused on locally generated and locally used power – instead of transport (and much associated loss of electrical power) across long-distances ripping apart critical big game winter ranges, sage grouse habitats, pygmy rabbit habitats, loggerhead shrike habitats, cultural and historical sites, landscapes and ecosystems critical to the integrity of National Parks and Monuments, ACEC, WSAs and Wilderness Areas, etc. 100-005

There is also no adequate analysis of how these mega corridors that are to serve as the basis for siting hideous polluting coal or other plants, as well as dynamiting public lands to carve out mega corporate-owned wind farms, will devalue private lands and negatively impact the human residents of the region. 100-006

Adverse impacts to residents and wildlife and potential health hazards include: Gas explosions and release of all kinds of toxic fumes, routine venting or other operations release of toxic chemicals, herbicide use along huge disturbed corridors and the disturbance associated with the development that will be spawned, pollutants associated with linked/facilitated coal plants and other development, spills or leakage of all manner of nasty chemicals ranging from PCBs to chemical solvents, ground and surface water contamination from materials transported when lines break or rupture, chemical contamination from materials/substances transported or spilled/leaked by the uses of the pipeline, or that may contaminate water used or "run-through" or re-injected in association with geothermal or other development that will be spawned. There may also be cumulative impacts of herbicides and chemicals used with roadways in areas where the Corridor and road r-o-w-s overlap. 100-007

There is no analysis of the necessary reduction in livestock AUMs across the entire public lands path of the pipeline. Infrastructure placed into this corridor, and all of the roading and facilities including those potentially fenced, that would be associated with this uses of this mega swath will remove or reduce available livestock "forage" across thousands of miles of the interior West. Necessary AUM reductions will have to occur on all associated public lands grazing permits. 100-008

Understanding of the current ecological health of all pubic lands grazing allotments in and near this mega corridor will also be necessary in order to conduct a necessary NEPA analysis of all the direct, indirect, cumulative, and additive/synergistic adverse effects of this pipeline – on top of chronic grazing disturbance. It is necessary to understand the effects of the additional disturbance associated with the pipeline, which may be much more likely to result in new invasive species problems in landscapes already degraded and disturbed by livestock, and thus "primed" for invasions. See Fleischner (1994), Belsky and Gelbard (2000), Gelbard and Belnap 2003. 100-009

A Supplemental EIS is clearly required to fully address the effects on public lands of this tremendous new Corridor disturbance on top of the adverse effects of habitat degradation, loss and fragmentation 100-010

WEC_00100

caused by livestock grazing, and often linked wildfire, roading, vegetation "treatments" and other disturbances. Please see Fleischner (1994), Belsky et al. 1999, Belsky and Gelbard 2000, USDI BLM 2001 Belnap et al. Technical Bulletin on microbiotic crusts) to understand just some of the broad array of adverse impacts from livestock grazing that chronically occur across many portions of the corridor and areas where new development would be promoted. If portions (or all?) of this corridor is not fenced off – then how will livestock grazing be dealt with? How will it be possible to rehab disturbed Corridor lands (soils, microbiotic crusts, native vegetation communities, fragile habitats) with continued chronic grazing disturbance? There is no annual monitoring, Ecological Site Inventory, Rangeland Health, allotment evaluation, lentic or lotic PFC monitoring or examination of condition of aquatic habitat components or other data essential to understand the current condition of the lands the Corridor slices across.

100-010 (cont.)

All of this is necessary to understand both indirect and cumulative impacts, as well the feasibility or likelihood of any rehab of disturbance being successful, risk of weed invasions with disturbance, current chronic grazing disturbance and degradation stressors on sage grouse and other habitats. There is no baseline information provided on the existing livestock facilities that serve to degrade or fragment essential species habitat components across the Corridor and landscape impacts – this includes livestock fences, water developments (spring "development" and de-watering projects, water pipelines and troughs, wells) salting sites, etc. – all of which may have spawned an extensive road network over time and are also deleteriously affecting sage grouse, pygmy rabbit and other important and sensitive species habitats. Fleischner (1994), Frelich (2003), Connelly et al. 2004. This is also essential to understand the impacts additional fencing, roading and other development that the Corridor projects and linked wild land industrial developments would spawn.

There is not adequate mitigation or other action associated with this EIS to adequately address the deleterious effects of pipeline, powerline, transformer station, new or expanded roading, etc. associated with placement construction and maintenance disturbance. This will be amplified by livestockdegradation of the corridor area and its surrounding areas where development will be promoted. This is essential to understand, because any disturbance effects of livestock grazing are likely to be exacerbated by global warming processes. Global warming is also likely to increase cheatgrass and other invasive species problems resulting from Corridor and livestock disturbance. This will lead to further altered wildfire cycles (Whisenant 1991, Billings 1994) related to corridor projects and grazing. See Pellant 2007 USDI BLM Congressional Testimony. How much will the risk of wild land fires (and thus significant losses of habitat) increase with Corridor development? Wildfires that start due to construction and operation accidents (raptor collisions with lines, explosions, maintenance or operation of vehicles, etc.) may spread well beyond the Corridor and affect a vast area of important and critical habitats for ESA-listed species and sensitive species like sage grouse and pygmy rabbit.

100-011

Fences (livestock or corridor-related or r-o-w associated) may have serious adverse effects on mule deer, elk, bighorn sheep, antelope, sage grouse, and many migratory bird species (Connelly et al. 2004). How many miles of fencing will be associated with this pipeline – under a range of development scenarios? How will that block or impede big game use and movement – including during periods of snow accumulation when any supposed "wildlife friendly" spacing will not be "friendly", movement to seasonal ranges, etc. Where are all critical or seasonal ranges located in the landscape impacted? During nesting season for migratory birds, any Corridor or linked facility fences - as well as Corridor power lines, gas lines, compressor stations, etc. – will provide even more elevated perches for brown-headed cowbird nest parasites on species like sage sparrow, Brewer's sparrow, sage thrasher, loggerhead shrike, etc., or perches for egg predators like ravens, or predators on nesting birds.

100-012

WEC_00100

Plus, as DEIS Appendices show, the Corridors slice across or impinge on Wildlife Refuges, Wilderness areas and other important wild lands. Note: We can find no mention of Forest Inventoried Roadless Areas. Placement of high tension lines in or near Wildlife Refuges, sage grouse leks, migratory bird flyways, etc. may have serious adverse impacts to migratory birds – and result in mortality and population losses, including of birds that breed in Canada, and are internationally significant. Where are all known migration corridors or pathways? Please conduct necessary baseline studies to determine migratory bird routes, especially in the Great Basin and other areas where such routes may be less known. What percentage of the population of each species may use each route? How might this Corridor, and also the development that may be spawned such as industrial wind farms on remote ranges affect population viability?

All of this must be determined NOW in a comprehensive EIS analysis– as many of the Land Use Plans to be amended contain specific protections for big game and sensitive species, as well as some wildlife species "forage" allocations and population goals. The consequences of any Amendment can not be understood unless current and comprehensive wildlife information is provided.

100-012 (cont.)

Please provide a full and detailed analysis of how any rehab of disturbed areas would occur, how any rehabbed areas would be protected from grazing – will entire pastures be closed? – or more fencing built? Will native species only be used in any site rehab? How will global warming impede rehab of Corridor disturbance zones? This is no small question – because invasive species like cheatgrass (promotes wildfires – see Billings 1994) and tumbleweeds thrive in disturbed areas. Windblown tumbleweeds and tumblemustards at times endanger motorists on roads, clog fences, heighten fire danger, etc.

100-013

There is no detailed analysis of the adverse effects on health and safety of motorists on federal, state, and local highways in the area of these corridors. What dangers does the infrastructure foreseeable here pose? Besides windblown weeds - What effects might fencing have in concentrating livestock or big game use on roadways? What exposure will passing motorists have to herbicides used to control weeds thriving in corridor disturbance zones? Please note that the BLM Weed EIS (Vegetation Treatment EIS) is considered by many to be greatly inadequate in addressing ecological and human and wildlife health concerns related to the use of a great number of herbicides across public lands. Will corridors be blocked off from motorists – or will all of the roading necessary to construct and maintain the corridor infrastructure

100-014

How will this (especially transmission lines) affect the safety of small plane operation, and landing at smaller airstrips across this vast area? This can have ramifications for emergency medical service on remote areas, state or federal agency monitoring of land conditions or wildlife populations, wildland fire fighting, and many other increasing uses of small plane airstrips.

100-015

There is no discussion or analysis of the current ecological health or importance of all the lands that will be affected by this swath, or the lands where new development is likely to occur as a result of this corridor. This is important not only to understand the difficulty of any rehabbing and the likelihood of invasive species dominance, altered fire cycles, etc. with Corridor development, but also to understand the relative scarcity/tremendous ecological importance – of tearing apart the remaining less developed landscapes and habitat areas especially in shrubsteppe, salt desert shrub and other arid habitats. Landscapes will be fragmented and torn apart once the Corridor infrastructure is in place. Example: Figure 2.2.4 shows areas of potential wind development in remote areas. We stress that this map seems to be greatly understating possibilities – vs. western Wind Potential maps that we have often

100-016

WEC_00100

seen! Such wind development - as by mega often foreign-owned corporations like RES UK to export power to Las Vegas or some other big city (as discussed below, see Attached Times-News 2008 article on Browns Bench (China Mountain). However, the real point here is that the lands in the Owyhee region of Oregon and Idaho shown for Potential Wind Energy contain some of the largest remaining relatively intact blocks of shrubsteppe habitat. This was shown in ICBEMP and other analyses (Wisdom et al. 2002, Connelly et al. 2004). Siting this mega Corridor that will promote huge corporate and potentially foreign-owned wind facilities in remote areas of the Owyhee Canyonlands would doom sage grouse, pygmy rabbit and other imperiled wildlife species populations in one of the few remaining "core" population areas. Please conduct a full-scale analysis of the effects of this development on short term, mid term, and long-term viability of all BLM sensitive species populations, and the significance of these core habitat areas and populations to the species as a whole (see Wisdom et al. 2002, Connelly et al. 2004 as a starting point for this analysis). 100-016 (cont.)

We again note that the mapping in Figure 2.2.4 (page 2-17) greatly underplays areas of potential wind development – including large areas of Nevada BLM lands where MET towers may already be placed, and where wind facilities have been discussed. Perhaps this is being done to minimize public understanding the tremendous damage that would occur with the long north-south leg of the Corridor associated with the greatly inadequate SWIP segmented EAs being conducted in bits and pieces to also minimize public understanding of the full effects of energy corridor development in the West? 100-017

There has been a large amount of discussion and promotion of wind energy development on remote public lands in areas in and near the SWIP swaths. Ely and Elko BLM know this – why have you not included that here? The windy ridges and plateaus (both in the area colored purple on your map as well as across of the Nevada landscape that you have omitted) lands are critical to maintaining viable populations of sage grouse and pygmy rabbit. They are also critical migration corridors for migratory birds, and placement of hazardous powerlines, wind facilities, likely lighting that may lure some species during migration, etc. would have international significance – as these serve as migration corridors for raptor, migratory songbird and perhaps bat movement north to Canada and south to Mexico. The bottom line is that the EIS appears to have purposefully downplayed the linked and foreseeable industrial wind farm development areas to cover up the tremendous ecological footprint that these corridors would have.

Figure 2.2.4 does, however, show areas of "Potential Geothermal Energy Development". This includes the entire range of sage grouse and pygmy rabbit in Nevada including the Nevada Owyhee Canyonlands, the SWIP zone of development north-south through Nevada, significant wild and undeveloped areas of Oregon including the Trout Creek, Alvord Desert and Steens region and portions of the Owyhee. It also includes large swaths of the Jarbidge BLM lands, Bruneau BLM lands, and much the northern Snake River Plain and portions of the Idaho batholith. Anything that facilitates industrialization of this landscape will have a tremendous adverse impacts to sage grouse, pygmy rabbit and other important and sensitive species in this region, as well as rare aquatic biota. 100-018

Development of geothermal energy facilitated by this Corridor would have a broad array of adverse effects to wildlife, recreational uses of public lands, and potentially even agriculture. For example, the Bruneau snail is an ESA-listed species that is tied to hot water springs in the lower Bruneau River watershed. It is already on a trajectory headed towards extinction due to Simplot and other large irrigators depleting ground water. Further tapping into or altering geothermal waters would accelerate aquifer depletion and snail extinction. Geothermal development would also deplete, alter and potentially destroy important recreational hot springs, or areas with important cultural importance to Native Americans.

WEC_00100

Large geothermal facilities themselves have a significant Footprint on the environment, and lead to further habitat loss, alterations and fragmentation. The Footprint includes new and/or expanded road networks to facilities, new spur powerline corridors – and all the adverse effects associated with these - from elevated perches for sage grouse nest predators or pygmy rabbit predators in livestock-degraded landscapes that have suffered extensive alteration of shrub structure and denser sagebrush - to weed invasions from disturbed areas choking pygmy rabbit habitats. There is also greatly increased human activity (including during sensitive wildlife wintering, birthing or nesting periods) associated with siting energy facilities in remote areas, as well as increased wildlife mortality on roads, or from collisions with infrastructure. 100-018 (cont.)

As this EIS will result in new roading, new development, transport or use of hazardous substances and environmental pollutants/contaminants, a broad array of effects on ground and surface waters may occur. These effects range from increased sedimentation (for new or expand road networks) that pollute and clog endangered or sensitive salmonid, springsnail or other habitats, to pollution/contamination from PCBs, petroleum products, herbicides, etc. contaminating ground and surface waters – with impacts to aquatic species, wildlife, human populations especially rural well water users, and even wild horses. 100-019

Construction of new roads or facilities with this mega-Corridor will alter hydrological processes, and may affect both ground and surface waters – and a broad range of native wildlife species, and human uses and enjoyment of wild land waters – including fishing opportunities. For example, sage grouse brood rearing, especially in desertified livestock-depleted landscapes is tied to green vegetation on wet meadow and other areas. Roading that alters hydrological flows, or energy development linked to this EIS that depletes ground or surface waters, may have significant adverse impacts to sage grouse.

On top of this, geothermal or other development linked to or spawned by this mega-Corridor will further later or deplete surface and ground waters. Of great importance are the effects of potential depletion on exceedingly scarce spring sources in high desert regions of Nevada, Idaho, Oregon, California. Springs are critical to a broad array of wildlife, and many have already suffered large-scale degradation, depletion and in some cases been killed entirely by the effects of livestock grazing and BLM and forest service "development" for livestock. See Sada et al. 2001, BLM Technical Bulletin, describing the sad and sorry state of many of the region's springs. A Supplemental EIS must fully examine the current condition (including both water quantity and quality and any documented changes over time up to this point) of springs, seeps and riparian areas across the affected landscape. It must then determine the effects of Corridor and associated, linked or foreseeable development on these critical riparian/watershed areas. 100-020

Riparian areas across the arid West will be under even greater stress, and facing further flow reductions due to diminished snow pack, increased temperatures, and other factors linked to global warming. How will this Corridor and the linked and foreseeable development amplify global warming effects and losses to riparian areas? 100-021

How will development of this corridor affect municipal watersheds? 100-022

There is no analysis of the enhanced national security protection for energy (not to mention the energy conservation that could occur) with locally generated and used power vs. this mega swath where many energy structures/facilities would be concentrated. 100-023

WEC_00100

The effort appears aimed at promoting and continuing large corporate control of the nation's energy supply. Now the Bush administration has run this country into trillions of dollars of debt, at the same time as large energy companies have profited. It is now many of the same giant energy corporations that would most benefit from opening up vast swaths of public land to large-scale corporate energy facility development with this West-wide Energy Corridor DEIS. Many of the corporate entities are foreign-owned or have significant foreign ownership. How can it be considered energy independence, or in the interests of "national security" to push in these mega-corridors – when the energy that is developed will often be controlled by foreign money interests, and thus to an unknown and unassessed degree – subject to foreign control? This seems sort of like the energy equivalent of the Dubai Ports deal. With wind, geothermal or other energy development across pubic lands, even remote areas in the heart of the country will come under control of energy giants. Reliance on this system only facilitates the Enron-type crises engineered for financial speculation and other purposes – and that could run counter to national security. 100-023 (cont.)

Plus, this EIS also encourages remote siting of coal or natural gas plants – again something that could only be done with a tremendous investment and under control of a few powerful corporations. It also thus promotes the large-scale environmental ravages of public lands to obtain coal, natural gas, oil shale, tar sands, or other fossil energy. 100-024

The bottom line is that part of the purpose behind this appears to be to facilitate and ensure continued large corporation dominance of energy by encouraging remote public wild land "development" that is only likely to occur with massive investments of capital. Under this EIS, both "renewable" – even though it is hard to consider dynamiting an industrial wind facility into a mountain on top of sage grouse leks "renewable"– and non-renewable energy on an industrial scale, and exporting energy across long distances - is the focus. A Supplemental EIS must be prepared to examine the full economic and energy "security" effects of the energy structure of the U. S. that this promotes. 100-025

We are also very concerned that sufficient independent analysis of chokepoints and solutions for chokepoints has not occurred. It is in the interests of large energy producers and power companies the may be in league with to claim problems exist where there are none. Look at Enron! We ask that court records and proceedings related Enron be analyzed as part of this EIS to determine any real need, and the way energy companies may currently be gaming the system to claim chokepoints. 100-026

A much broader range of alternatives must be developed to focus on smaller, less destructive energy production - and that includes using existing corridors wherever possible. There has been no systematic and fact-based examination of any "need" for the particular swaths of the single EIS alternative. 100-027

Promoting and relying on huge energy projects detracts funding, interest and incentives (both federal and private) from efforts to develop local conservation, and home-produced energy such as solar or wind-powered houses with power generated on-site. By promoting giant developments, this DEIS and its very limited ONE alternative also cuts against small, local producers such as wind farms on the depleted, marginal irrigated private ag lands of the Snake River Plain where there is sufficient wind for energy and no public land would be destroyed . 100-028

The single DEIS alternative that promotes remote siting and large-scale exploitation, development and destruction of public lands also promotes large corporate interests at the expense of smaller, diversified local energy producers. It frees industrial wind farm developers of paying for use of private lands – and instead the pay much cheaper fees for rights-of-way and land use on the pubic lands that they destroy.

WEC_00100

Mitigation for any "renewable" resource that will be spawned by this is likely to be minimal – example – the Burley BLM Cotterell wind farm EIS (which we incorporate by reference) shows how little the public receives in mitigation for these industrial sites that wipe out sage grouse and other native wildlife populations. 100-029

How are these energy corridors related to NAFTA? This was a highly controversial trade agreement that has resulted in the loss of American jobs. How might development of this mega-Corridor promote out-of-basin piping of water – such as the Southern Nevada Water Authority water exploitation and aquifer mining of Spring valley and other areas of central Nevada and Utah underlain by a deep carbonate aquifer. Could this corridor be used for moving water across the West – as well as "energy" related materials and power? If so, where is it foreseeable that water would be removed from, and exported to? In the late 1950s and early 1960s, there was a proposal for a large water transport system to take Canadian, Idaho and other water south and to California. Please review that proposal, and examine how this energy corridor - if foreseeably used for water pipelines as well, may affect local, regional and national water supplies and established uses as well as critical ESA-listed and other important species habitats? 100-030

This EIS and its single alternative promotes global-warming gas producing coal-fired plants in areas with currently cleaner air, and it also promotes mega industrial wind farm and other complexes in remote areas of public lands where their Footprint and harm to the environment will be maximized. This is the dead opposite path that the U. S. should be taking in the 21st century. 100-031

The full carbon and other green house gas footprint of all materials involved in any of the facilities, lines, etc here – from steel to transformers – such as involved in monstrous powerlines that might be built must be estimated. 100-032

You must also examine the costs of transport of materials (likely from China) for materials for mega-power or pipelines here, and the oil and other energy costs and emissions produced for construction and support operations for this. Please factor into this the LOSS of energy in transport over long distances. Please consider this under an array of development scenarios as part of an impacts analysis, including analysis of cumulative impacts. How does this compare to the Carbon and other global warming gas and energy footprint of small, localized technology for America's energy independence. 100-033

DOE must provide a detailed analysis of the scale and degree of coal plant emissions that would occur from plant development linked to this mega new corridor. How will such coal plant development – like the proposed Ely coal plants or Toquop affect cleaner air, visibility over national parks and monuments, wilderness areas and WSAs, etc. contribute to global warming gases, etc. How many Toquops or Ely –lie plants are foreseeable under the DEIS proposed action? The layout of the Corridors looks like a Mega Energy company wishlist to exploit areas with currently relatively cleaner air and pollute it. Such pollution becomes an environmental justice issue, as communities most likely to be close to remote coal plants are often minority or Native American. It also would destroy air quality and generate haze over national parks, like Great Basin National Park, southern Utah, and downwind areas like the Jarbidge Wilderness. 100-034

DOE must also provide detailed analysis and information on the current power line and other utility corridors across the Project Area, so the full cumulative effects of these can be understood. These are simply not adequately shown or examined in this EIS. 100-035

WEC_00100

The DEIS provides some species lists. However, DOE or land management agencies have conducted no current, site-specific surveys for rare or imperiled species over the project areas – and that includes surveys for rare plants – which are likely to be greatly affected by invasive species promoted by disturbance from construction, operation, and linked developments associated with the Corridors.

We are appalled at how little consideration is given to nationally significant biological resources that are affected and will be further imperiled or driven extinct under the profligate development of public wild lands that this EIS promotes. Two prime examples are sage grouse and pygmy rabbit. 100-036

The recently constructed Nevada Falcon-Gonder powerline newly fragmented critical sagebrush and pinyon-juniper communities and important sage grouse, pygmy rabbit, loggerhead shrike, pinyon jay and other BLM sensitive and rare and declining species habitats. Now powerline sage grouse "mitigation" studies are showing that sage grouse nesting success is plummeting – as raven populations that thrive with elevated perches and increased disturbance rise.

At the time it was built, I commented on that process too. It was claimed then that purpose of the line was not really known. Well, it turns out that the purpose was known all along –it's just that the energy companies were doing things in a sly way – first get a leg of the powerline corridor in – then propose building mega coal-fired powerplants in the heart of the Great Basin - plants that if built will now spew polluting air into some of the cleanest air in the nation. WWP stresses that NOW a leg of this DOE EIS ties right into the area of the proposed Ely coal plants. 100-037

The likely decline of sage grouse, of course, had all been anticipated and a science-based analysis beforehand would have shown this (Connelly et al. 2000, Connelly et al. 2004). Note: Copy of Sage Grouse Conservation Assessment on cd included with WWP comments on this DOE EIS. Powerlines provide ample sage grouse avian predator and egg-predator perches – where ravens can scan for nests. Powerlines are always accompanied by new roading. Additional roading and other disturbance also increases sage grouse nest predator travel corridors. 100-038

It is alarming to us that "mitigation" for mega powerlines and energy corridors is minimal and consists largely of minor measures and a bit of "research" dollars to Game Departments or BLM to once again prove that already known to be highly predictable wildlife declines and species loss will occur. Such highly damaging powerlines, carved into core habitats for sensitive species are virtually always given the greenlight – despite the long-lasting tremendous impact these developments have on wildlife, watersheds, native plant communities and much-increased risk of weed development, cultural sites, wild land recreational uses, etc. DOE must fully examine the large-scale deleterious effects of development of these Corridors, as well as other foreseeable linkage or development powerlines that will result, and provide some sizable mitigation funding and significant mitigation actions – not just giving the Game Department some funds to study grouse and kill some junipers, and fragment more habitats. 100-039

As part of the DEIS process - and certainly a supplemental DEIS must be prepared to adequately do this as well as evaluate a full range of science-based alternatives – we ask that DOE use the methodology and science in the Sage Grouse Conservation Assessment (Connelly et al. 2004) to conduct a science based analysis of the direct, indirect and cumulative effects of the designation and/or development of the Energy Corridors as shown in the DEIS and under a full range of new alternatives for a broad range of species. 100-040

WEC_00100

For example, conduct current and updated habitat impact and fragmentation analyses for all sage grouse populations as described in the Connelly et al. 2004 assessment. Then, take this one step further, and examine the effects on "Population Management Units", as described and defined in, for example, the Nevada Sage Grouse Plan. Since both the sage grouse Range-wide CA and the state-specific planning documents like the Nevada Bi-state plan are now a few years old, please collect and apply current data. In Nevada, for example, the claimed population increases of sage grouse from much more intensive sampling in the early 2000s are now dropping. In all of these efforts – the broader populations of the CA and the smaller PMUS, please examine the current effects of fragmentation and loss of habitats – including fire, livestock fences and other infrastructure, roads, existing and foreseeable energy development, powerlines, etc. Please project effects to populations over time with and without development of this mega utility corridor in the area. Please do this under all of a greatly expanded range of alternatives. 100-041

Please use analyses as found in ICBEMP and other current science-based assessments such as the ICBEMP Wisdom et al. 2002 species examination and other ICBEMP documents, also Nevada Wisdom et al. 2003 assessment, and the Wyoming Basin Environmental Analysis (WBEA) to examine the full range of ecological threats and habitat fragmentation that currently exists for other sensitive species, as well especially the pygmy rabbit.

Note that the WBEA Assessment did not take into account the effects of livestock grazing and livestock-related infrastructure – this a cause for serious concern, and must be included in the analyses conducted to examine the effects of the West-wide EIS Corridor legs under all alternatives, including baseline/No Action. 100-042

As mitigation for every leg of this DOE corridor, WWP requests that the DOE/federal government set up a substantial fund to purchase and retire public lands grazing permits across regions where sage grouse and other native wildlife habitats and populations will be adversely affected by this project. 100-043

This DOE EIS should work with BLM and the USFS to contain language that amends Land Use Plans and allows for permanent retirement of grazing permits so purchased. Funding should come from the federal government, as well as coal or foreign-owned mega wind farm proponents like RES UK or other companies that may benefit from these West-wide corridors. 100-044

This DOE EIS must disclose all the reasonably foreseeable new powerlines, gas [pipelines, water pipelines (like the SNWA aquifer-mining pipelines to Las Vegas, or the Harvey Whittemore Geyser Ranch to Coyote Springs developments) and other energy developments that are being discussed, or are likely. Then, an analysis of the environmental footprint, if built, must be provided. 100-045

This EIS seems aimed at turning large tracts of public lands, and little-developed areas into Energy provinces of larger population centers – where all the environmental damage and adverse Footprint – ranging from coal plant pollution to herbicide use to control the proliferation of weeds in the corridor and linked development areas – will affect large areas of the interior West - and its human populations, wildlife, and other important attributes. 100-046

In Idaho, WWP's members would be "downwinders" of the toxic rain of mercury and other pollutants that would result from development of the lands associated with the Nevada Corridors. We received the nuclear fallout from this region. Wind roses for this area are not adequate in the cursory EIS analaysis. 100-047

WEC_00100

The full Footprint of the project on ALL important resources and values of public lands must be assessed. This includes the scale and degree of wind, geothermal, solar or other mega often foreign 100-048

While the Energy Policy Act may direct corridors be established, it does not direct that be established in the species habitats here - which maximize impacts on many critical and nationally significant and important environmental resources. 100-049

DOE has considered a much too meager range of alternatives. DOE should consider a full range of alternative actions, including siting any corridors paralleling interstate Highway systems and existing large powerline routes (i. e bundling), not establishing huge new powerlines across remote or little-developed areas, and a broad range of alternatives. 100-050

****

The RES UK foreign energy company proposal to construct a mega wind farm on Browns Bench (called the China Mountain project) in a critical sage grouse and pygmy rabbit habitat in the Jarbidge BLM lands south of Twin Falls illustrates of much that is wrong with the energy development that the EIS promotes with its single Alternative. See 2008 *Times-News* article. See WWP and IWF Appeal of MET tower placement (Attached).

In the case of Browns Bench/China Mountain, the lands lie in the Jarbidge Field Office, while the West-wide corridor is located in lands of an even older LUP area by a different Field Office (Burley). However, plans are already underway to develop a large new bridge across Salmon Falls Creek that would span the 2 areas to facilitate movement of mega wind turbines to develop the Browns Bench site. This demonstrates the complexity and scale of the many development projects and adverse environmental effects that would occur from this project.

The impacts that this development will have on public wild lands and America's wildlife heritage would be devastating. The foreign energy company has already violated terms of a right-of-way for MET tower placement. Please see Attached WWP Appeal and Comments on MET tower placement for the RES UK (a FOREIGN-owned energy mega) and Sierra Pacific that plans to export the power to Las Vegas. This is a perfect example of the destruction of critical wildlife habitats to benefit urban energy waste and excess, and the role of foreign-owned energy companies in proposals that would devastate America's public lands and wildlife populations like sage grouse. See Attached 2008 *Times-News* article by Matt Christensen. 100-051

Please see the Attached Jarbidge AMS to understand the large-scale depletion of sagebrush habitats in this large 1.3 million acres landscape. Since the AMS was finalized in early July 2007, over half a million acres of the Jarbidge lands burned in later summer 2008 fires. Now, pretty much the only intact block of habitat left is the Browns Bench/China Mountain area where this massive and destructive project and environmental destruction would be facilitated by the Westwide EIS. Linked to this project would be large-scale road cuts, dynamiting, a plethora of new powerlines, and large-scale human disturbance of the only area in 1.3 million acres JFO that may contain anything resembling a viable population in the short-term. In the mid and long-term ,especially with ANY disturbance development on top of the huge Footprint of livestock grazing and fire fragmentation across the Jarbidge, sage grouse would very foreseeably be extirpated here. This EIS will promote rapid ESA listing of sage grouse, pygmy rabbit and other sagebrush-dependent species.

WEC_00100

In addition, an area like Browns Bench is a migratory bird migration corridor, as well as several areas that would be flung open to development by SWIP and the various legs of SWIP greatly expanded on in the Westwide EIS.

Even a highly conservative Bush BLM RAC (Lower Snake River District) opposed development of a mega wind farm here, in discussion of MET tower placement. Yet, this EIS is predicated on maximizing development like Browns Bench that is opposed by local entities.

100-051 (cont.)

SWIP is a prime example of how the DOE EIS and BLM appear to be coasting on long-outdated and deficient environmental analysis. It is unclear if the Westwide EIS is trying to rely on long-outdated analyses in old LUPs or the musty Idaho Power SWIP EIS as somehow being adequate for any consideration of effects of the DOE EIS across several hundred miles of Nevada. WWP believes SWIP analyses certainly are not.

Large areas of Nevada, Idaho, and other important wild lands traverse by the various SWIP legs, and the surrounding sage grouse and other habitats that would be destroyed, have only old or outdated Land Use Plans. Ee Attached WWP comments on SWIP.

Plus, in many instances, the imposition of this large SWIP lines on top of the increasingly fragmented sage grouse, pygmy rabbit and other important habitats in Elko and Ely and southern Idaho BLM lands would likely be in violation of existing land use plans. That certainly is the case for the sensitive species and wildlife provisions of the Wells and Elko RMP and many other Land Use Plans in lands impacted by this behemoth. Is this DOE EIS planning to amend LUPS to authorize SWIP? Or will current approval for SWIP be a wholy separate process? This Westwide EIS can not just waltz in, impose this much-opposed huge project, and amend LUPs without undertaking a very detailed site-specific analysis of effects, including how this type of development may be in direct contradiction to Land Use Plan policies for Threatened or Endangered or candidate species, important and sensitive species, cultural resources, recreational resources, watersheds, etc.

100-052

Some Additional Comments

The DEIS is supposed to: Designate corridors for oils, gas, hydrogen pipelines and electricity transmission and distribution corridors. Will these also be used for water, or other liquid transport? For example the SNWA aquifer mining pipelines are highly controversial. Please provide a full and detailed analysis of any foreseèeable additional uses, including for water or wastes.

100-053

The DEIS does not appear to amend LUPS to require that any utility companies (gas, electricity, etc.) actually bundle new projects into these corridors. Instead it leaves the door wide open for a plethora of OTHER lines, corridors and developments paralleling the path or area of the Corridor. There is no requirement for "bundling".

100-054

There is little discussion of hydropower in the West and the grid that supports movement of this energy, or any additional developments associated with even more dams being proposed – as in Washington state There is no discussion that we can find that sufficiently addresses various conservation actions and other efforts that might provide alternative ways to relieve congestion.

100-055

100-056

The DEIS mentions "congestion", and 49,430 existing miles of transmission lines, 27,000 miles of natural gas lines, two million miles [is this really correct – or is the EIS treating oil differently than electrical lines) of oil pipelines (how many in the West???). The DEIS fails to identify all of these

100-057

WEC_00100

existing powerlines, oil and gas lines, etc. on maps. The DEIS fails to adequately examine the areas of congestion, and alternative ways to relieve congestion. 100-057 (cont.)

This claims to be enhancing capability of the grid, but not provide necessary analysis to allow understanding of why only the Proposed Action in that and only that location, would magically achieve this compared to a broad range of other alternative locations, conservation actions, and more localized energy development. 100-058

Will this corridor facilitate remote siting of nuclear plants? If so, this is a major human health issue that needs to be thoroughly examined. This will also generate hazardous waste that somehow must be dealt with. Plus, nuclear energy requires a large volume of water for cooling, and any nuclear development in the water-scarce West may greatly strain and deplete waters – plus has a potential for contamination and pollution. 100-059

How is this Corridor potentially or foreseeably or known to be linked to military uses? We can not help but notice that it comes close to many military areas. Is the military advocating that this be built for training or development of new or expanded weapons? What about the INEL path? Is this associated with more nuclear development at INEL? If so, what are the potential health risks to human populations? How is this related to current or proposed rail corridors? 100-060

Will there be disposals of public land to promote compressor station or other facility siting linked to this Corridor? If so, where and how much? How much additional public land will be lost as a result of this? 100-061

Issuance of rights-of-way by federal agencies is often just the start of a long process of violations. Companies/r-o-w holders extend uses beyond rights-of-way, do things first before getting agency authorization, etc. A full analysis of the risk associated with any rights of way and potential lack of compliance with provisions must be thoroughly examined. 100-062

Will this facilitate additional cyanide heap leach gold mining, and linked mercury poisoning of regional airsheds and waters from energy-intensive gold-roasting operations by foreign-owned gold mines like Newmont and Barrick Goldstrike in Nevada? The path of the Corridors through Nevada certainly look like they will. What adverse effects will this have on human health, and on aquatic biota exposed to mercury and other poisons – on top of the adverse effects of the mercury and other poisons released by the coal or other energy plants associated with this Corridor? 100-063

How will this corridor promote weeds, wild land fire, and accelerated loss of sage grouse and other arid lands species through more frequent and unnatural fires?

For example, weeds like cheatgrass invade disturbance zones associated with this corridor and the Pandora's box of other development that it opens. Raptor electrocutions on powerlines are an increasing cause of wildland fires in the arid West, as are OHV and vehicle catalytic converter fires on unpaved roads and berms. Given that a large series of roads, and intensive motorized access to tend various facilities, compressors, etc may be required, this is all likely to very significantly increase fire starts, and further expand and accelerate loss of wild land habitats from fire in salt desert shrub, sagebrush, and pinyon-juniper habitats. 100-064

It is very likely that the corridors and the developments that they spawn will result in a very large area of new "wildland urban interfaces", where agencies will seek to do large-scale vegetation manipulation 100-065

WEC_00100

projects. This will increase disturbance – and likelihood of weeds and habitat and species losses. This, of curse, will spawn additional loss and fragmentation of sage grouse, pygmy rabbits and other important species habitats. 100-065 (cont.)

The corridors traverse or are located right next to Historic trails like the Oregon Trail, and will greatly mar scenic viewsheds, natural ambiance, etc. The EIS must fully examine the adverse effects to public enjoyment of historic sites, and potential adverse effects on them (such as promoting alien weed spread onto historic sites). 100-066

Please provide mapping and analysis that overlays Dark Night Sky areas with the path of this Corridor. Locating the Nevada, Oregon and other legs of this corridor will result in serious adverse effects to some of the only remaining areas in the West with dark night skies, including near Wilderness Areas, National Monuments, National Parks and other important wild places. There is no mitigation or limitation placed on lighting used in the corridor. 100-067

The EIS has not addressed the likely amount of lighting that would be associated with various facilities in the corridor, or with the developments that would be spawned. 100-068

The EIS must do a much better job of describing the type of existing rights-of-way in or near all segments of the Corridor. 100-069

How much land leveling might be required for pipelines? What is the potential for spills of pipelines crossing springs, rivers, streams? DEIS at 2-46 states the project crosses 285 steams, 26 lakes and reservoirs, and 4 wild and scenic rivers. 100-070

Why in the world couldn't alternatives such as just paralleling existing large rows to relieve congestion be done- instead of new paths. The DEIS does not in these analyses distinguish between existing r-o-w-s with roads vs. utility lines. 100-071

An electric line crossing a stream may not have nearly as serious a likelihood of water contamination and spills as a petroleum or other hazardous substance line. 100-072

As part of the socioeconomic impacts the EIS must fully examine the de-valuation of residential property as a result if the industrialization of the landscape stemming from this Corridor EIS. Also, how much will the federal government have to pay for any property condemned? How many billions of dollars would this be? 100-073

It is impossible to understand what is being discussed about impacts of multiple projects – EIS at 2-43. 100-074

The visual, aesthetic and recreational impacts (including negative impacts on recreation-based economies) are tremendous. DEIS at 2-50 reveals that there are 31 national parks, national monuments and recreation areas within five miles of this Monster energy corridor. How many Wilderness areas or WSAs are similarly situated? How many Citizen-inventoried Wilderness areas in Utah or Oregon or other important places? Many of these areas were established through legislation, executive order and other important avenues? 100-075

Why should this single piece of Energy legislation – and DOE's single-minded interpretation of what it means – be allowed to trump all of these other designations? Here, as well as in its running roughshod 100-076

WEC_00100

across public lands, the DOE EIS violates FLPMA, and agency policies developed under FLPMA – such as sensitive species policies for sage grouse and pygmy rabbit. 100-076 (cont.)

DOE Abjectly Shirks ESA Duties

The DOE tries to shirk its duty to consult over corridor designation in this PEIS –even though it will amend a plethora of land use plans that are based on widespread public outreach over the past several decades.

DOE claims that DOI, USDA and DOD are "action" agencies for ESA purposes, but that it has determined that it is not. It claims those action agencies have "examined the effects of designating federal land and amending land use plans in relation to listed species and critical habitat".

This is absurd. Many of the affected Land Use Plans are very old, and/or pre-dated Listings, and critical habitat designations, and/or do not rely on best available science for examining effects of habitat loss or fragmentation on rare species.

DOE claims that the designation would not have any "direct" impact on the environment, and that "designation of an energy corridor is an administrative task that occurs when an agency amends its LUPs, and the action has no impacts.

It claims the action does not impact the environment. It claims that an application for a ROW is subject to full policy review at some future time, and that any ground-disturbing effects would undergo EA consultation. The full range of direct, indirect and cumulative impacts of this mega-corridor will never be examined in smaller individual project level EIS. This DOE EIS is the programmatic document that must do so.

100-077

These excuses are, of course, hogwash. There MUST be programmatic consultation over the DOE EIS by somebody -either DOE or each of the agencies whose LUPS are amended - potentially for each separate LUP, because all provisions and consultations are different. Yet if each individual Field office conducted consultation, the full array of adverse direct, indirect and cumulative effects of the action and its massive Footprint and development spawned would never be adequately examined.

DEIS at ES-6 acknowledges many Listed species are present, including critical habitat– yet then blows shirks analysis. We also stress that just last week, a federal judge ruled that FWS must designate critical habitat for the spotted owl in the Southwest. This is new information.

A series of industry-biased Bush admin officials have long thwarted and interfered with ESA listings and critical habitat designations (such as the disgraced Julie MacDonald in FWS) – so many more species are very likely to soon become listed in the Footprint and Impact Zone of the West-wide Corridors.

The DEIS at 7 states that the "action agencies" also decided not to conduct consultation – thus shirking their duties as well. DOE claims the agencies said that they could not consult because consultation would be "speculative". This whole thing is an absurd shell game designed to purposefully ignore the large-scale environmental destruction this Corridor would cause across much of the American west for the benefit of large energy corporations – while ignoring the effects on the public, public lands and private lands and land owners as well.

WEC_00100

The DEIS claims "no effect" on listed fish, but NMFS did not agree. So how can DOE arrogantly ignore this? DOE found "no causal connection, **whether direct or indirect**, between the mere designation of energy corridors (by land use plan amendment) and any effect on a listed species or critical habitat". 100-077 (cont.)

This EIS seeks to amend all LUPs in its path to designate these mega multi-purpose corridors. The corridors contain oil and gas pipelines, electricity transmission lines, compressor stations, hydrogen pipelines, and other energy infrastructure. This all seems like an accident waiting to happen. 100-078

According to the TWS Website: "DOE told members of Congress it would avoid Wilderness Areas, wildlife refuges, and other "sensitive environmental or cultural areas". WWP believes that DOE did not adequately respond to many of the congressional concerns, and sited this corridor in areas that will aversely affect an array of important biological, scenic, recreational, cultural and other values. For example, this goes right by Craters of the Moon and Minidoka, and core sage grouse and pygmy rabbit habitats. 100-079

TWS also described Congressional concern and actions as: "In addition to the Section 368 West-wide Energy Corridor effort, Section 1221 of the Energy Policy Act required the Department of Energy (DOE) to identify areas of electricity congestion and permitted the DOE to designate National Interest Electricity Transmission Corridors (NIETCs). Authority for approval of projects within the NIETCs can be issued by the Federal Energy Regulatory Commission (FERC), bypassing and even overriding state and local authorities, and companies can be permitted to use the government's eminent domain authority to condemn private land to ensure new transmission lines are built or existing lines are expanded. Two members of Congress (Representative Frank Wolf R-VA and Representative Maurice Hinchey D-NY) have introduced separate pieces of legislation which would either remove Section 1221 from the Energy Policy Act, limit the federal government's ability to condemn private land, require public comment, and/or require consideration of ecological values. This shows the DEIS single action alternative blinders are highly controversial, and must be examined in much greater detail in the EIS- including in developing a range of alternatives that would be in keeping with Congressional concerns – and that would minimize the Footprint of the project in many areas. 100-080

Below is also a summary of some other info from TWS Website that further supports our concerns about the effects of Corridors that would promote massive industrialization and exploitation of western landscapes – including potential oil tar sands or other deposits in Canada as well as the US.

Geothermal Energy

BLM and the US Forest Service have begun the process of developing a Programmatic Environmental Impact Statement for the leasing and development of federal geothermal energy resources in Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

Geothermal energy production runs naturally occurring super-heated steam found in the earth's crust through generators, thereby producing electricity. Although geothermal energy is a type of renewable energy, the ways that the resource is accessed and the development of this resource can harm other natural resources in a similar manner to oil and gas development. Similar to the way oil and gas is accessed, the steam needed to produce electricity is accessed through drilling. 100-081

WEC_00100

Federally administered geothermal resources are leased to companies, who then drill to access the steam, collect the steam in pipelines, and move the steam to a generating plant where it is used to produce electricity. Pipelines, drilling pads, and access roads are all needed to develop it. The result of this development, if not done properly, can be habitat fragmentation, loss of open space, and damage to natural and cultural resources. The scope of this PEIS specifically excludes National Parks, U.S. Fish and Wildlife Refuges, Wilderness Areas, and BLM National Monuments, geothermal energy development has the potential to negatively impact wildlife habitat, cultural resources, and proposed wilderness, and aquifers that underlie these areas. 100-081 (cont.)

Oil Shale and Tar Sands Leasing and Development

Section 369(d)(1) of the 2005 Energy Policy Act required the BLM to prepare a Programmatic Environmental Impact Statement (PEIS) for research and development leases to facilitate the development of oil shale and tar sands in Colorado, Utah and Wyoming. Energy development from oil shale and tar sands is really scraping the bottom of the barrel. Molecules of petroleum are trapped in shale and sand. They cannot be recovered by traditional drilling techniques. Thus far, tar sands have proven more economically viable than oil shale; however, development of tar sand takes a grave toll on the environment. Oil shale development has the potential to be equally as destructive as tar sands development. Many of the processes being actively studied as part of the research and development leases will require inordinate amounts of electricity and water. Retorts are used to "cook" oil shale, and thus release oil. Retorts will pollute air. Reports abound outlining the potential of oil shale to meet our nation's energy needs. Oil shale has yet to be proven economically viable and the impact to our air, water, wildlife and Wild Western Lands from large scale oil shale development could prove catastrophic. Coupled with furthering our reliance on greenhouse gas causing fossil fuels, investment in oil shale technology seems ill-advised at best. There is no reason to needlessly sacrifice our Western Wildlands on an energy source that at best will continue our reliance on fossil fuels and at worst destroy our Western landscape. 100-082

****

Fundamentally, to understand the Need for this project, it is essential to examine adequate current baseline information, and develop a wide ranging of alternative visions for America's energy future. The EIS has not done this. DOE must start over, and develop a range of alternatives that provide much better environmental protection, minimize new habitat loss and harms, and provide real energy security. 100-083

Sincerely,

Katie Fite
Biodiversity Director
Western Watersheds Project
PO Box 2863
Boise, ID 83701
208-429-1679

Russ Heughins
Idaho Wildlife Federation

WEC_00100

PO Box 6412
Boise, ID 83707

ATTACHMENTS (INCLUDES 2 CDS W/DOCUMENTS)

- Belsky and Gelbard 2000
- Knick et al. 2003
- Connelly et al. 2004
- Dobkin and Sauder 2004
- Fleischner 1994
- Steinfeld et al. 2006
- USDI Pellant 2007
- *Times-News* 2008
- Wisdom et al. 2002
- WWP Comments/Appeals: Browns Bench, SWIP

Literature Cited

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.

Baker, W. L. 2003. Fire and restoration of sagebrush ecosystems. Wildl. Soc. Bull. 34(1)177-185.

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

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. and J. L. Gelbard. 2000. Livestock grazing and weed invasions in the arid West. Oregon Natural Desert Association. Bend, OR.

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.

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

Braun, C. 2006.A Blueprint for sage-grouse conservation and biology. Grouse, Inc. Tucson, AZ.

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.

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.

WEC_00100

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

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.

Deines, L. R. Rosentreter, D. J. Eldridge, M. D. Serpo. 2007. Germination and establishment of two annual grasses on lichen-dominated biological soil crusts. Plant Soil. 295 (1-2) p. 23.

Dregne, H. E. 1986. Desertification of arid lands. In *Physics of Desertification.* , ed. F. El-Baz and M. H. A. Hassan. Dordrecht, The Netherlands.

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.

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.

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.

Gregg, M. A. , J. A. Crawford, M. S. Drut, and A. K. DeLong, 1994. Vegetational cover and predation of sage grouse nests in Oregon. Journal of Wildlife Management 58: 162-166.

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

Holloran, M.J. 2005. Greater Sage-Grouse *(Centrocercus urophasianus)* population response to natural gas field development in western wyoming. PhD Dissertation. University of Wyoming. Laramie, WY.

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.
Johansen, J. R. 1993. Cryptogamic crusts of semiarid and arid lands of North America. Journal of Phycology. 29: 140-147.

Katzner, T. E. and K. L. Parker. 1997. Vegetative characteristics and size of home ranges used by pygmy rabbits (*Brachylagus idahoensis*) during winter. Journal of Mammalogy. 78:1063-1072.

WEC_00100

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.

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

Montana Fish, Wildlife and Parks. 2005. Joel E. Peterson. Ecological implications of sagebrush manipulation. Booklet. 49 pp.

Naugle, D. E., C. A. Aldridge, B. L. Walker, K. E. Doherty, M. R. Matchett, J. McIntosh, T. E. Cornish, and M. S. Boyce. 2005. West Nile virus and sage-grouse: What more have we learned? Widlife Soc. Bull. 33: 616-623.

Naugle, D. E, B. L. Walker, and K. E. Doherty. 2006 (a). Sage-grouse population response to coal-bed natural gas development in the Powder River Basin: Interim Progress Report on Region-wide Lek-count analyses. Wildlife Biology Program, College of Forestry and Conservation. University of Montana, Missoula, MT.

Naugle, D. E., K. E. Doherty and B. L. Walker, 2006 (b). Sage-grouse winter habitat selection and energy development in the Powder River Basin: Completion Report. Wildlife Biology Program. Univ. of Montana, Missoula, MT.

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.

Pellant, M. USDI. BLM. Statement before the House Appropriations Subcommittte on Interior, Environment and Related Energy Change. April 26, 2007.

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.

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

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.

Sada, D. W., J. E. Williams, J. C. Silvey, A. Halford, J. Ramakka, P. Summers, and L. Lewis. 2001. A guide to managin , restoring, and conserving springs in the western United States. BLM Tech. Ref. 1737-17. Bureau of Land Management, Denver, CO.BLM/ST/ST-01/001=1737. 70 pp.

Sheridan, D. 1981. Desertification of the United States. Council on Environmental Quality. Washington, DC. U. S. Government Printing Office.

WEC_00100

Steinfeld, H., P. Gerber, T. Wassenaar, V. Castel, M. Rosales, C. de Haan. Livestock's Long Shadow" Environmental Issues and Options. 2006. Food and Agriculture Organization of the United Nations. Rome.

Siegel, N. J., L. A. Shipley, R. D. Sayler. 2003. Effects of cattle grazing on ecology and habitat of Columbia Basin pygmy rabbits (*Brachylagus idahoensis*). Biological Conservation 119 (4) 525-534.

USDI BLM. 2002. Management considerations for sagebrush *(Artemisia)* in the western United States: a selective summary of current information about the ecology and biology of woody North American sagebrush taxa.

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

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.

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. 2002. 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.

WEC_00100

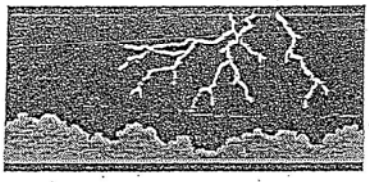
Livestock Grazing and Weed Invasions in the Arid West

by

A. Joy Belsky Ph.D.
and
Jonathan L. Gelbard

April 2000

A Scientific Report Published By The
Oregon Natural Desert Association



Oregon Natural Desert Association
Bend Office
16 NW Kansas, Bend, OR 97701
Voice: 541-330-2638 • Fax: 541-385-3370
E-mail: onda@onda.org
Website: www.onda.org

Portland Office
732 SW 3rd Ave., #407, Portland, OR 97204
Voice: 503-525-0193 • Fax: 503-228-9720
E-mail: jbelsky@onda.org

Preparation and publication of this report were supported by
True North Foundation, Northwest Fund for the Environment, and Rogue Wave Foundation

WEC_00100

ISSUES IN CONSERVATION

The Condor 105:611–634

TEETERING ON THE EDGE OR TOO LATE? CONSERVATION AND RESEARCH ISSUES FOR AVIFAUNA OF SAGEBRUSH HABITATS

STEVEN T. KNICK[1,7], DAVID S. DOBKIN[2], JOHN T. ROTENBERRY[3], MICHAEL A. SCHROEDER[4], W. MATTHEW VANDER HAEGEN[5] AND CHARLES VAN RIPER III[6]

[1]*USGS Forest and Rangeland Ecosystem Science Center, Snake River Field Station, 970 Lusk Street, Boise, ID 83706*
[2]*High Desert Ecological Research Institute, 15 S.W. Colorado Ave., Suite 300, Bend, OR 97702*
[3]*Center for Conservation Biology and Department of Biology, University of California, Riverside, CA 92521*
[4]*Washington Department of Fish and Wildlife, P.O. Box 1077, Bridgeport, WA 98813*
[5]*Washington Department of Fish and Wildlife, 600 North Capitol Way, Olympia, WA 98501*
[6]*USGS Southwest Biological Science Center, Northern Arizona University, P.O. Box 5614, Bldg. 24, Flagstaff, AZ 86011*

Abstract. Degradation, fragmentation, and loss of native sagebrush (*Artemisia* spp.) landscapes have imperiled these habitats and their associated avifauna. Historically, this vast piece of the Western landscape has been undervalued: even though more than 70% of all remaining sagebrush habitat in the United States is publicly owned, <3% of it is protected as federal reserves or national parks. We review the threats facing birds in sagebrush habitats to emphasize the urgency for conservation and research actions, and synthesize existing information that forms the foundation for recommended research directions. Management and conservation of birds in sagebrush habitats will require more research into four major topics: (1) identification of primary land-use practices and their influence on sagebrush habitats and birds, (2) better understanding of bird responses to habitat components and disturbance processes of sagebrush ecosystems, (3) improved hierarchical designs for surveying and monitoring programs, and (4) linking bird movements and population changes during migration and wintering periods to dynamics on the sagebrush breeding grounds. This research is essential because we already have seen that sagebrush habitats can be altered by land use, spread of invasive plants, and disrupted disturbance regimes beyond a threshold at which natural recovery is unlikely. Research on these issues should be instituted on lands managed by state or federal agencies because most lands still dominated by sagebrush are owned publicly. In addition to the challenge of understanding shrubsteppe bird-habitat dynamics, conservation of sagebrush landscapes depends on our ability to recognize and communicate their intrinsic value and on our resolve to conserve them.

Key words: Artemisia, *conservation, landscape change, land use, priority research issues, sagebrush ecosystems, shrubland loss.*

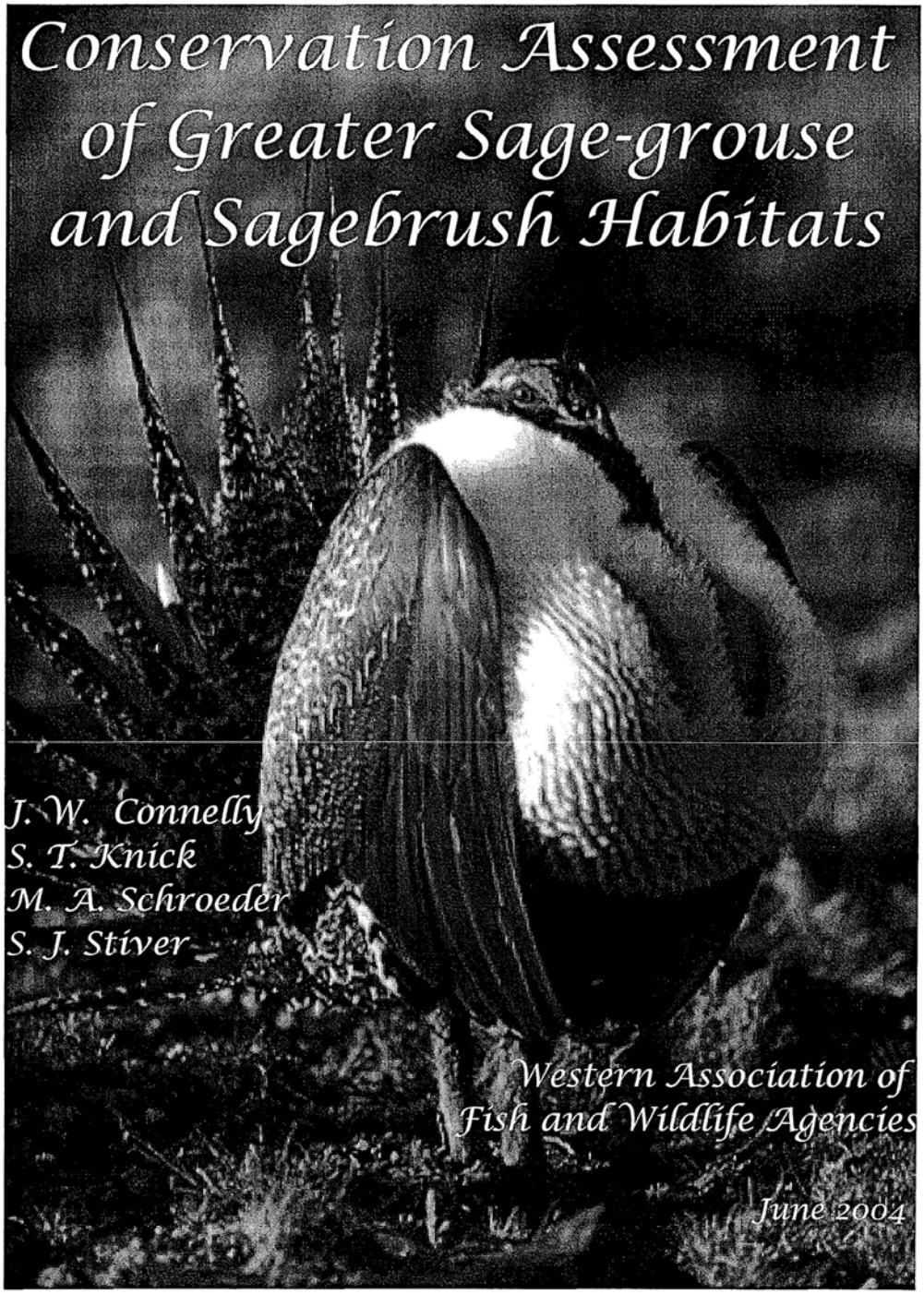
¿Tambaleando en el Borde o Demasiado Tarde? Asuntos de Conservación e Investigación para la Avifauna de Ambientes de Matorral de *Artemisia* spp.

Resumen. La degradación, fragmentación y pérdida de paisajes nativos de matorrales de *Artemisia* spp. han puesto en peligro a estos ambientes y su avifauna asociada. Históricamente, esta vasta porción del paisaje occidental ha sido subvalorada: aunque más del 70% de todo el hábitat de matorral de *Artemisia* de los Estados Unidos es de propiedad pública,

---

Report of the Cooper Ornithological Society Committee for Conservation of Sagebrush Ecosystems.
Received 4 April 2003; accepted 4 August 2003.
[7] E-mail: steve_knick@usgs.gov

WEC_00100


Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats
J. W. Connelly
S. T. Knick
M. A. Schroeder
S. J. Stiver
Western Association of Fish and Wildlife Agencies
June 2004

WEC_00100

CONSERVATION ASSESSMENT OF GREATER SAGE-GROUSE and SAGEBRUSH HABITATS

John W. Connelly
Idaho Department Fish and Game
83 W 215 N
Blackfoot, ID 83221
JCsagegrouse@aol.com

Steven T. Knick
USGS Forest & Rangeland Ecosystem Science Center
Snake River Field Station
970 Lusk St.
Boise, ID 83706
Steve_Knick@usgs.gov

Michael A. Schroeder
Washington Department of Fish and Wildlife
P.O. Box 1077
Bridgeport, WA 98813
grouse@vib.tv

San J. Stiver
Wildlife Coordinator,
National Sage-Grouse Conservation Framework Planning Team
2184 Richard St.
Prescott, AZ 86301
stiver@cableone.net

This report should be cited as:

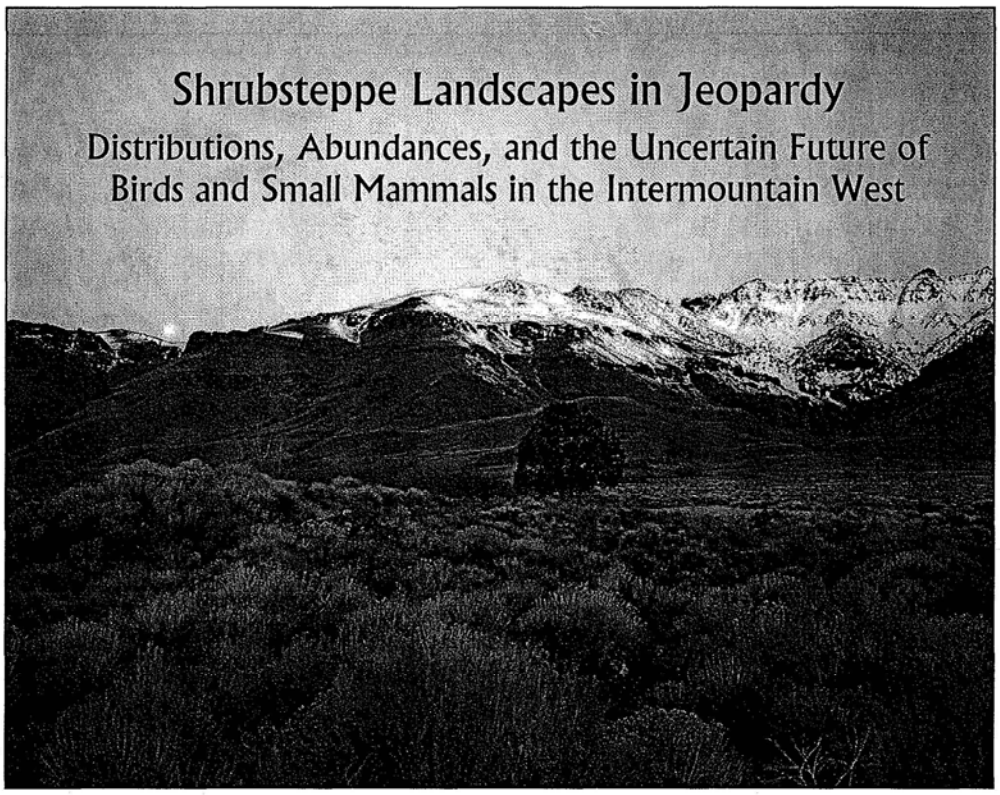
Connelly, J. W., S. T. Knick, M. A. Schroeder, and S. J. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.

Cover photo credit, Kim Toulouse

WEC_00100

Shrubsteppe Landscapes in Jeopardy

Distributions, Abundances, and the Uncertain Future of Birds and Small Mammals in the Intermountain West



David S. Dobkin and Joel D. Sauder

High Desert Ecological Research Institute

Shrubsteppe Landscapes in Jeopardy

Distributions, Abundances, and the Uncertain Future of Birds and Small Mammals in the Intermountain West

David S. Dobkin and Joel D. Sauder

High Desert Ecological Research Institute
15 S.W. Colorado Ave., Suite 300, Bend, OR 97702

AUGUST 2004

WEC_00100

 Produced and printed by the High Desert Ecological Research Institute, 15 S.W. Colorado Ave., Suite 300, Bend, OR 97702. Page editing and layout by Hugh Powell.

Recommended citation:

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

COVER: Moonrise over shrubsteppe on Steens Mountain in southeast Oregon's Great Basin. Photograph by Greg Burke.

The High Desert Ecological Research Institute, under the direction of Dr. David S. Dobkin, was established in 1993 to serve as a regional center for ecological research and policy analysis with a primary focus on natural resource issues related to the Intermountain West and the Pacific Northwest. The Institute conducts cooperative, multidisciplinary, long-term research on a wide range of problems in natural resource management and conservation in western North America. The High Desert Ecological Research Institute is an independent, nonprofit, research and educational organization.

This report is printed on acid-free paper.

WEC_00100

Reviews

Ecological Costs of Livestock Grazing in Western North America

THOMAS L. FLEISCHNER

Prescott College
Environmental Studies Program
220 Grove Avenue
Prescott, AZ 86301, U.S.A.

Abstract: *Livestock grazing is the most widespread land management practice in western North America. Seventy percent of the western United States is grazed, including wilderness areas, wildlife refuges, national forests, and even some national parks. The ecological costs of this nearly ubiquitous form of land use can be dramatic. Examples of such costs include loss of biodiversity; lowering of population densities for a wide variety of taxa; disruption of ecosystem functions, including nutrient cycling and succession; change in community organization; and change in the physical characteristics of both terrestrial and aquatic habitats. Because livestock congregate in riparian ecosystems, which are among the biologically richest habitats in arid and semiarid regions, the ecological costs of grazing are magnified in these sites. Range science has traditionally been laden with economic assumptions favoring resource use. Conservation biologists are encouraged to contribute to the ongoing social and scientific dialogue on grazing issues.*

Costos ecológicos del pastoreo de ganado en el oeste de Estados Unidos

Resumen: *El pastoreo de ganado es la práctica de manejo de la tierra más ampliamente utilizada en el oeste de Norte América. El setenta por ciento del oeste de Estados Unidos se utiliza para pastoreo, incluyendo áreas silvestres, refugios de vida silvestre, bosques nacionales e inclusive algunos parques nacionales. El costo ecológico de esta forma ubicua de uso de la tierra puede ser dramático. Ejemplos de este costo incluyen pérdida de la biodiversidad; decrecimiento de las densidades de población para una amplia variedad de taxones; alteraciones en las funciones del ecosistem, incluyendo ciclos de nutrientes y sucesiones; cambios en la organización de la comunidad y cambios en las características físicas de hábitas terrestres y acuáticos. Dado que el ganado se congrega en ecosistemas ribereños, los cuales están entre los hábitas biológicamente más ricos dentro de las regiones áridas y semi-áridas, los costos ecológicos del pastoreo se magnifican en estos sitios. Tradicionalmente, la ciencia de pastizales, ha estado cargada de suposiciones económicas que favorecen el uso del recurso. Se alienta a los biólogos conservacionistas a contribuir al diálogo social y científico en los problemas del pastoreo.*

Introduction

Aldo Leopold (1953) once said that to be an ecologist is to live "alone in a world of wounds." The spectacular groundswell of interest in conservation biology is heartening evidence that we no longer work alone. But what about a world of wounds? The wounding of natural processes accelerates, but some wounds are more conspicuous than others. Recognizing a clearcut forest is easy, but it often takes a trained eye to comprehend damage to rangelands. The destruction caused by livestock grazing is so pervasive and has existed for so long that it frequently goes unnoticed. Livestock grazing has re-

Paper submitted August 16, 1993; revised manuscript accepted February 14, 1994.

Conservation Biology, Pages 629–644
Volume 8, No. 3, September 1994

WEC_00100

livestock's long shadow

environmental issues and options

WEC_00100

The Livestock, Environment and Development (LEAD) Initiative is supported by the World Bank, the European Union (EU), the Ministère des Affaires Etrangères (France), German Federal Ministry for Economic Cooperation and Development via GTZ (Germany), the Department for International Development (United Kingdom), the US Agency for International Development (USA), the International Development Agency (Denmark), the Swiss Agency for Development and Cooperation (Switzerland), the International Fund for Agricultural Development (IFAD) and the Food and Agriculture Organization of the United Nations (FAO).

LEAD website: http://www.virtualcentre.org

Photographs

Page 2 and 3: USDA / Ken Hammond
Page 22 and 23: USDA / Dana Downic
Page 78 and 79: FAO / R. Faidutti
Page 124 and 125: USDA–NRCS / Gene Alexander
Page 180 and 181: CIPAV – Photograhic archive
Page 220 and 221: FAO / H. Wagner
Page 266 and 267: Nikolaus Schareika

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 2006

livestock's long shadow

environmental issues and options

Henning Steinfeld
Pierre Gerber
Tom Wassenaar
Vincent Castel
Mauricio Rosales
Cees de Haan

WEC_00100

STATEMENT OF
MIKE PELLANT
GREAT BASIN RESTORATION INITIATIVE COORDINATOR
BUREAU OF LAND MANAGEMENT
U.S. DEPARTMENT OF THE INTERIOR
BEFORE THE HOUSE APPROPRIATIONS SUBCOMMITTEE ON
INTERIOR, ENVIRONMENT AND RELATED AGENCIES
REGARDING CLIMATE CHANGE
April 26, 2007

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear here today to discuss the potential impacts of climate change and activities in progress to mitigate these effects on public lands in the Great Basin. I am the Coordinator for BLM's Great Basin Restoration Initiative and am responsible to coordinate restoration-related activities across a five-state area for BLM.

Background

The Great Basin is North America's largest desert, encompassing 135 million acres of land between the Rocky and Sierra Nevada Mountains in western North America. The largest land manager in the Great Basin (includes parts of Nevada, Utah, Idaho, Oregon, and California) is the U.S. Department of Interior's Bureau of Land Management with oversight of 75 million acres of public land. (I could attach a map showing the boundary of the Great Basin in the five state area). The Great Basin is characterized by aridity (over half the area receives less than 12 inches annual precipitation) and a mix of shrubs, sagebrush (*Artemisia tridentata*) being the dominant with an understory of native grasses and forbs. Today, population growth, wildfires, and invasive species are reducing the quality of native rangelands at an accelerating rate. In 1999, a consortium of organizations led by The Nature Conservancy identified the Great Basin as the third most endangered ecosystem in the United States due in large part to the dominance of exotic species. Climate change is expected to accelerate these changes and associated impacts.

The Great Basin is a land of wide, historical fluctuations in climate both on a relatively short and long time frame. Extremes in precipitation (wet years followed by multi-year extreme droughts) and temperature challenge the management of livestock, wild horses and burros, and wildlife on public lands. Given this variability in climate, public land managers have flexibility in adjusting time and amount of forage consumption and water use to sustain land health over the long term. BLM managers evaluate these situations on a local basis and have the regulatory authority to remove livestock or wild horses during extended droughts when forage production or water sources are inadequate to sustain native vegetation. The challenge is to separate the natural climatic variation that

NEWS

Story published at magicvalley.com on Tuesday, February 05, 2008
Last modified on Tuesday, February 5, 2008 12:13 AM MST

Mega-wind project south of T.F. progresses

Bulk of electricity likely to go out of state

By Matt Christensen
Times-News writer

Developers are hoping you won't see one of the largest building projects in Idaho history.

They are hoping, however, that Nevada residents will reap the bulk of the project's rewards.

In the next two years, the first of nearly 200 planned wind turbines could begin to gently spin on seldom seen federal, state and private lands, hidden by hills just west of U.S. Highway 93 between Twin Falls and Jackpot, Nev.

Though most of the turbines will be in Idaho, a Nevada utility has first dibs on the electricity they'll produce. The farm could be one of the largest of its kind in the entire Northwest.

Nevada Power, a Sierra Pacific Resources company, is in talks with Renewable Energy Systems America Developments to buy 200 megawatts from the project, called China Mountain. Anything over 200 MW - about enough energy to power 65,000 homes - would be sold on the open market, maybe to Idaho, maybe to other states.

Documents related to the proposal say the site could produce up to 425 MW, but an RES official said Monday he doesn't anticipate the project will ultimately offer that much.

"It's a large project," said Scott Kringen, an RES project manager. "(But) we anticipate the first 200 will go to Nevada."

The company quietly applied to lease Bureau of Land Management property in southern Twin Falls County last May. In November, the company announced it was pursuing a deal with the Nevada utility, though an agreement is yet to be finalized. A permitting process is also under way, as are environmental and economic impact reports expected to be finished soon.

RES has hired Twin Falls-based consultant Stephen Hartgen to lead a local public relations campaign. He said that Twin Falls County could see ongoing 3 percent revenue from the project's gross income because of recently changed tax laws, which provide money to counties that host wind farms as long as the turbines continue to produce electricity.

The company will employ 20 fulltime workers and about 200 workers to build 185 turbines. At nearly $2 million per turbine, construction costs will likely approach a half a billion dollars.

"This is one of the largest projects ever proposed in Idaho," Hartgen said.

RES declined to say how much of the 9,000-acre project will be on private lands, whether it bought those properties or at what price.

Companies often lease federal lands for energy projects, especially for oil and gas. Another energy company has leased BLM land related to a proposed 100-turbine wind farm on Cotterel Mountain in Cassia County.

China Mountain would be Sierra Pacific's first wind project. RES, however, specializes in wind farms. The company says it's had a hand in developing 15 percent of the nation's wind energy, including projects in Washington, California and Texas, where it is headquartered and is developing a possible 1,000 MW farm.

Organizers stress that plans are early in the two-year permitting process, and no specific turbine locations have been chosen. But RES officials and wind experts familiar with the project say it's only a matter of time before turbines will spin in Twin Falls County.

Matt Christensen may be reached at 735-3243 or at matt.christensen@lee.net.

Community Speaks
Story Commenting Forum

Grant Uptain (id:95164) wrote on Feb 5, 2008 5:18 PM:

" became a fact in the 1990s that America was experiencing a shortage of electricity. Editorials have asked people to conserve. The rolling brown outs in California are still fresh in my mind. Deregulation did not bring the results predicted. According to Rebecca Smith of the â€œWall Street Journalâ€ said the â€œU.S. has generating plants capable of cranking out 780,000 megawatts of electricity on a summer's day. But it will take a minimum of 700,000 megawatts to power the nation this summer (2000), according to estimates by the Department of Energy. That leaves little surplus, and in any event, the power can't always get where it's needed most.â€ Before deregulation, electricity companies delivered electricity to customers without trouble. But deregulation was set by COMPETITIVE markets, with increased prices justified by investors, not ratepayers. When I lived in Pahrump, Nevada we had a cooperative, with each user have a piece of the action. So today, more and more users areâ€surrendering control of long-haul transmission lines to new nonprofit operators whose job it is to ensure fair access to the ---multistate system of high-voltage lines. Yeh!
Big replaced local and the problems grow, as I have repeatedly said: â€œBottom Liners are more interested in profits than in service. Many areas are on the edge or outside of the grid. So the coal boys try to move in and pollute the air.
The citizenry know rats are causing much of the problems, as they think only of BOTTOM LINERS, not clean reliable service. So itâ€™s another example of public owned enterprise THATâ€™â€™S privatized, with the PROMISE that competition will bring prices down—you know like pigs would fly if they had wings.
Well, we need greater grids for the nation, not a local area, because that possibility LEFT US when utilities were privatized. So you are stuck with that unless you can untangle a Gordian knot. But we can bring pressure for clean reliable energy. So I am in favor of clean renewable energy and a return to regulations, with stiff penalties and with the investors paying into a greater grid toward a national one. But I do not believe that you will get it. Too bad!
Source: â€œWall Street Journalâ€ May 11, 2000, by Rebecca Smith
"

Amos Moses (id:Amos) wrote on Feb 5, 2008 5:04 PM:

" A merchant wind farm? I'll expect Dr. Rickards to prepare a voter initiative to ban any wind project that uses Idaho wind resources and subjects Idaho families to the hazards of falling wind towers to heat Las Vegas hot tubs. If Merchant wind developers use up our wind for the benefit of Nevada, we'll be stuck with that darn old clean nuclear energy. Oh, the horror. "

Max Hatfield (id:7623) wrote on Feb 5, 2008 1:36 PM:

WEC_00100

Vol. 3-1

Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-Scale Trends and Management Implications

Volume 3— Appendices

Michael J. Wisdom, Richard S. Holthausen, Barbara C. Wales, Christina D. Hargis, Victoria A. Saab, Danny C. Lee, Wendel J. Hann, Terrell D. Rich, Mary M. Rowland, Wally J. Murphy, and Michelle R. Eames

NOTE: This is a compact disc version of PNW-GTR-485 in draft form as it was submitted by the authors to the Pacific Northwest Research Station for layout and production of galley proofs. Minor differences in style and content are expected between this compact disc version and the final publication of this GTR in hard-copy format. Differences are due to layout and final editing. The substance, however, will remain the same between this compact disc version and the final, hard-copy publication.

WEC_00100

Vol. 3-2

AUTHORS

MICHAEL J. WISDOM is a terrestrial ecologist, and BARBARA C. WALES is a wildlife biologist, U.S. Department of Agriculture (USDA), Forest Service, Pacific Northwest Research Station, Forestry and Range Sciences Laboratory, 1401 Gekeler Lane, La Grande, OR 97850; RICHARD S. HOLTHAUSEN is the national wildlife ecologist, and CHRISTINA D. HARGIS is the associate national wildlife ecologist, USDA Forest Service, Forestry Sciences Laboratory, 2500 S. Pine Knoll, Flagstaff, AZ 86001; DANNY C. LEE was a research biologist, and VICTORIA A. SAAB is a research wildlife biologist, USDA Forest Service, Forestry Sciences Laboratory, 316 E. Myrtle St., Boise, ID 83702; Wendel J. Hann is the national landscape ecologist, National Interagency Fire Center, Boise, ID 83705; TERRELL D. RICH is the senior avian ecologist, U.S. Department of Interior (USDI), Bureau of Land Management, 1387 S. Vinnell Way, Boise, ID 83709; MARY M. ROWLAND is a wildlife biologist, USDI Bureau of Land Management, Forestry and Range Sciences Laboratory, 1401 Gekeler Lane, La Grande, OR 97850; WALLY J. MURPHY is a natural resources staff officer, USDA Forest Service, Umatilla National Forest, 2517 S. W. Hailey, Pendleton, OR 97801; and MICHELLE R. EAMES is a wildlife biologist, USDI Fish and Wildlife Service, 11103 E. Montgomery Drive, Suite 2, Spokane, WA 99206.

CONTRIBUTORS

David A. Newhouse
Fred B. Samson
Alan Sands
Nancy Warren

WEC_00100

Vol. 3-3

Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-Scale Trends and Management Implications

Volume 3: Appendices

Michael J. Wisdom, Richard S. Holthausen, Barbara C. Wales, Christina D. Hargis, Victoria A. Saab, Danny C. Lee, Wendel J. Hann, Terrell D. Rich, Mary M. Rowland, Wally J. Murphy, and Michelle R. Eames

Interior Columbia Basin Ecosystem Management Project: Scientific Assessment

Thomas M. Quigley, Editor

Volume 3 contains pages 1 through 120.

U.S. Department of Agriculture
Forest Service
Pacific Northwest Research Station
Portland, Oregon
General Technical Report PNW-GTR-485
2000

WEC_00100

Vol. 3-4

ABSTRACT

Wisdom, Michael J.; Holthausen, Richard S.; Wales, Barbara C.; Hargis, Christina D.; Saab, Victoria A.; Lee, Danny C.; Hann, Wendel J.; Rich, Terrell D.; Rowland, Mary M.; Murphy, Wally J.; Eames, Michelle R. 2000. Source habitats for terrestrial vertebrates of focus in the interior Columbia basin: broad-scale trends and management implications. Volume 1--Overview. Gen. Tech. Rep. PNW-GTR-485. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. (Quigley, Thomas M., tech. ed.; Interior Columbia Basin Ecosystem Management Project: scientific assessment).

We defined habitat requirements (source habitats) and assessed trends in these habitats for 91 species of terrestrial vertebrates on 58 million ha (145 million acres) of public and private lands within the interior Columbia basin (basin). We also summarized knowledge about species-road relations for each species and mapped source habitats in relation to road densities for four species of terrestrial carnivores. Our assessment was conducted as part of the Interior Columbia Basin Ecosystem Management Project (ICBEMP), a multiresource, multidisciplinary effort by the USDA Forest Service (FS) and the USDI Bureau of Land Management (BLM) to develop an ecosystem-based strategy for managing FS and BLM lands within the basin. Our assessment was designed to provide technical support for the ICBEMP and was done in five steps. First, we identified species of terrestrial vertebrates for which there was ongoing concern about population or habitat status (species of focus), and for which habitats could be estimated reliably by using a large mapping unit (pixel size) of 100 ha (247 acres) and broad-scale methods of spatial analysis. Second, we evaluated change in source habitats from early European settlement (historical, circa 1850 to 1890) to current (circa 1985 to 1995) conditions, for each species and for hierarchically nested groups of species and families of groups, at the spatial scales of the watershed (5th hydrologic unit code [HUC]), subbasin (4th HUC), ecological reporting unit (ERU), and basin. Third, we summarized the effects of roads and road-associated factors on populations and habitats for each of the 91 species and described the results in relation to broad-scale patterns of road density. Fourth, we mapped classes of the current abundance of source habitats for four species of terrestrial carnivores in relation to classes of road density across the 164 subbasins and used the maps to identify areas having high potential to support persistent populations. And fifth, we used our results, along with results from other studies, to describe broad-scale implications for managing habitats deemed to have undergone long-term decline and for managing species negatively affected by roads or road-associated factors.

Our results indicated that habitats for species, groups, and families associated with old-forest structural stages, with native grasslands, or with native shrublands have undergone strong, widespread decline. Implications of these results for managing old-forest structural stages include consideration of (1) conservation of habitats in subbasins and watersheds where decline in old forests has been strongest; (2) silvicultural manipulations of mid-seral forests to accelerate development of late-seral stages; and (3) long-term silvicultural manipulations and long-term accommodation of fire and other disturbance regimes in all forested structural stages to hasten development and improvement in the amount, quality, and distribution of old-forest stages. Implications of our results for managing rangelands include the potential to (1) conserve native grasslands and shrublands that have not undergone large-scale reduction in composition of native plants; (2) control or eradicate exotic plants on native grasslands and shrublands where invasion potential or spread of exotics is highest; and (3) restore native plant communities by using intensive range practices where potential for restoration is highest.

Our analysis also indicated that >70 percent of the 91 species are affected negatively by one or more factors associated with roads. Moreover, maps of the abundance of source habitats in relation to classes of road density suggested that road-associated factors hypothetically may reduce the potential to support persistent populations of terrestrial carnivores in many subbasins. Management implications of our summarized road effects include the potential to mitigate a diverse set of negative factors associated with roads. Comprehensive mitigation of road-associated factors would require a

WEC_00100

Western Watersheds Project

Boise, Idaho Office
PO Box 2863
Boise, ID 83701
Tel: (208) 429-1679
Fax: (208) 342-8286
Email: Katie@WesternWatersheds.org
web site: www.WesternWatersheds.org

Working to protect and restore Western Watersheds

November 11, 2007

Mr. John Ruhs
Ms. Jane Petersen
Ely BLM
702 N. Industrial Way
HC 33 Box 33500
Ely, NV 89301-9408

RE: Southwest Intertie Project EA, NV-040-07-048,
EA prepared for EPG for Great Basin Transmission LLC

Dear BLM Managers,

Here are comments of Western Watersheds Project on the Southwest Intertie Project EA, NV-040-07-048. We cannot understand why BLM is wasting everyone's time by allowing large energy companies to prepare a series of segmented and separate EAS linked to a long-outdated and out-moded Idaho Power SWIP EIS from 1994. It is abundantly clear that the analysis of effects of this massive undertaking in the old Idaho Power SWIP EIS in no longer valid. BLM is not even willing to supply requestors with the EIS. WWP sought the EIS from both Ely and Idaho BLM in 2006, when we heard some of what was planned to occur, and were not provided with the document. The SWIP EIS and its complicated mapping volume are not available on-line, so there is no way of understanding claims made in the EA related to the EIS analysis.

Even if one believes that the ancient EIS contains any current validity, ANY proposal to move any part of the SWIP EIS forward must be re-scoped AFTER BLM has made the SWIP EIS and all maps that accompanied it readily availble to the public. We ask that the current EA be put on hold until this is done, and comment period re-initiated.

Our search today of the BLM Website, and the Internet – turns up NO copy of the EIS, or any way to obtain information necessary to understand the full scope of this proposal.

WWP also notes that we requested a hard copy of this EA after receiving a letter stating its availability. It was not mailed to us for weeks. Instead, WWP's Fite had to call Ely BLM while in Ely and ask to pick up a copy.

WEC_00100

November 11, 2007

Mr. John Ruhs
Ms. Jane Petersen
Ely BLM
702 N. Industrial Way
HC 33 Box 33500
Ely, NV 89301-9408

RE: Southwest Intertie Project EA, NV-040-07-048,
EA prepared for EPG for Great Basin Transmission LLC

Dear BLM Managers,

Here are additional comments of Western Watersheds Project on the Southwest Intertie Project EA, NV-040-07-048.

It is critical that remaining native vegetation communities and lands not completely overrun with cheatgrass be managed in a much more conservative manner of use here. To the north, habitats are torn apart by cyanide heap leach mining. Large areas of the Great Basin are becoming cheatgrass wastelands. In this context, the lands traversed by the powerline and opened to linked and foreseeable development are ever more important for remaining native wildlife species. We Protest the failure to adequately examine the environmental setting of the allotment and develop a decision that addresses the calamitous state of habitats and accelerating habitat losses that are occurring in the sagebrush biome of central Nevada. See, for example, Nevada Natural Resources Status Report (2002).

Please apply the relevant portion of these comments to this process.

BLM'S Duty Under FLPMA

BLM is required under FLPMA to consider present and potential uses of the public lands, and the scarcity of values involved. The sagebrush sea, salt desert shrub, aspen pockets, mahogany thickets, playas, scarce streams, springs and seeps, clear air, and wild roadless lands are important examples of the wide-open country that once characterized the American West.

Recent scientific assessments conducted under the Interior Columbia Basin Ecosystem Management Project (ICBEMP) such as Wisdom et al. 2002 recognize the importance of protecting and enhancing native plant communities for the long-term persistence of sagebrush biota, as well as the grave threats of growing exotic species invasions that could ultimately doom these lands. (Nevada Natural Resources Status Report 2002, Wisdom et al. 2002, Wisdom et al. 2005). These studies are now buttressed by a number of comprehensive new analyses (Knick et al. 2003, Connelly et al. 2004, Dobkin and Sauder 2004, Wisdom et al. 2005) that likewise highlight the need to protect, enhance, and reconnect fragmented areas of sagebrush-steppe. The public lands provide great opportunities for BLM to actually fulfill its duties under FLPMA, and

THE COMPETITIVE INFLUENCES OF CHEATGRASS (*BROMUS TECTORUM*) ON SITE RESTORATION

Stephen B. Monsen

ABSTRACT

Cheatgrass (Bromus tectorum) continues to expand its area of occupation and dominance. The plant now exists amid the salt desert shrublands and upper pinyon-juniper and ponderosa pine communities. Significant increases have been reported within the past 20 to 40 years. The competitive features of this weedy annual prevents natural recovery of native species and requires extensive control measures to assure other species become established after seeding. Some progress has been made using selected native species to restore cheatgrass-infested sites. Properly planned seedings in the sagebrush benchlands and pinyon-juniper woodlands usually can restore the native understory and prevent further spread of this weed. Remedial treatments conducted in areas receiving less than 10 inches of annual rainfall is hazardous, consequently restoration is still quite limited.

INTRODUCTION

Cheatgrass (*Bromus tectorum*) has invaded and disrupted many plant communities throughout the Intermountain and Columbia Basin Regions (Hulbert 1955). In many situations, cheatgrass has gained dominance and exists as nearly pure stands devoid of any native species (Morrow and Stahlman 1984). The presence of cheatgrass has resulted in the loss of plant diversity and associated resource values (Harniss and Murray 1973; Young and Evans 1978). The conversion of native communities to annual grasslands has occurred over an extended period, having a cumulative effect on existing resources (Pickford 1932). Many sites initially occupied with scattered cheatgrass plants have been converted to nearly pure stands of annual grass (Whisenant 1990). The stands have been converted to annual grass by the intense competition of cheatgrass and the sequence of fires attributed to its flammability (Young and Evans 1973). As cheatgrass gains dominance, the incidence of wildfires increases significantly. Sites are likely to burn at more frequent intervals, resulting in the perpetuation of the annual weed, coupled with the loss of many native species (Whisenant 1990).

Measures to prevent the spread of cheatgrass or to restore infested ranges with native species or more acceptable introductions have been investigated. The plant is unusually competitive and difficult to displace without extensive remedial treatments (Stewart and Hull 1949). Stands of cheatgrass must be thinned to permit seeded plants to become established (Hull and Pearse 1943; Platt and Jackman 1946; Robertson and Pearse 1945). Although treatments have been developed to restore or revegetate areas occupied by cheatgrass, costs of site preparation and seeding often limit treatment projects. In addition, many sites are not accessible, limiting restoration practices. Efforts to restore cheatgrass ranges to perennial plant cover by natural revegetation have had limited success and have required a long time before appreciable changes have occurred (Hironaka and Tisdale 1963). Cheatgrass continues to spread and now exists in drier environments than it did previously. These sites are more difficult to restore.

Some progress has been made in developing techniques and practices to control this weed and to develop plants that are better suited for seeding. This paper discusses some of the competitive attributes of cheatgrass and presents some advances in restoration.

DISTRIBUTION AND AREAS OF OCCUPATION

Cheatgrass is most abundant in the Great Basin and Columbia Basin of the Western United States, but it is also encountered throughout the continental United States and portions of Canada and Mexico (Morrow and Stahlman 1984). Warg (1938) states cheatgrass was probably introduced into the eastern Coastal States prior to its entry into the West. It may have migrated across the country or have been introduced directly from the Mediterranean region (Novak and Mack 1993; Novak and others 1993). The earliest reported collection in the West was made in Washington by Sandberg and Lieberg in 1883 (Warg 1938). Mack (1981) postulated that seeds arrived in contaminated grain, which may explain its rapid spread. It was widely scattered throughout the West prior to 1900 as successive collections were reported from central Utah in 1894, Colorado in 1895, and Wyoming in 1900 (Hulbert 1955). The grass expanded rapidly, and by 1928 it was reported to have reached its present distribution (USDA 1970). Mack (1981) reported that the grass had become the dominant species in most disturbed steppe communities by 1930. Platt and Jackman (1946), reporting on earlier studies, concluded that cheatgrass was present in Oregon for at least 50 years (1880), but had abandoned its role as an ally to become an aggressor within the last 30 years (1916 to 1946). The authors report the plant was found mostly in areas receiving between

Paper presented at the Symposium on Ecology, Management, and Restoration of Intermountain Annual Rangelands, Boise, ID, May 18-21, 1992.

Stephen B. Monsen is a Botanist, Shrub Sciences Laboratory, Intermountain Research Station, Forest Service, U.S. Department of Agriculture, Provo, UT 84606.

The Spread of Invasive Weeds in Western Wildlands:

A STATE OF BIOLOGICAL EMERGENCY

THE GOVERNOR'S IDAHO WEED SUMMIT

Boise, Idaho
May 19, 1998

Jerry Asher - Bureau of Land Management - Portland, Oregon

Carol Spurrier - Bureau of Land Management - Lakewood, Colorado

The purpose of this paper is to explain how hundreds of public land watersheds in the west are rapidly undergoing what is perhaps the greatest permanent land degradation in their recorded history. This paper only very brief touches on Integrated Weed Management, which can be so successful in controlling weeds and preventing the spread to uninfested lands, because other speakers will address these solutions in the remainder of this summit.

I would like to make some preliminary clarifications before explaining the details of why I call the spread of weeds on western lands a biological emergency. First, fine weed control work is underway by private, county, state and federal people and these people deserve a great deal of credit. Second, the term "permanently degraded" means with today's economics and technology and in the time frame of our children and their grandchildren. The terms permanently degraded and biological emergency are used only after considerable forethought and collaboration with many leading weed scientists, agency weed experts, and land managers.

The term "permanent" is used because, even though there are dozens of commendable restoration projects underway, the amount of wildland being restored is infinitesimal compared to the amount of land that needs to be reseeded. Furthermore, severe weed infestations near trees and shrubs and in riparian areas frequently become permanent because of restrictions on herbicides in those areas. Examples of severe and permanent land degradation are discussed because we need to learn from our experiences. There is absolutely no criticism intended. Finally, the terms exotic, alien, noxious, invasive, and non-native plants

Sagebrush Steppe Ecosystems Symposium, Boise State University, Boise, Idaho – June 21-23, 1999

STRUCTURE AND FUNCTION OF BIOLOGICAL SOIL CRUSTS

Jayne Belnap

Introduction

In arid and semiarid lands throughout the world, the cover of vegetation is generally sparse or absent. Open spaces between the higher plants are not bare of autotrophic life but usually covered by a community of highly specialized organisms. This soil surface floral community consists of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Cyanobacterial and microfungal filaments weave throughout the top few millimeters of soil, gluing loose soil particles together to form a biological crust. These crusts occur in all hot, cool, and cold arid and semiarid regions. They may constitute up to 70% of the living cover (Belnap 1994) and have only recently been recognized as having a major influence on terrestrial ecosystems. These communities are also referred to as cryptogamic, cryptobiotic, microbiotic, or microphytic soil crusts (Harper and Marble 1988).

Physical soil crusts are also a major structural feature in many arid regions and are often confused with biological soil crusts. Most physical crusts are formed by raindrops hitting unprotected soil surfaces, which breaks apart surface aggregates. Smaller particles then wash into spaces between larger particles, thus clogging soil pores and reducing infiltration rates by as much as 90%. In general, rain-formed crusts are less than 5 mm thick. This layer is often harder than the rest of the soil because it is drier and compounds such as salts, lime, and silica are often deposited at the surface as water evaporates. With large pores absent, these crusts increase water runoff and soil erosion and prevent the emergence of seedlings. Thus, physical crusts play a very different role in arid ecosystems than do biological crusts (Lemos and Lutz 1957).

Microstructure

Lichens and mosses are easily seen without aid of magnification. However, much of the structure and function of crusts depends on cyanobacteria, green algae, and microfungi, which are often too small to be seen without a microscope. In most desert soils, cyanobacteria contribute the most to crust microstructure.

Jayne Belnap, U.S. Geological Survey, Biological Resources Division, 2282 S. Resource Blvd., Moab, Utah 84532 [jayne_belnap@nps.gov]

Cyanobacterial filaments confer structural integrity to the soils in which they occur. When wetted, the sheath of filamentous cyanobacteria swell, expelling the living filaments and leaving behind empty sheath material. These filaments often string sand and clay particles together, much like fibers in fiberglass. Depending on environmental conditions and soil textures, cyanobacterial sheaths may be found at depths of 10 cm below the soil surface (Belnap and Gardner 1993). As aeolian and water-borne materials are trapped in the polysaccharide sheaths of cyanobacteria on the soil surface, old sheaths are gradually buried. Thus, influence on water-holding capacity and soil stability may extend far below the depth to which light can penetrate, unless sheaths are crushed. If sheath-soil connections are broken by trampling or vehicles, these sheaths are no longer living and therefore cannot be repaired.

Ecological Roles – Carbon and Nitrogen Fixation

Biological soil crusts are an important source of fixed carbon on sparsely vegetated areas throughout the West (Beymer and Klopatek 1991). While vascular plants provide organic matter to soils directly underneath them, large interspaces between plants have little opportunity to receive such input. Carbon contributed by soil crusts helps keep plant interspaces fertile and thus provides energy sources for other microbial populations.

The dominant components of biological soil crusts are photosynthetic organisms that require sunlight. When soils are dry, the bulk of the cyanobacterial biomass is at 0.2 - 0.5 mm, with bundles found down to 4 mm where sufficient light for net carbon gain is available but UV exposure is reduced (Garcia-Pichel and Belnap 1996). Carbon fixation rates are dependent on moisture and temperature (Rychert et al. 1978; Nash et al. 1982*a*,*b*; Lange et al. 1997). Most crustal species increase photosynthetic rates with increasing temperatures up to about 26-28°C, after which rates decline.

Nitrogen concentrations are known to be low in desert ecosystems relative to other ecosystems. Total atmospheric input of nitrogen over the past 10,000 years has been conservatively estimated at about 3 kg/m^2 (ignoring cyanobacteria inputs), with 77% lost through wind erosion, ammonia volatilization, nitrification, and denitrification (Peterjohn and Schlesinger 1990).

INVASIVE PLANTS AND FIRE IN THE DESERTS OF NORTH AMERICA

Matthew L. Brooks
U.S. Geological Survey, Western Ecological Research Center, Las Vegas Field Station, 6770 South Paradise Road, Las Vegas, NV 89119

David A. Pyke
U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center, 3200 SW Jefferson Way, Corvallis, OR 97331

ABSTRACT

Invasive plants and fire create substantial challenges for land managers in the deserts of North America. Invasive plants can compete with native plants, alter wildlife habitat, and promote the spread of fire where it was historically infrequent. Increased fire frequency in the Mojave and Sonoran deserts has converted native shrublands to alien annual grasslands. Fire suppression and overgrazing of livestock has allowed native woody shrubs, such as mesquite (*Prosopis* spp.) and creosotebush (*Larrea tridentata*), to invade perennial grasslands in the Chihuahuan Desert, and native trees, such as juniper (*Juniperus* spp.) and pinyon (*Pinus* spp.), to invade sagebrush (*Artemisia* spp.) steppe in the Great Basin. The reintroduction of fire can be complicated by the positive effect of fire on alien invasive plants, and the subsequent effects of invasives on post-fire establishment by native species.

Invasive alien grasses especially benefit from fire, and promote recurrent fire, in many cases to the point where native species cannot persist and native plant assemblages are converted to alien-invaded annual grasslands. This vegetation type-conversion can affect wildlife ranging from herbivores to carnivores and reduce overall biodiversity. The effective management of many wildlife species can depend on the control of invasive plants and the maintenance of appropriate fire regimes.

Fire can be used to either control invasive species or to restore historical fire regimes. However, the decision to use fire as a management tool must consider the potential interrelationships between fire and invasive species. Historical fire regimes did not occur in the presence of many invasive plants that are currently widespread, and the use of fire may not be a feasible or appropriate management action if fire-tolerant invasive plants are present. The management of fire and invasive plants must be closely integrated for each to be managed effectively.

keywords: desert, disturbance, fire, invasive plants, land management, North America.

Citation: Brooks, M.L., and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1–14 *in* K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. Miscellaneous Publication No. 11, Tall Timbers Research Station, Tallahassee, FL.

INTRODUCTION

Invasive species rank second only to habitat destruction in causing species endangerment across the United States. About 42% of federally threatened or endangered species are listed because of threats from invasive species (The Nature Conservancy 1996, Babbitt 1998, Wilcove et al. 1998). In the Mojave Desert, the desert tortoise (*Gopherus agassizii*) is a federally threatened species due partly to the negative effects of invasive plants and fire (M.L. Brooks, unpublished data). Invasive plants negatively affect other sensitive desert species, such as the sage grouse (*Centrocercus urophasianus*; Fischer et al. 1996) and cause changes in ecosystem processes (D'Antonio and Vitousek 1992). Accordingly, the management of invasive plants is now a top priority for land managers in the deserts of North America.

The Federal Wildland Fire Management Policy defines fire as a critical natural process that should be reintroduced where it has been historically suppressed (Glickman and Babbitt 1995). This policy also recognizes that fire hazards develop as fuels accumulate over time and recommends that fire be used to prevent high fuel loads. However, it does not consider interactions involving fire and invasive species or that the reintroduction of historical fire regimes may create new and potentially unknown changes in ecosystem processes and fire hazards.

Fundamental ecosystem changes have occurred in the deserts of North America during the 1900s, resulting from separate and interactive effects of invasive species and fire, and from land use activities. Problems with invasive species and fire may get worse, since recent Census 2000 data show that increases in human populations in the desert southwest currently exceed the national average (U.S. Census Bureau 2001). In this paper, we describe the factors that promote plant invasions and alter fire regimes, discuss the ecological changes that result, review the use of fire and other methods to control invasive plants, and summarize the information needed by managers to prevent further changes and restore ecosystem integrity in areas that have been altered in North American deserts.

A66