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A paradigm shift in use and management of United States public lands for livestock grazing

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Implications

- The western United States (US) has been a food-security resource to generate a consistent supply of nutritious, high-protein foods from grazing livestock.
- Much of the lands in the western US are "public lands" that are administered by US federal land management agencies. Public lands have been historically used to provide multiple ecosystem services that benefit humans, which include food production from grazing livestock.
- Recent US public land management policies that have been focused specifically on wildlife species-of-interest have resulted in permanent withdrawal of federal public lands from livestock grazing and food production.
- Decisions to reduce or eliminate grazing on federal public lands reflect a shift from long-standing federal policies designed to ensure a ready supply of domestic food and fiber.
- Approximately 23% of the US sheep industry is facing imminent loss of grazing access to public lands, which will irretrievably alter the many small-business and family-owned livestock operations and the rural communities that rely on the public lands that surround them.
- Elimination of livestock grazing removes an effective tool for land managers to maintain range and forest health, enhancing wildlife habitat, controlling invasive weeds, and mitigating wildfire risk.

Key words: endangered species act, food security, grazing, livestock, public lands

The Paradigm Shift Challenge

For approximately 150 yr, the western US rangelands and forests have been a food-security resource to generate a consistent supply of nutritious, high-protein foods. Much of the western US lands are not economically suitable for cultivation, and thus, livestock (e.g., cattle and sheep) grazing has provided an efficient, sustainable, and profitable means to convert fibrous plant matter to high-quality protein foods for human consumption. Beginning in the late 1800s, the US government and early settlers cooperated to develop an infrastructure that facilitated the use of private and federal public lands to produce food and fiber for the nation from grazing livestock.

A multi-use landscape in the Santa Fe National Forest. (Photo: Dee Taylor)

Most public lands in the western US are administered by the USDA Forest Service (Forest Service) and US Department of Interior Bureau of Land Management. As a component of past, and to a lesser extent current, land management plans, the Forest Service and Bureau of Land Management have issued fee-based permits to livestock producers for federal public-land grazing allotments. Further discussion on grazing allotment permitting is presented by Rimbey et al. (2015) in this Animal Frontiers issue. In the evolution and early expansion of the western US livestock industry, a producer's livestock inventory size was subject to availability of public land grazing allotments near the producer's homestead. Accordingly, a large segment of today's western US livestock industry is partly dependent on maintaining permits for grazing public lands.

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A recent shift in US government policies has put into question the use of federal public lands to generate food. The cooperation that once existed between the US government and western US livestock industry to provide food for US citizens has given way to policies that deter livestock grazing on public lands and thus remove federal public lands from the US food-security resource base. Accordingly, such actions can and are impacting the livelihood of western US producers, the US livestock industry, communities that depend on the sustainability of livestock enterprises, and the long-term integrity of the US food security infrastructure.

The purpose of this article is to present examples of recent US government policies that have resulted in permanent withdrawal of federal public lands from livestock grazing and food production. As an example, we will focus on the sheep industry in the upper Intermountain West regions of the US and how wildlife species of interest (often called, charismatic megafauna; Ducarme et al., 2013; Marris, 2013) have been used to direct land management policies that are contrary to food production from livestock as one of the many ecosystem services (i.e., benefits) that can be derived from public lands.

The Western U.S. Sheep Industry: A Livelihood of the Past?

The US sheep inventory is at an all-time low of approximately 5.25 million animals (NASS, 2015), which is only 9% of a high of nearly 60 million sheep in the early 1900s (US Department of Commerce, 1927). This is counterintuitive given that the US sheep industry supplies only 50% of the US demand for lamb meat and less than 30% of the demand for wool (Shifflett et al., 2007). For states adjoining Yellowstone National Park, which are Wyoming, Montana, and Idaho (Fig. 1), the decline in sheep inventory has been more pronounced in these states over the last 15 yr. For example, from 1964 to 1997, the collective sheep inventory for Wyoming, Montana, and Idaho accounted for an average of 17.3% (± 0.6%) of the entire US sheep industry; however, from 2002 to 2012, this inventory share dropped nearly 10% (i.e., two percentage points; NASS, 1964, 1969, 1974, 1978, 1982, 1987, 1992, 1997, 2002, 2007, 2012).

Although the reasons for the national and regional decline in the sheep industry are multifaceted (discussed in detail elsewhere; National Academy of Sciences, 2008), recent governmental policy changes in public-land management have resulted in permanent closure of many public-land grazing allotments in Wyoming, Montana, and Idaho, with specific emphasis on Forest Service sheep-grazing allotments. Particularly damaging to public-land grazing and especially sheep ranching in the western US are policies that are manipulated toward achieving the ideology of restoring a "pristine nature" on the landscape.

Transition from "Multi-use" to "Single-use" Management of Public Lands

One of the most influential governmental actions resulting in closure of public-land grazing (sheep and cattle) allotments is related to the recovery of the grizzly bear (Ursus arctos horribilis) in the Greater Yellowstone Area (GYA).

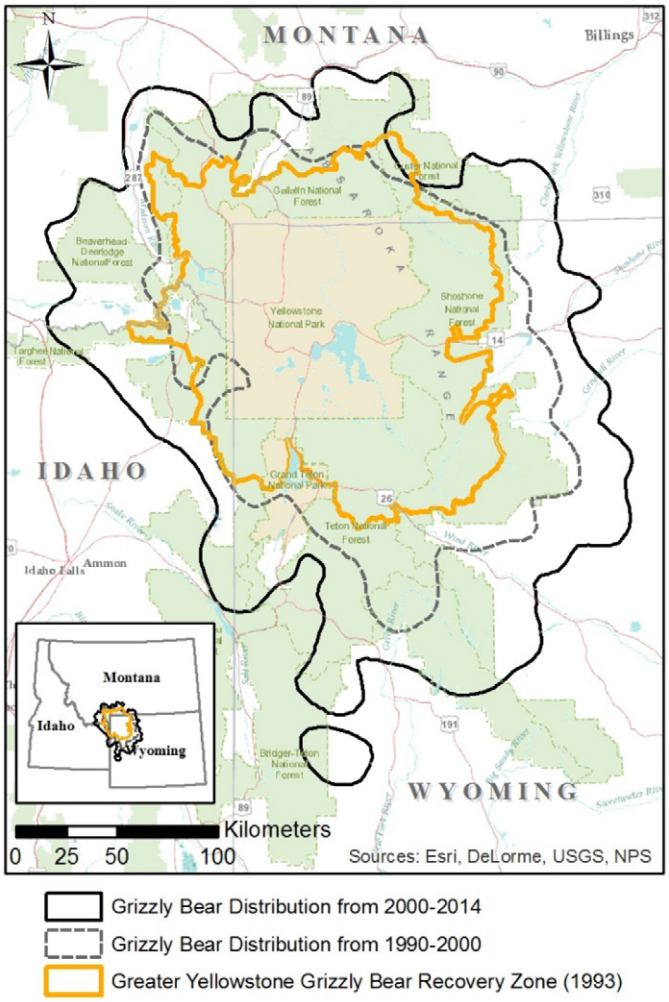

Figure 1. Geographical location of the Greater Yellowstone Area, grizzly bear recovery zone, and grizzly bear distribution areas in the states of Wyoming, Montana, and Idaho.

Photo: iStockPhoto.com/babyface01

The GYA includes Yellowstone National Park and surrounding US federal, state, and private lands in Wyoming, Montana, and Idaho (Fig. 1). On 28 July 1975, the grizzly bear in the US lower 48 states was listed as threatened under the Endangered Species Act of 1973. Accordingly, the US Fish and Wildlife Service and many other federal and state agencies developed a series of recovery goals, plans, and guidelines to direct land management policy for the purpose of ensuring recovery of grizzly bears to a self-sustaining population within the recovery zone (Fig. 1). In 1983, the multi-agency (federal and state) Interagency Grizzly Bear Committee was established to coordinate all grizzly bear policy, planning, management, and research relating to recovery of the grizzly bear.

The Interagency Grizzly Bear Committee published the Interagency Grizzly Bear Guidelines (Guidelines) in 1986, which was a final culmination of a series of drafts beginning in 1975. In the revised edition, the Interagency Grizzly Bear Committee described five "Management Situations" (MS-1 to MS-5) for land classification, which directed the Forest Service, Bureau of Land Management, and National Park Service to classify their lands according to critical habitat, i.e., lands determined as essential for the recovery of grizzly bears. These classifications resulted in a radically different approach to land management; a paradigm shift that deemphasizes management of federal public lands as a multi-use resource and focuses more on single-outcome management. For example, in MS-1 classified lands, land management direction in the Guidelines (IGBC, 1986) was mandated as:

> *"...grizzly-human conflict minimization will receive the highest management priority. Management decisions will favor the needs of the grizzly bear when grizzly habitat and other land use values compete. Land uses which can affect grizzlies and/or their habitat will be made compatible with grizzly needs or such uses will be disallowed or eliminated."*

Although MS-2 allowed agencies to maintain ongoing land use practices (e.g., grazing or timber harvest), the Interagency Grizzly Bear Committee also directed agencies to "upgrade" MS-2 classified lands to MS-1 status if such lands are deemed critical for grizzly bear recovery (IGBC, 1986).

Once the Guidelines (IGBC, 1986) MS-1 and MS-2 classifications were incorporated in Forest Service management plans from 1986 to 1996, actions were initiated to close or phase out livestock grazing allotments, specifically sheep grazing allotments. The targeted approach on sheep grazing was based on a series of publications in the 1970s and 1980s, where actual and assumed conflicts between grizzly bears and sheep led to a final interpretation by the Interagency Grizzly Bear Committee that sheep production and grizzly bear recovery may not be compatible (for detailed discussion, refer to the Grizzly Bear Compendium, IGBC, 1987). The Interagency Grizzly Bear Committee stated in the Guidelines:

> *"On sheep allotments where grizzly-livestock depredation has been authenticated, adjustments will be made for the primary purpose of grizzly bear conservation. The following options are available: (a) change the season of use, bedding practices, or grazing area to avoid known problem areas or other habitat important to grizzlies in time and space; (b) change the class of livestock from sheep to cattle if the range is suitable for cattle; or (c) remove all livestock and close the allotment. Vacant sheep allotments will not be restocked with sheep."*

As already acknowledged, reasons for the decline in the US sheep inventory is the result of a multitude of factors. However, implementation of the Guidelines (IGBC, 1986) Management Situations in subsequent Forest Service land management plans resulted in direct closure or voluntary permit forfeiture of many public land sheep grazing allotments. As the federal agencies that manage sheep grazing allotments began to implement the Guidelines (IGBC, 1986) management actions, large sheep operations around the Greater Yellowstone Area dwindled accordingly from 64 operations in 1978 to 18 operations in 2012 (Fig. 2; NASS, 1978, 1982, 1987, 1992, 1997, 2002, 2007, 2012).

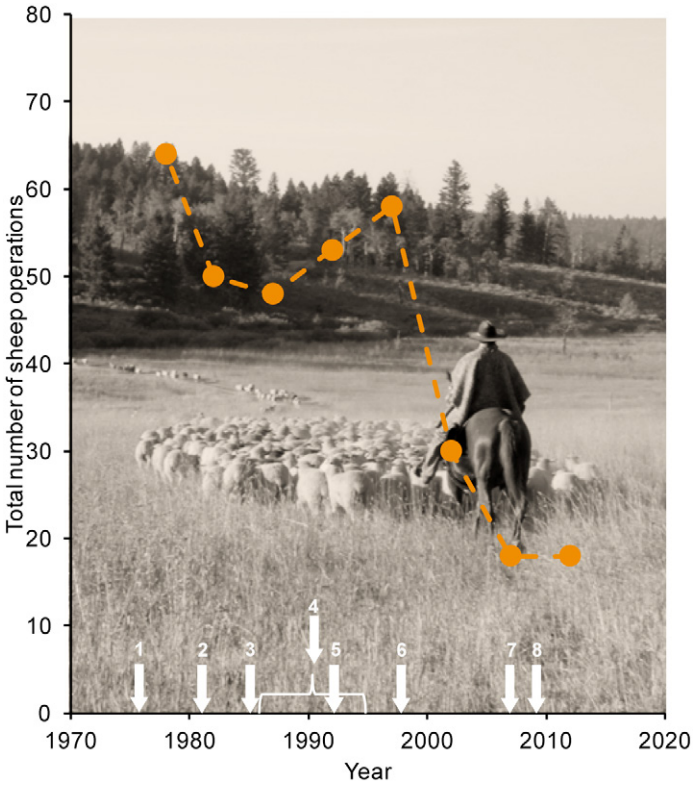

Figure 2. Number of large sheep operations (>1,000 sheep) in selected counties of Wyoming, Montana, and Idaho that are within or near the Greater Yellowstone Area (NASS, 1978–2012). Arrows with numbers indicate: (1) listing of grizzly bears as threatened, 1975; (2) publication of the Grizzly Bear Recovery Plan, 1982; (3) publication of the Interagency Grizzly Bear Committee Guidelines, 1986; (4) implementation of the Guidelines in federal agency land management plans for the Greater Yellowstone Area, 1986 to 1997; (5) publication of the first revised Grizzly Bear Recovery Plan, 1993; (6) publication of the Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests– Final Environmental Impact Statement, 1996; (7) grizzly bears are delisted, 2007; and (8) federal court ruling reinstalled listing of grizzly bears, 2009.

In addition to closing or modifying public land livestock grazing allotments, federal land management agencies also implemented management changes that affected many other public-use activities such as timber harvest, road development, mining, and recreation. To reiterate, these actions are a paradigm shift in how western US public lands have been managed. A shift from multi-use landscapes, which yielded life-essential raw products (e.g., food, fiber, lumber, and mineral) that benefited all US citizens to a limited-use landscape with land management plans constructed to focus on a single outcome. But this raises some questions: Can grizzly bear recovery exist on a multi-use landscape? And can former multi-use public land activities in the GYA be returned to the landscape now that GYA grizzly bears have exceeded (USFWS, 2007, 2011a) the recovery goals? Unfortunately, this may not be the case, especially for livestock grazing.

Figure 3. Geographical location of the USDA US Forest Service National Forests in Region 4 (Intermountain).

Various special-interest groups have engaged in a number of litigation efforts against federal agencies to expand agency policies/regulations as broad legal authority to institute recent land management transitions in perpetuity. For example, interpretations of the Endangered Species Act of 1973 no longer require the imminent or inevitable extinction of a species as necessary to list a species as threaten or endangered. The definition of "critical habitat" has been expanded from its statutory and regulatory definition, which was land areas "currently occupied" and containing "essential primary constituent elements" necessary for breeding, shelter, and feeding for a listed species, to include "unoccupied areas" and "man-made structures," such as a livestock tank (i.e., water development; USFWS, 2012). Such all-encompassing interpretations provide uninhibited expansion of land management policies and regulations that can be used to permanently halt livestock grazing and other resource-important uses of public lands.

The GYA grizzly bear population has increased amazingly since 1983, reaching and exceeding the recovery goals as defined by the US Fish and Wildlife Service (USFWS, 2007, 2011a). Sheep conflict-related mortalities of grizzly bears in the GYA accounted for only 1.8% (three grizzly bear mortalities over 10 yr) of the 214 grizzly bears that died or were removed during 1998 through 2007; the classification as sheep-conflict-related was less than any other group classification of mortality causes (IGBT, 2009). The leading causes of mortalities were backcountry recreational activities (e.g., camping, hunting, and poaching) and human-infrastructure interface conflicts (e.g., residential, roads, and front-country), which accounted for 32.2% and 28.0%, respectively (IGBT, 2009). Nevertheless, closure of remaining sheep grazing allotments on an opportunity basis remains a primary focus, regardless of the actual low rates of grizzly bear mortalities attributable to sheep production and the recovery of grizzly bears beyond recovery goals for the GYA.

Tools of Litigation to Manipulate Public Land Management

Anti-grazing, special-interest organizations have effectively used the US judicial system to eliminate livestock grazing on western US public lands. Such litigation is not limited to issues involving the Endangered Species Act of 1973. In fact, lawsuits have been filed against federal land management agencies to increase species-of-interest that are regularly hunted for sport in North America, such as the bighorn sheep (Ovis canadensis). These lawsuits are generally focused on assumed or actual technical errors in federal land management plans. One may assume that this would be a costly process for the plaintiffs. However, these groups leverage the Equal Access to Justice Act of 1980 as a means to fund their efforts. Under the Equal Access to Justice Act of 1980, a court must award "reasonable" attorney fees to a prevailing party unless the court finds that the position of the US government was "substantially justified or that special circumstances make an award unjust" (USC, 2015). This has evolved into a never-ending source of funding that facilitates the "recycling" of lawsuits against federal agencies. Multiple organizations may use previous litigation documents (record of filing) as templates to facilitate the repeating of similar or identical lawsuits against the same or different federal agencies.

The constant barrage of lawsuits against federal land management agencies becomes troublesome, costly, and many times overwhelming. In attempts to reduce the burden, federal agencies increasingly entertain settlement agreements to avoid the full litigation process. In some cases, these legal settlements may be negotiated outside of the public realm, or more specifically, without input from the elected Congress or the public and stakeholders that are affected by the subsequent terms of agreement. This type of litigation process has become a common venue for special-interest groups, small parties, or individuals to bypass the elected branches of the US government (legislative and executive) to manipulate land management policies. For example, the US Fish and Wildlife Service recently settled litigation cases with environmental-based organizations to avert a large number of similar petition-related lawsuits (USFWS, 2015). The terms of settlement required the US Fish and Wildlife Service to review numerous species for listing under the Endangered Species Act of 1973 within a short period of time. Although the US Fish and Wildlife Service stated that the settlements would, "…give states, stakeholders, and the public much-needed certainty," the plaintiffs continue to file related suits and petitions that undermine the settlement terms of agreement (USFWS, 2011b). Such persistence suggests that the plaintiffs' goal may not be to simply correct technical errors, but rather rewrite whole land/species-management policies according to their specific agenda.

The Domestic Sheep-Bighorn Sheep Dilemma and Public Land Management

Although neither threatened nor endangered, bighorn sheep populations in the western US have declined, raising concerns among wildlife

Trailing sheep near the Caribou-Targhee National Forest (Photo: Cody Hiemke).

enthusiasts, hunters, and livestock producers about bighorn sheep long-term viability. One of the factors thought to be related to the population decline in bighorn sheep is the periodic die-offs seen in some herds. In an effort to increase bighorn sheep populations on federal public lands, environmental/wildlife-based organizations sued the Forest Service for failure to adhere to the National Forest Management Act of 1976 (US D Idaho, 2007). The plaintiffs argued that the Forest Service decision to continue grazing in the Hells Canyon and Salmon River regions of the Payette and Nez Perce National Forests threatened the "viability and sustainability" of bighorn sheep in the forests, thus violating the "implementing regulations" of the National Forest Management Act of 1976 and by presumably not maintaining "minimum viable populations" of all vertebrate species. In 2010, the Forest Service issued a Record of Decision (USFS, 2010) that permanently closed 70% of the sheep grazing allotments on the Payette National Forest (Fig. 3). However, due to congressional appropriations rider (Public Law, 2012), the Forest Service did not fully implement the 2012 phase of the plan, which resulted in another lawsuit. In addition, livestock producers sued to the Forest Service over the decision as well, which the court subsequently ruled against. Embattled with litigation, the Forest Service apparently entered into a "collaborative negotiation" with anti-grazing advocates "in lieu of litigation on nine additional Forests containing known BHS [bighorn sheep]/domestic sheep intersections." (USFS, 2014). This negotiated agreement resulted in the rapid and immediate effort to apply the "Payette Model" to sheep allotments throughout Region 4 of the US National Forests (Fig. 3), where bighorn sheep populations may intersect with sheep grazing allotments. Similar to the situation concerning grizzly bear recovery, this further illustrates the use of federal policies/regulations, brought about by litigation, as broad legal authority to institute perpetual land management changes without regard for current land-use activities and without input from the stakeholders or elected US Congress.

The Forest Service is currently moving to a bighorn sheep-focused framework (USFS, 2014) to implement the Payette Model on US National Forests throughout Region 4 (Fig. 3). The targeting of domestic sheep allotments is based on models that presume the mere presence of domestic sheep grazing is the source of bighorn population decline. Contrary to the Forest Service proposed action to remove/minimize domestic sheep grazing on public land, the Forest Service has stated that it doesn't necessarily support actions to remove domestic sheep grazing. For example, in a risk assessment document-for-comment concerning bighorn sheep and domestic sheep grazing allotments in the Rio Grande National Forest (USFS, 2015), the Forest Service states:

> *"Local information suggests that disease outbreaks of every 32 yr or less would result in a bighorn sheep population that is being constantly exposed to ongoing disease transmission and resultant outbreaks… A disease event occurring within a Rio Grande NF bighorn herd every 32 yr or less would result in a*

High Risk to bighorn sheep long term viability and a Low Probability of Population Persistence and Viability as evidenced from several local herds… A rating of 'High' risk indicates that contact between domestic sheep and bighorn sheep is thought to be likely in the immediate future, although disease transmission resulting in a subsequent bighorn mortality event is not assumed to be a certainty. Conversely, if allotments have been operated for many years without evidence of disease transmission, we do not use this observation to infer a lower risk rating. The fact that contact has not been observed, or a bighorn disease event has not been detected, does not imply a lower risk for such events happening in the future. For this reason, the allotment could still receive a rating of 'High' risk."

Likewise, in a Final Environmental Impact Statement (BLM, 2013), the Bureau of Land Management (Tres Rios Field Office) and Forest Service (San Juan National Forest) state:

"…a primary issue related to the management of bighorn sheep on the SJNF and TRFO involves the potential for bighorn sheep to contract diseases, possibly leading to bighorn mortality events, after individual bighorns come into physical contact with domestic sheep or goats. As stated previously, there have been no confirmed cases of disease transmittals from domestic sheep to bighorns and no documented mortality events of native bighorns on the SJNF or TRFO. There is, however, strong circumstantial evidence of one bighorn mortality event on the SJNF involving exclusively translocated bighorns in 1988. All currently active domestic sheep allotments that are stocked annually on the SJNF have been stocked since the 1980s, and most have remained in their current allotment configurations since. Bighorn sheep summer use areas have also remained relatively consistent since the 1980s, with the exception of S-71, the West Needles Herd, which was established by releases in the Animas River Canyon between 2000 and 2003."

Neither the Forest Service nor Bureau of Land Management are mandated to manage for zero risk/zero tolerance when looking at species viability, calling into question the statutory authority for implementing regulations that favor species viability over domestic livestock grazing. Nonetheless, processes to close federal sheep grazing allotments in proximity to bighorn sheep populations continue based on controversial science and models and litigation pressure.

Future of Livestock Grazing on Public Lands in the Western US?

US public lands are being transitioned away from a landscape of multiple uses and toward what is presumed to be a "natural pristine" state. The persistent pressure, brought about by burdensome litigation, on federal land management agencies to halt livestock grazing on federal public lands is undermining livestock production in the West. Approximately 23% of the US sheep industry is facing imminent loss of public land grazing permits, which will irretrievably alter the many small-business and family-owned sheep operations and the rural communities that rely on the public lands that surround them. Furthermore, by eliminating grazing and other uses of public lands, land managers are fast losing critical management tools to achieve land management objectives, such as improving rangeland and forest health, enhancing wildlife habitat, managing invasive weeds, and mitigating wildfire risk (Tolleson and Meiman, 2015).

Rocky Mountain Bighorn Sheep in the Intermountain West (Photo: Jaci von Struve).

Permanent closure of federal public-land livestock grazing allotments in the western US removes a long-standing component of the US food-security infrastructure. The dependable and sustainable supply of nutritious, high-protein foods from western US livestock enterprises is at risk. Once these agricultural systems disappear, the likelihood of ever returning them to the landscape is minimal given the fact that it took over 100 yr to develop and build the western US livestock industry.

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