

The Role of Livestock in Sage Grouse Decline

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The Greater Sage Grouse (*Centrocercus urophasianus*) is the largest grouse in North America. The grouse is found in sagebrush steppe from Alberta to New Mexico and throughout the Great Basin region of Oregon, Idaho, Nevada, Utah, Colorado and Wyoming. The sage grouse is extirpated from much of its former range and is no longer found in British Columbia, Kansas, Nebraska, Oklahoma, Arizona and New Mexico.

Habitat loss, combined with habitat degradation has led to its decline from a previous estimated population of 16 million to the present 250,000-500,000 across its remaining vast geographical range. Because many of the remaining populations are small and fragmented, the bird's population continues to decline due to random stochastic events like local winter storms that might cause an isolated group to wink out and perhaps as a consequence of genetic issues related to inbreeding depression. The bird is currently under petition for listing under the Endangered Species Act.

The decline of the sage grouse is symptomatic of the overall decline of the ecological health of the sage brush steppe with which it is intricately entwined. In parts of the bird's range, much of the sagebrush habitat in eastern Washington, northern Montana, and parts of Northwest Oregon has been converted to wheat and other agricultural croplands.

In parts of Wyoming, Montana, Colorado and Utah oil and gas development has led to significant habitat fragmentation of the sage brush steppe and thus declines in sage grouse.

In small areas, habitat has also been lost to urban and rural development, wind farms, power line corridors, and other factors.

LIVESTOCK COMMON DENOMINATOR IN DECLINE

But the common denominator in the bird's decline across its entire geographical range is livestock production.

With the exception of the habitat acreage lost to agricultural production, these other factors have only recently become an issue for sage grouse survival. Sage grouse numbers have been falling for decades, long before some of these other factors like oil and gas

development, power lines, wind farms, subdivisions, and so forth were an issue across much of its habitat, however, livestock have been degrading sage grouse habitat for a century or more.

Livestock affect sage grouse at every step of their life history.

LIVESTOCK IMPACTS ON CHICKS

Sage grouse lack a muscular gizzard so can't eat seeds. They must consume soft foods. Although sage grouse depend on sage brush, they also do consume forbs (flowers) insects and perhaps even grasses at certain seasons. In summer months forbs can make up to 40% of the adult diet. Since cattle also eat these same plants, in many areas, cattle are consuming the food that might otherwise sustain sage grouse. In drought years (when competition between cattle and grouse is more intense) sometimes grouse will simply forgo breeding in low nutrition years. By contrast, hens in good nutritional shape will produce more eggs, and healthier chicks. So the mere presence of cattle and sheep grazing sage grouse habitat is literally taking food out of the mouth of sage grouse.

Sage grouse require good grass/forb cover under or near sage brush as hiding cover for nesting habitat to avoid predators. Grazing removes a lot of that cover, making hens vulnerable to predation from coyotes, ravens, and even ground squirrels. In Idaho they are poisoning ravens to "boost" sage grouse numbers—instead of leaving more grass behind to give sage grouse sufficient cover. If the grass cover is good, the hens are less vulnerable to predators.

MICRO CLIMATE FOR NEST AND EGGS

Another impact of grazing on nesting success has to do with micro-climate. Males do not help raise the young or guard the eggs, thus the female must leave periodically to feed. During this time, it's critical for the nest and eggs to have enough cover to moderate the nest environment. Temperatures either too hot or too cold can be disastrous to the eggs. Again livestock grazing often reduces this critical cover component.

Unlike some other "chicken like" birds say pheasant, sage grouse tend to have fewer eggs. They are a long-lived bird, but they can't sustain high nest losses year after year.

IMPACTS ON RIPARIAN HABITAT

After the chicks hatch, they feed mostly on insects and forbs in wet meadows and riparian areas. Forbs constitute up to 50% of their diet for the first 11 weeks. Insects are also important and may be as much as 75% of their diet in the first couple of weeks.

Unfortunately the activity that has destroyed more riparian habitat and wet meadows than any other is livestock grazing. Cattle trample the soils reducing the infiltration of water reducing the physical extent of wet meadows. They break down stream banks creating down

cutting of stream channels which then causes the water table to fall, again reducing the extent of wet meadows or riparian vegetation. Livestock trample springs, and/or ranchers often “develop” springs to water stock, in either case limiting their output which is the source for summer flows in many streams, again reducing the riparian influence.

Livestock are naturally attracted to wet meadows and riparian areas and preferentially graze these areas because high soil moisture increases overall plant production and palatability. Yet the vegetation in these wet meadows and riparian area is critical as hiding cover for chicks so they are not eaten by predators.

This effect of plant cover loss is amplified in drought years to the detriment of grouse. Since lower precipitation means less grass production and cover, chicks are already more vulnerable to predators. But in drought years, wet meadows are especially attractive to cattle which often graze them down to billiard table lawns with no cover for chicks or adult hens.

Yet another way that livestock production has impacted sage grouse is the loss of the best habitat to livestock production. Sage grouse do best on flat to slightly sloping terrain with some streams or wetlands close by. Of course, throughout the West, this is exactly the habitat that has been converted into private ranchlands. Native wet meadows and riparian areas have been destroyed and particularly the low elevation terrain has been converted to alfalfa fields and other exotic grasses. Overall across its vast geographical range this loss of this critical habitat element has reduced sage grouse numbers just as the conversion to wheat fields has negatively impacted the bird.

HABITAT FRAGMENTATION AND FENCES

Sage grouse are vulnerable to habitat disturbance. Sage grouse are weak fliers. They prefer to walk. When there is anything like seeding projects or hay fields, or even a road, it can fragment habitat and make sage grouse either abandon habitat or avoid those areas, even if good habitat may exist beyond the barrier.

One of the linear barriers to sage grouse movement as well as habitat loss throughout sage grouse habit range is fences. A surprising number of sage grouse just fly into fences. A number of studies have documented significant mortality from fences, particularly among young grouse.

Fences also provide perches for avian predators (i.e. golden eagles, hawks, ravens, etc.) that survey the surrounding terrain for sage grouse. Because sage grouse recognize that perches are a predator trap, some studies have shown that grouse avoid fences for up to a half mile on either side of the fence. That means for every mile of fence out there, you are losing a mile wide patch of habitat. Multiply this by all the livestock fences in the West, and you start to understand what a big impact fencing has upon grouse.

Why are there fences all over the open spaces of the West? One reason—livestock.

Of course sage grouse get their name because they eat sage brush most of the year. Without sage brush they starve. Plus sage brush provides cover from predators and thermal cover in winter when there is cold weather. This is particularly important in winter when “wind chill” can greatly increase metabolic demands. Grouse will even burrow into the snow under the branches of sage brush in cold weather. Thus they are sage brush obligates.

SAGEBRUSH CONTROL PROGRAMS

One of the biggest negative impacts on sage brush has been livestock management practices on sage brush itself. In many parts of the West federal agencies like the BLM, FS, etc. have and/or are either spraying herbicides and/or burning it to eliminate sage brush to produce more grasses for livestock to eat. Millions of acres have been impacted. This is less common today than in the past because of the potential listing of sage grouse, but one cannot underestimate how much damage has been done to the grouse over the years by sage brush elimination programs. Unfortunately it still occurs. Sage brush burning proposals designed to increase livestock forage in occupied sage grouse habitat are being implemented across western states.

There are also seeding programs that have had the same effect. The notorious Vale Project in eastern Oregon eliminated millions of acres of sage brush to plant crested wheatgrass, an exotic grass from Russia, that has little value for wildlife, but is grazed by cows. Again why was this done? To increase forage for livestock on the public lands.

CHEATGRASS-FIRES AND LIVESTOCK

One of the threats to sage grouse are range fires burning through sage brush. Wildfires are a natural occurrence and natural process in sage brush habitat, however, over the past few decades, the fire frequency has been greatly accelerated due to the widespread establishment of cheatgrass in the sage brush steppe. Cheatgrass is highly flammable.

Cheatgrass doesn't magically appear and it has a difficult time invading healthy sage brush habitat.

However when sage brush steppe is degraded by livestock grazing, it reduces the competitive ability of the native grasses to compete with cheatgrass. Cattle prefer to graze on the native grasses (hence the name cheatgrass because in the old days ranchers felt “cheated” when cheatgrass replaced the natives). So while the native grasses are grazed and must recover from grazing, the cows largely ignore the cheatgrass.

The second factor in the spread of cheatgrass related to cows has to do with biocrusts. Biocrusts grow on the soil surface in-between the native grasses and sage brush. These soil crusts do several things including reduce soil erosion. But they also prevent the seeds of cheatgrass from getting into the soil. Cheatgrass as an annual plant has small seeds, and if the seed doesn't get roots into the soil quickly they die. Native grasses have large seeds,

and have enough energy to get roots through the crusts. Also since native grasses are long lived—up to 150 years—they only have to get a few seeds into the soil once a century to replace themselves.

By far the worst thing that cattle do is trample the biocrust. And it's important to note that the entire Great Basin did not have large herds of grazing animals like bison in historic times. The plant communities are therefore not adapted to trampling and heavy hooves tearing up the soil.

Worse for range recovery most native grasses require a decade without any grazing at all to begin to recover from a fire, but due to the pressure from ranchers, most rangelands seldom get more than 1-2 years rest before cattle are moved back on to them. This greatly reduces the recovery and favors cheatgrass again.

WEST NILE VIRUS

Another way that livestock has impacted sage grouse has to do with water troughs. In many of the drier parts of the West, ranchers have put out stock tanks to provide water. Stock tanks are good breeding habitat for mosquitoes. Mosquitoes carry West Nile Virus which kills sage grouse. In some populations, as much as 29% of the birds have died from the infection.

INBREEDING

As sage grouse populations decrease, the negative effects of inbreeding regression sets in further eroding the viability of the species. So it may not seem like a big deal if a few breeding leks disappear or there remain some “strongholds” with grouse, keep in mind that grouse are a tournament species, meaning that a relatively few males do the bulk of all breeding. This significantly reduces the genetic diversity in small populations, making them further likely to wink out.

States and Wildlife Agencies are engaged in these so-called “Sage Grouse Working Groups” to avoid listing under the ESA. But, those groups ignore livestock impacts and management that would leave sufficient cover of grasses and forbs in riparian areas and meadows during the summer brood rearing season. Further, these groups are channels for Federal tax dollars to provide more vegetation treatments, more seedings, more range water developments, fences and infrastructure while not addressing the basic problem, overstocking and poor to no direct control over livestock.