



Project Title: Developing Plants of the Sagebrush Ecosystems for Greater Sage-Grouse Conservation

Headline Title (2-5 words): Bureau of Land Management & Sagebrush Conservation

Brief Summary (Abstract): The greater sage-grouse is a candidate for listing by the U.S. Fish and Wildlife Service under the Endangered Species Act (ESA). Greater sage-grouse are dependent on sagebrush-dominated habitats, using sagebrush itself and other native plants for cover and food. Once seen in great numbers across sagebrush landscapes of the West, greater sage-grouse have declined over the past one hundred years because of the loss, degradation, and fragmentation of sagebrush habitats essential for their survival. The Bureau of Land Management (BLM) manages more habitat for greater sage-grouse than any other landowner and will therefore face significant management challenges and recovery responsibilities if the species is listed under ESA. Native plant materials, including seeds and seedlings, are needed for successful restoration of the plant communities that support the greater sage-grouse. The BLM's Native Plant Materials Development Program is working across all western ecoregions to ensure that appropriate native plant materials are available for greater sage-grouse habitat restoration.

Project Location: Greater sage-grouse habitat across the western United States.

Partners: The BLM is leading the Native Plant Materials Development Program; however, partnerships are vital to getting work done. Among the partners in the Program are other federal agencies, state, tribal and local governments, nongovernmental organizations and private industry. (eg. USDA Forest Service, University of Utah Rio Mesa, Shoshone Paiute, Truax Company, and BFI Native Seeds)

Background: A study conducted by Alan Sands and Ann Moser for the Idaho Department of Fish and Game examined Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*), from thirteen geographic locations that were planted at the Glens Ferry Shrub Plot in 1987. In 2010, the percent survival showed stark differences between the multiple seed sources; the Glens Ferry sourced seed performed much better than seed from different latitudes, longitudes and elevations. The management implications from this study suggest that use of locally adapted sagebrush seed or plant materials for restoring sagebrush ecosystems is very important to long-term success and conservation of greater sage-grouse.

In order to have locally adapted seed or plant materials available for sage-grouse habitat restoration, the Native Plant Materials Development Program works with partners to take desired species through a multistep process to collect, research, and increase various species. Native plant materials can take up to 10-20 years to develop commercially available seed crops from wildland seed collections. There are many steps in the process including:

- **Seed Collection.** The Seeds of Success program is working to capture genetic variation from populations of native plants including sagebrush. From 2001 to 2013, Seeds of Success has made



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over 2,200 native seed collections within greater sage-grouse general habitat (1,020 collections) and priority habitat (1,211 collections) areas.

- **Evaluation and Development.** Researchers use collected seed to conduct studies about species' biology, underlying adaptive genetic diversity, and basic agricultural needs.
 - The Great Basin Native Plant Project is conducting studies with researchers from over 25 institutions. Surprisingly little is known about most native plant species, so this stage is often critical to guide effective species restoration.
- **Production.** It takes time to multiply the amounts of seed so that there are enough native plant materials for commercial availability. This process involves many different partners such as USDA Natural Resource Conservation Service's Plant Materials Centers and private growers.
 - For example, the Institute for Applied Ecology has partnered with the BLM to improve habitat for greater sage-grouse by engaging state and federal correctional facilities in the production of sagebrush for habitat restoration. A protocol is being developed for working with correctional facilities to grow locally sourced plants to support restoration of greater sage-grouse habitat. This project has the potential to engage 24 correctional facilities across ten states throughout the range of the greater sage-grouse. A pilot project to produce 10,000-20,000 sagebrush plants annually is underway at the Snake River Correctional Facility in eastern Oregon, and the plants grown at this facility will be planted into a site recently damaged by wildfire on nearby BLM lands. The pilot project will inform the protocol and demonstrate the potential for this innovative approach to contribute to greater sage-grouse recovery.
- **Habitat Restoration.** The ultimate goal of the BLM's Native Plant Materials Development Program is to facilitate the development of material to restore resilient native plant communities and habitat. Restoration practices benefit from incorporating genetic considerations and using research to choose the best seed source, seed mix, and restoration technique to maximize appropriate genetic variation and population size, thus ensuring successful habitat restoration in a changing climate.

Project Goals:

Goal 1: Collect wildland native seed in sage-grouse habitat for research, development, germplasm conservation, and ecosystem restoration.

Goal 2: Support research that will provide information needed for production of native plant materials for sage-grouse habitat restoration and inform management of methods for successful restoration.

Goal 3: Restore resilient native plant communities that provide sage-grouse habitat.

Strategy Goals Implemented:

Goal 2: Manage species and habitats to protect ecosystem functions and provide sustainable cultural, subsistence, recreational, and commercial use in a changing climate. Using native seed and information



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on how to conduct successful restoration contributes to reducing habitat degradation and fragmentation for sage-grouse. Healthy native plant communities are more resilient to pressures such as climate change and will better support the sage-grouse population.

Goal 3: Enhance capacity for effective management in a changing climate. The scientific studies done under the native plant materials development program, such as the sagebrush study, will allow management to make more informed decisions and increase the chance of successful restoration of sage-grouse habitat.

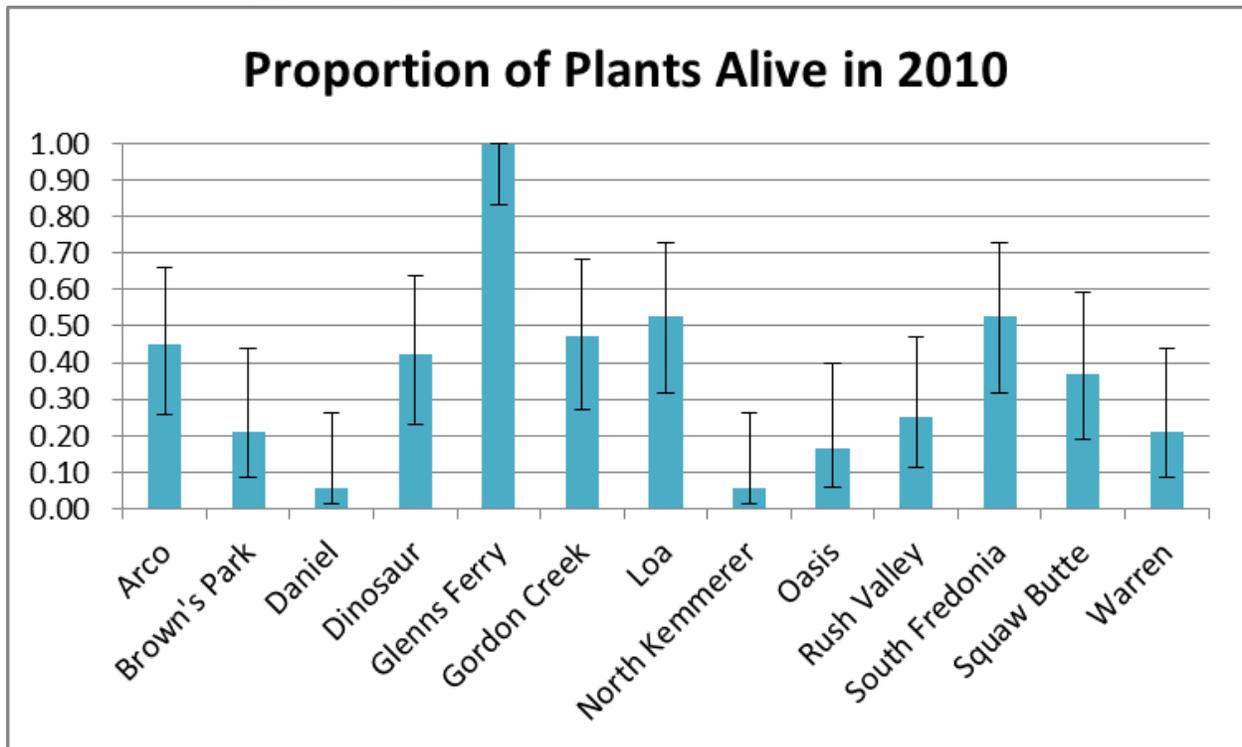
Climate Impacts Addressed: Using the plant materials and information gained from the Program would successfully restore native plant communities in a genetically appropriate manner to support resiliency to climate change while providing habitat for wildlife.

Status of Project Implementation (Timeline, Milestones, Next Steps): Seed collecting and research projects are on-going for the Program. Implementation of information gained from the research into the decision-making process, and subsequent decisions, is at the discretion of BLM Offices that manage land with greater sage-grouse habitat.

Project Outcomes: The intent of the Program is to increase the quality and quantity of native plant materials available for restoring and supporting resilient ecosystems including sage-grouse habitat. The information gained from associated research will also enhance methods for successful restoration by land managers in areas with sage-grouse habitat.

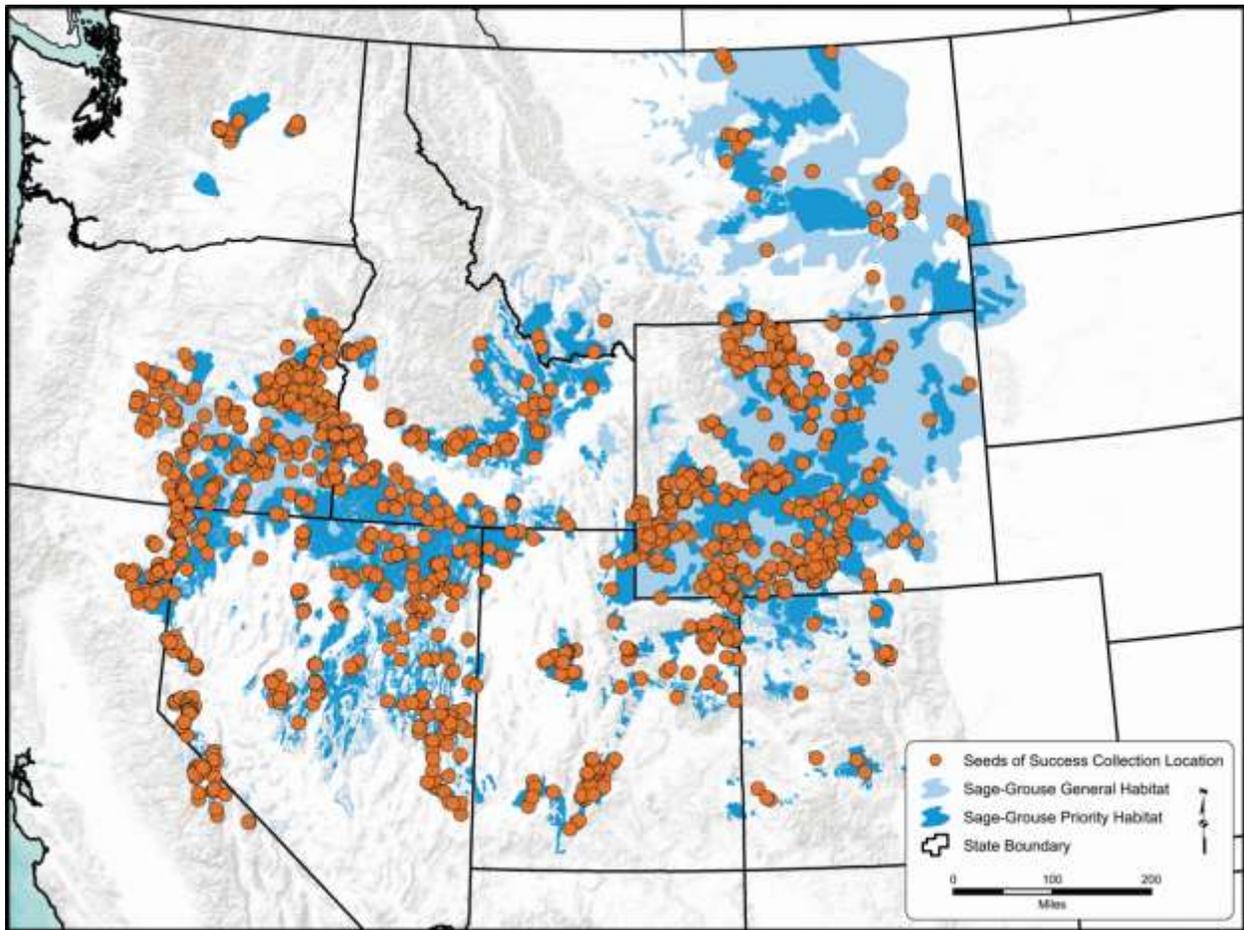
Funding Sources: Native plant materials development for sagebrush habitat is funded through the BLM's Plant Conservation Program. In addition to that funding, partner organizations provide matching funds.

Photos/Attachments:



Photo/Figure Credits (do we have permission to print): Sands, Alan, and Ann Moser. 2013. Welch WY Big Sagebrush Shrub Plot Documentation. Sage Wildlife Consulting Services, LLC, Boise, ID. 7 p. Report prepared for the Idaho Department of Fish and Game. (Permission granted for graph use)

Suggested Photo Caption: 2010 percent survival and confidence interval of 13 different accessions of Wyoming big sagebrush planted in 1987, Welch Shrub Plot, Glenns Ferry, ID.



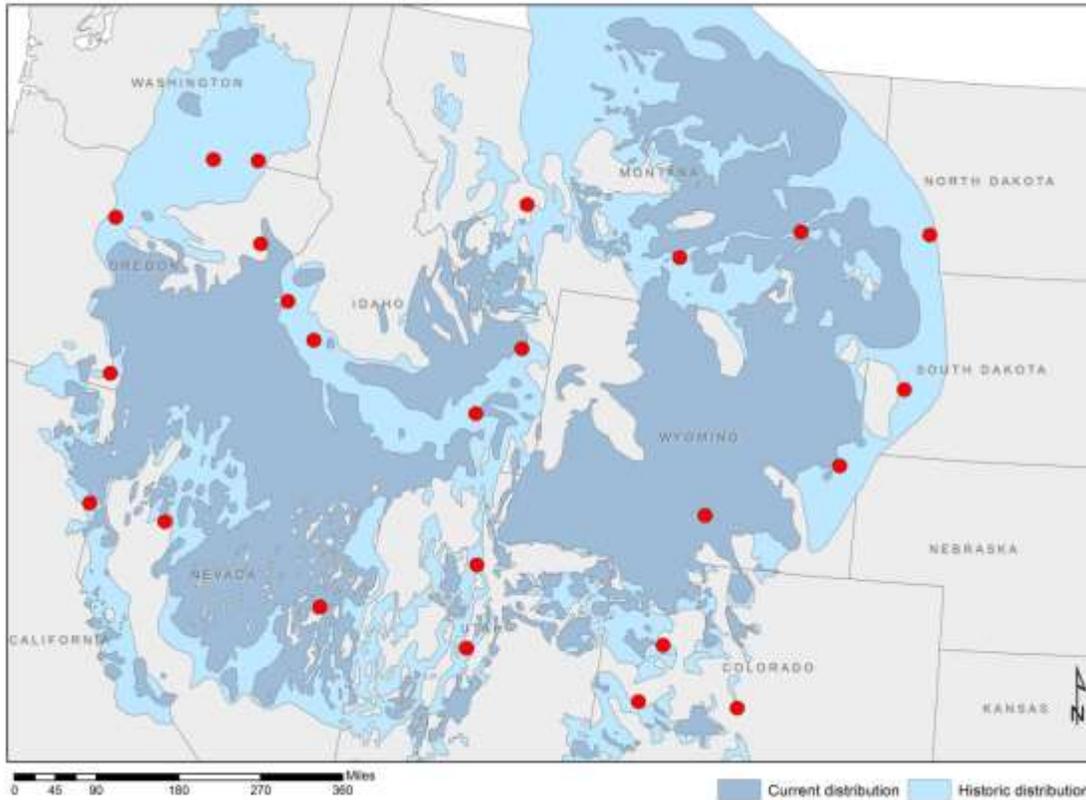
Photo/Figure Credits (do we have permission to print): Map by the Bureau of Land Management. (Permission granted for map use)

Suggested Photo Caption: Seeds of Success collections in Greater Sage-Grouse General and Priority Habitat areas from 2001-2013. Collecting teams are continuing to sample the genetic diversity of sagebrush and other native plants that support wildlife.



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Sustainability in Prisons Project: Overlay of Sagegrouse habitat and prison facilities



Photo/Figure Credits (do we have permission to print): Greater Sage-Grouse distribution from USGS. Map by the Institute for Applied Ecology. (Permission granted for map use)

Suggested Photo Caption: Current distribution of Greater Sage-Grouse with locations of state and federal correctional facilities.



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Photo/Figure Credits (do we have permission to print): BLM Montana State Office (Permission granted for photo use)

Suggested Photo Caption: BLM's Montana State Office works with Special K Ranch in Columbus, Montana to grow out Wyoming Big Sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) seedlings for use in wildlife enhancement and disturbance rehabilitation projects.