

Saving the Sagebrush Sea

Rylee Sharkey - ESS 221 - SUPER

The sagebrush ecosystem is located in the Western United States and is one of the most threatened ecosystems due to the fire-grass cycle (Mahood et al. 2019). Increased fire frequency and invasion by non-native, annual grasses create a cycle of continued fire and invasion that completely changes the vegetation composition of this ecosystem. Once sagebrush systems are invaded, they rarely return to their natural state and many ecological benefits are lost.

Conserving the sagebrush ecosystem is essential for maintaining ecosystem health, biodiversity, Indigenous culture, and natural resources.

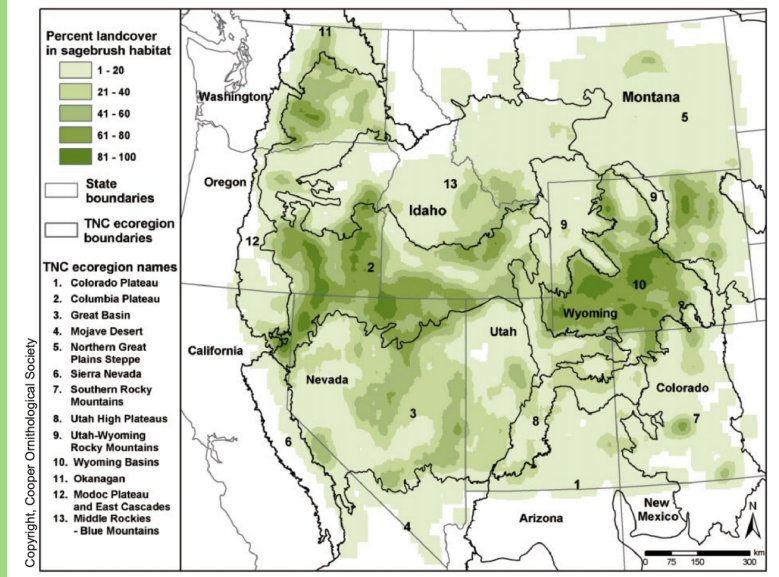
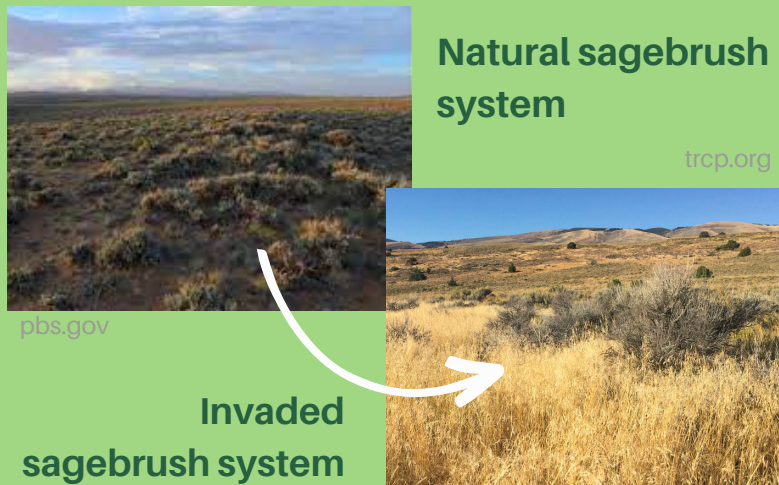


Figure 1: Distribution of Sagebrush in the US
usda.gov



Species Endemic to the Sagebrush Ecosystem:

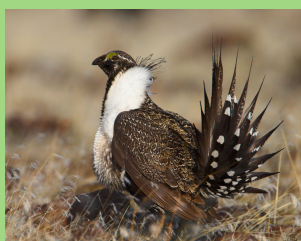
Several species endemic to the sagebrush system are also threatened or endangered due to human infrastructure and habitat loss by wildfire and invasive species.



usda.gov

Big Sagebrush
(*Artemisia tridentata*)

The big sagebrush is the namesake of this ecosystem and provides essential food and shelter for wildlife.



fws.gov

Greater Sage-Grouse
(*Centrocercus urophasianus*)

This species of bird is endemic to the sagebrush and is known for its elaborate mating ritual. The conservation status of this species is "near threatened".



agrillifetoday.edu

Sagebrush Lizard
(*Sceloporus graciosus*)

This lizard is endemic to this ecosystem and relies upon the sagebrush for habitat. This species is considered to be endangered due to decrease in habitat range.



ndow.org

Pygmy Rabbit
(*Brachylagus idahoensis*)

The pygmy rabbit is a near threatened species, conservation-wise, but they are still state protected. They rely upon the sagebrush for food and habitat.

Cultural Value in the Sagebrush Ecosystem:

Indigenous Culture and Significance:

Several Indigenous groups in the Western United States have relied upon the natural resources of the sagebrush ecosystem for spiritual, cultural, and medicinal purposes. (Ryan, 2015) The Indigenous Peoples of The Coahuilla, Hopi, Shoshone, Ute, Paiute, and Tewa people inhabit(ed) the Sagebrush biome. This is a huge motivation to protect the sagebrush for current and future generations.



grist.org



nps.gov



trcp.org

Recreational Significance:

The sagebrush ecosystem provides several opportunities for outdoor recreation in the West, including: hiking, camping, hunting, fishing, wildlife viewing, and more. Recreation within this area encourages conservation efforts and creates a connection between humans and the land. The economic benefits of this ecosystem further protect and educational outreach on how we can better conserve this threatened ecosystem.

How we can conserve the sagebrush biome

Ecological Restoration

Ecological restoration within the sagebrush ecosystem involves the removal of invasive species, the planting of native species, repairing of soil health, and limiting the impacts of habitat fragmentation. Through these efforts, some swaths of sagebrush can be restored back to their natural state. Due to the large extent of this biome, a total restoration would be near impossible as implementing land treatments can actually introduce invasive species into this ecosystem.

Land Management

Several land management strategies are implemented with the goal of conserving the sagebrush biome and reducing the risk of altered fire regime and invasion by non-native annual grasses. Fuel breaks are one management treatment that remove or reduce fuels to decrease the risk of fire spreading into intact swaths of sagebrush. My research concluded that fuel breaks are not the most effective management plan at low elevation sagebrush sites as they can increase risk of invasion. Other management techniques include responsible grazing practices, mindful recreation, and limited natural resource extraction.

Education & Outreach

Educating and engaging the public on sagebrush ecosystem conservation can help spread the word about the threatened state of this biome. Public education campaigns, citizen projects, volunteer opportunities, and recreation are various ways for people to become involved in the conservation of the sagebrush ecosystem. Raising public awareness and admiration of this ecosystem are great ways to ensure support for future sagebrush conservation efforts.



Citations:

Mahood, A. L., & Balch, J. K. (2019). Repeated fires reduce plant diversity in low-elevation Wyoming big sagebrush ecosystems (1984–2014). *Ecosphere*, 10(2). <https://doi.org/10.1002/ecs2.2591>
Ryan, T. (2015). Sagebrush: Icon of the west. Montana Natural History Center. Retrieved April 9, 2023, from <https://www.montanaturalist.org/blog-post/sagebrush-icon-of-the-west/>