

7. Habitat Enhancement					
ISSUE 7.1	Improper design or implementation of vegetation enhancement treatments may not meet habitat objectives and may lead to degraded GrSG habitats.				
OBJECTIVE 7.1.1	Conduct proper planning for sagebrush, riparian, and wet meadow restoration and improvement projects that provide the structural habitat requirements in breeding, summer-fall, and winter sage-grouse habitats.				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
7.1.1.1	Identify the sage-grouse habitat treatment objective(s) in a given population, sub-population, or population zone area, and review annually (see CCP Appendix A, "GrSG Structural Habitat Guidelines").	BLM, CPW, LWGs, NRCS, Private Landowners, SLB, USFS, USFWS	When project is proposed	CPW: General - Population scale habitat treatment objectives are in an early state, but project level identification of these objectives occurs routinely. CPW has hired a sagebrush steppe habitat coordinator who is beginning work to identify these population-wide objectives, starting in portions of the NWCO population. NP - CPW, BLM, NRCS, USFS and USFWS work with Owl Mountain Partnership and NP HPP to implement habitat improvement projects on private and public lands in NP. GrSG habitat requirements are considered when planning habitat improvement projects in NP.	The multiple parties listed here are reconsidering the effectiveness of sagebrush treatment projects as a GrSG habitat enhancement project in NP.
7.1.1.2	Identify the ecological site characteristics and sagebrush species associated with the project area in GrSG habitat.	BLM, CPW, LWGs, NRCS, Private Landowners, SLB, USFS, USFWS	When project is proposed	CPW: General - CPW and BLM identify the ecological site characteristics associated with projects in GrSG habitat. CPW and BLM attempt to identify the sagebrush species for projects in GrSG.	Strategy complicated due to the presence of sagebrush hybrids throughout much of Colorado GrSG habitat.
7.1.1.3	Consult Monsen (2005), and select appropriate treatment options suitable for the site characteristics and treatment objectives in GrSG habitat.	BLM, CPW, LWGs, NRCS, Private Landowners, SLB, USFS, USFWS	During project planning	CPW: General - Monsen (2005) and/or other valid treatment references are consulted by CPW biologists during treatment planning to determine appropriate treatment methods. CPW landscape scale treatment planning (Sagebrush Biome Habitat Coordinator) will also include assessments of the most appropriate treatment methodologies for areas of GrSG habitat.	
7.1.1.4	Conduct pre-project planning for treatment areas in GrSG habitat (e.g., project design, necessary archaeological clearances, EAs).	BLM, CPW, LWGs, NRCS, Private Landowners, SLB, USFS, USFWS	During project planning	CPW: General - Project pre-planning is a routine part of project level planning in GrSG habitat. Portions of NWCO and PPR have accomplished programmatic NEPA clearances for GrSG habitat activities (e.g., PJ removal), expediting project level planning. NWCO - Project planning and necessary clearances have been conducted for numerous PJ removal projects in Management Zones 5, 6, and 7. MP - Project planning was conducted prior to the PJ removal project completed summer 2012 on private lands. CPW, NRCS and FWS worked to identify the project boundaries, develop contract, and flag work areas. PPR - This is done by BLM to clear BLM lands for PJ treatments as a joint effort with CPW. NP - CPW, BLM, NRCS, USFS and USFWS work with Owl Mountain Partnership and NP HPP to implement habitat improvement projects on private and public lands in NP. The project proponents conduct the pre-project planning for treatment areas. NESR - CPW, BLM, NRCS, USFS and USFWS implement habitat improvement projects on private and public lands in NESR. The project proponents conduct the pre-project planning for treatment areas.	

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
7.1.1.5	Encourage and strongly support development of production and storage of native seed in Colorado, including native seed banks, for use in reclamation efforts in GrSG habitat (see also “Fire and Fuels Management” strategy 4.1.4.7.) Work cooperatively with the Uncompahgre Project (UP), Upper Colorado Environmental Plant Center (UCEPC), and other entities in the development and storage of native seed for restoration purposes.	BLM, CPW, LWGs, NRCS, SCDs, SLB, UCEPC, UP, USFS, USFWS	Ongoing	Upper CO Environmental Plant Center has conducted 8 Replicated Field Evaluation Plantings in CO since 2004. Intended to identify which native plants are most easily established. Some have been subsequently released as formal products to the commercial seed industry for reclamation. CPW: CPW completed the Seed Warehouse in Delta in 2012 as a storage repository for native seed to be used on habitat enhancement/restoration projects in western Colorado (e.g., rehabilitation of the 2012 Pine Ridge Fire on the SW side of PPR. Through multiple partners, a variety of native collections are being developed and the propagation of native species by commercial growers is continuing.	
7.1.1.6	When reseeding an area in GrSG habitat, use certified "weed-free" seeds (see “Fire and Fuels Management” strategy 4.1.4.8 and “Weeds” strategy section, pg. 425).	BLM, CPW, LWGs, NRCS, SCDs, SLB, UCEPC, UP, USFS, USFWS	Ongoing	Upper CO Environmental Plant Center develops, produces, sells and promotes the use of certified seed. Available since 1975. CPW: CPW recommends and uses certified weed free seed when possible. The CPW native seed storage facility should help with this action by providing storage for appropriate seed stocks. BLM, USFS, and NRCS require certified "weed-free" seeds on many projects.	
OBJECTIVE 7.1.2 Conduct and monitor restoration for improvement of the vegetation structural habitat requirements necessary for productive breeding, summer-fall, and winter sage-grouse habitats.					
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
7.1.2.1	Conduct pre-restoration monitoring using a recognized technique appropriate to measure the treatment objective(s) in GrSG habitat (see “Habitat Monitoring” strategy, pg. 354 and CCP Appendix C, “Habitat Monitoring Protocol”).	BLM, CPW, LWGs, NRCS, Private Landowners, SLB, USFS, USFWS	During project planning	CPW: General - Standardized monitoring of GrSG habitat enhancement projects is still in development, but is being increasingly implemented for individual projects. CPW's Sagebrush Steppe Habitat Coordinator will assist with developing standardized monitoring protocols for CPW projects. MP - Conducted presence/absence surveys prior to the PJ removal treatment completed in 2012. PPR - BLM and CPW conducted veg transects in GrSG habitat before a prescribed burn was implemented. NP - CPW, BLM, NRCS, USFS and USFWS work with Owl Mountain Partnership and NP HPP to implement habitat improvement projects on private and public lands in NP. Pre-treatment monitoring transects have been conducted at the majority of sagebrush habitat enhancement projects in NP. NESR - Pre-treatment habitat measurement data are available for a small portion of the vegetation enhancement projects in NESR. However, only before photos are available for most of the PJ projects.	

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
7.1.2.2	Implement the appropriate treatment/restoration action(s) in GrSG habitat (Monsen 2005).	BLM, CPW, LWGs, NPS, NRCS, Private Landowners, SLB, USFS, USFWS	Project specific	<p>NRCS: completed 8 conservation plans in GSG habitat that meet criteria of NRCS Conference Report. Completed through EQIP.</p> <p>CPW: General - Numerous treatment projects have been completed in GrSG habitat since 2004, including control of PJ encroachment, restoration of agricultural lands to suitable habitat, development of wet meadow sites, wildfire restoration/seeding, and understory restoration (reference number and acreage of treatments from table). NWCO - PJ removal projects have been completed in management zones 5, 6, and 7. MP - A GrSG habitat site with encroaching PJ at stage 1 and 2 was treated to remove PJ in the summer of 2012. NP - CPW, BLM, NRCS, USFS and USFWS work with Owl Mountain Partnership and NP HPP to implement habitat improvement projects on private and public lands in NP. GrSG habitat requirements are considered when planning habitat improvement projects in NP. The multiple parties listed above are reconsidering the effectiveness of sagebrush treatment projects as a GrSG habitat enhancement project in NP. NESR - CPW, BLM, NRCS, USFS and USFWS implement habitat improvement projects on private and public lands in NESR. GrSG habitat requirements are considered when planning habitat improvement projects in NESR.</p> <p>See Appendix A: Habitat Treatments See Appendix B: Summary of Expenditures on GrSG in Colorado 2006-2012</p>	NRCS: 3,000 acres of private land in GSG habitat now in compliance with NRCS / USFWS Conference Report.
7.1.2.3	Monitor vegetation response to treatments in GrSG habitat using appropriate monitoring technique and timing for the treatment type (see "Habitat Monitoring" strategy, pg. 354 and CCP Appendix C, "Habitat Monitoring Protocol").	BLM, CPW, LWGs, NPS, NRCS, Private Landowners, SLB, USFS, USFWS	Post-treatment + every 5 years	<p>CPW: General - Standardized monitoring of GrSG habitat enhancement projects is still in development, but is being increasingly implemented for individual projects. CPW's Sagebrush Steppe Habitat Coordinator will assist with developing standardized monitoring protocols for CPW projects. NP - CPW, BLM, NRCS, USFS and USFWS work with Owl Mountain Partnership and NP HPP to implement habitat improvement projects on private and public lands in NP. Post-treatment monitoring transects have been conducted at several of the sagebrush habitat enhancement projects in NP. NESR - Post-treatment photos are available for the PJ projects in NESR. Post-treatment vegetation measurements are generally not available. MP - not completed.</p>	

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
7.1.2.4	Evaluate the effectiveness of vegetation enhancement treatments on GrSG. [See Research Strategy 21.1.2.1]	BLM, CDA, CPW, LWGs, NRCS, Private Landowners, UCEPC, USFS, USFWS, USGS	Begin by 2015	CPW: General - Project level effectiveness in achieving vegetative goals can be determined by project monitoring. Systematic assessment of vegetation enhancement treatments, particularly their effect on GrSG populations will require a research project designed and funded to assess specific vegetation and/or GrSG objectives and exceeds the capability of local field studies. PPR - CPW/BLM PJ removal research by CPW Researcher B. Walker is using pellet transects to determine change in GrSG occupancy after treatment to assess effectiveness. NP - CPW, BLM, NRCS, USFS and USFWS work with Owl Mountain Partnership and NP HPP to implement habitat improvement projects on private and public lands in NP. GrSG habitat requirements are considered when planning habitat improvement projects in NP.	The multiple parties listed here are reconsidering the effectiveness of sagebrush treatment projects as a GrSG habitat enhancement project in NP. CPW is currently determining whether NP GrSG telemetry data can be used to evaluate the effectiveness of vegetation treatments on GrSG in NP.