

6. Grazing					
<b>Issue 6.1</b>	Lack of understanding of relationships among herbivory, GrSG populations, GrSG habitat				
<b>Objective 6.1.1</b>	Research - herbivore direct effects on GrSG				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.1.1.1	Conduct a literature review of herbivores and their effects on sage-grouse. <b>[See Research Strategy 21.2.1.1; see also <a href="http://sagemap.wr.usgs.gov/">http://sagemap.wr.usgs.gov/</a> for a recently completed literature review]</b>	BLM, CPW, Universities	Begin by 2020	<b>CPW:</b> Beck and Mitchell, 2000. Influences of livestock grazing on sage-grouse habitat. Wildlife Society Bulletin 28:993-1001. Cagney et al. 2010. Grazing Influence, Objective Development, and Management in Wyoming's Greater Sage-Grouse Habitat. BLM report.	
6.1.1.2	Evaluate the effects of herbivores on GrSG (e.g., nest trampling, changes in GrSG behavior, also positive effects). <b>[See Research Strategy 21.2.1.1]</b>	BLM, CPW, Universities	Begin by 2020		
<b>Objective 6.1.2</b>	Research - herbivory effects on GrSG habitat				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.1.2.1	Conduct a literature review of grazing systems and their effects on the vegetation parameters important to sage-grouse. <b>[See Research Strategy 21.1.2.2]</b>	BLM, CPW, CSU Extension, LWGs, NAGP, NRCS, Universities, USFS, WAFWA	Begin by 2015	<b>CPW:</b> Beck and Mitchell 2000. Influences of livestock grazing on sage-grouse habitat. Wildlife Society Bulletin 28:993-1001. Cagney et al. 2010. Grazing Influence, Objective Development, and Management in Wyoming's Greater Sage-Grouse Habitat. BLM report.	
6.1.2.2	Evaluate the effect of herbivores on the quality of sagebrush habitat (e.g., grass and forb abundance, diversity, and vegetative structure). <b>[See Research Strategy 21.1.2.2]</b>	BLM, CPW, CSU Extension, LWGs, NAGP, NRCS, Universities, USFS, WAFWA	Begin by 2015		
6.1.2.3	Provide incentives to private landowners to participate in research (e.g., strategy 6.1.1.2, 6.1.2.2) and monitoring actions (e.g., if a rancher is requested to rest a pasture for a research project). Develop grazing banks or help find other pasture to graze. Provide financial compensation such as fencing and water developments; however, water developments should be designed to minimize WNV risk to GrSG). <b>[See Research Strategy 21.1.2.2]</b>	BLM, CPW, CSU Extension, LWGs, NAGP, NRCS, Universities, USFS, WAFWA	Begin by 2015		
6.1.2.4	As results become available on research on herbivory and GrSG (e.g., strategy 6.1.1.2, 6.1.2.2), distribute them to local work groups. <b>[See also Information, Communication, and Education Strategy 12.3.2.1 and Research Strategy 21.1.2.2]</b>	BLM, CPW, CSU Extension, NRCS, USFS	Ongoing	<b>See 12.3.2.1</b>	

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
<b>Objective 6.1.3</b>	Research - effects of GrSG habitat parameters on GrSG populations				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.1.3.1	Conduct a literature review of how GrSG populations respond to different habitat parameters. <b>[See Research Strategy 21.1.1.1]</b>	BLM, CDA, CPW, Industry, LWGs, NGOs, NRCS, Other Research Institutions, Private Landowners, SLB, Universities, USFS, USFWS, USGS, WAFWA	Begin by 2010	<b>See 21.1.1.1</b>	
6.1.3.2	Determine the relationship of GrSG habitat parameters to sage-grouse productivity, demographics, and population viability. <b>[See Research Strategies 21.1.1.1 and 21.1.1.3]</b>	BLM, CDA, CPW, Industry, LWGs, NGOs, NRCS, Other Research Institutions, Private Landowners, SLB, Universities, USFS, USFWS, USGS, WAFWA	Bein by 2010/2012	<b>See 21.1.1.1</b>	
<b>Issue 6.2</b>	Sagebrush - management of herbivores while considering GrSG habitat needs				
<b>Objective 6.2.1</b>	Domestic herbivore management				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.2.1.1	Identify GrSG seasonal habitat objectives for individual sites (dependent on site potential and environmental conditions; see CCP Appendix A, "GrSG Structural Habitat Guidelines").	BLM, CPW, LWGs, NPS, NRCS, Private Landowners, SLB, USFS, USFWS	Ongoing	<b>CPW:</b> NP - CPW, with support from the NP LWG, conducted habitat measurements at GrSG use and non-use sites across NP. The USFWS helped with funding technicians to conduct the habitat measurement. Local habitat measurement will be compared to seasonal habitat objectives. Data have been collected and currently being analyzed. A report will be provided to NP LWG. NWCO and NESR - CPW conducted habitat measurements at GrSG locations in various ecological sites. These data were compared to other GrSG structural guidelines and then used in the development of the Colorado GrSG Structural Habitat Guidelines. PPR - Partial - seasonal maps have been developed. MP - no mapping	
6.2.1.2	In cooperation with the local work groups, identify a specific menu of grazing management options (for examples, see Appendix E, "Grazing Management Options") that supports the local work group sage-grouse habitat objectives and will provide the flexibility needed for local site conditions; options should be compatible with the BLM's "Standards for Public Land Health" and "Guidelines for Livestock Grazing Management" ( <a href="http://www.blm.gov/co/st/en/BLM_Programs/grazing/rm_stds_guidelines.html">http://www.blm.gov/co/st/en/BLM_Programs/grazing/rm_stds_guidelines.html</a> ), as well as the "GrSG Structural Habitat Guidelines" (Appendix A). Encourage application of grazing management options for GrSG on a landscape scale, across ownership boundaries.	BLM, CSU Extension, LWGs, NRCS, SLB, USFS	Within next 2 years		
6.2.1.3	Use livestock grazing management options on private lands, where possible, and on public lands, as developed by land management agencies or LWGs, that are consistent with achieving GrSG habitat objectives. Explore the use of vacant federal allotments through the land-use planning process and CRP, to provide flexibility in grazing options recommended to achieve GrSG habitat objectives.	BLM	Ongoing	<b>BLM:</b> Grazing management practices on BLM are evaluated with respect to compatibility with achieving SG habitat objectives when grazing permits come up for renewal. No vacant federal allotments have been identified that could provide flexibility in grazing in SG habitat to date.	
6.2.1.4	Monitor the effectiveness of grazing management options. All stakeholders should be involved in the development of monitoring plans (see "Habitat Monitoring" strategy, pg. 354, and CCP Appendix C, "Habitat Monitoring Protocol").	BLM, CDOW, LWGs	Start within 5 years		
6.2.1.5	Use monitoring results (strategy 6.2.1.4) to adjust grazing management options (see "Adaptive Management", pg. 10).	BLM, CDOW, FSA, LWGs, NPS, NRCS, Private Landowners, SLB, USFS, USFWS	ASAP following monitoring results		

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.2.1.6	Use results from research on grazing impacts on GrSG habitat and populations (strategies 6.1.1.2 and 6.1.2.2) to update and adjust grazing management options (see "Adaptive Management", pg. 10).	BLM	Ongoing	<b>BLM:</b> As research relative to impacts on SG or their habitat become available, that information is shared among agency biologists for use and consideration.	
6.2.1.7	Monitor (throughout the year as needed) GrSG habitat and total utilization (e.g., cattle, sheep, wild ungulates, wild horses, insects), and/or vegetation structure available during the important grouse use period, and adjust grazing management plans as necessary to achieve desired vegetation structure for GrSG. Monitoring protocol should provide data useful for determining if GrSG habitat and grazing objectives are being met (see CCP Appendix C, "Habitat Monitoring Protocol").	BLM, CPW, LWGs, NRCS, Private Landowners, USFS	Ongoing		
6.2.1.8	Evaluate the effectiveness of grazing management options in achieving GrSG habitat objectives used at the local level. Use monitoring results to adjust management options (see "Adaptive Management", pg. 10). It is critical for all stakeholders to be involved in the design of the monitoring plan.	BLM, CSU Extension, LWGs, NRCS, SLB, USFS	Within 5 years		
6.2.1.9	Evaluate the effects of grazing management changes made for GrSG on maintaining sustainable agriculture.	BLM, CPW, CSU Extension, LWGs, NRCS, Private Landowners,	Ongoing		
<b>Objective 6.2.2</b>	Wild herbivore management				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.2.2.1	Encourage the consideration of specific sage-grouse habitat objectives when revising DAU plans for deer, elk and pronghorn, particularly in revisions of big game population objectives.	BLM, CPW, LWGs, USFS	Ongoing	<p><b>CPW:</b> CPW staff encourage local ranchers and BLM through verbal communication to consider GrSG habitat. BLM considers GrSG habitat when analyzing grazing allotments. Several herd management areas have developed forage availability models that reserve 50% of net annual production for landscape health and wildlife habitat needs including GrSG. For example, NWCO - A combined model addresses mule deer, elk, pronghorn, and wild horses in 4 herd units that included the majority of the NWCO, NESR, and MWR populations. This model was used to set and validate big game population objectives in these herds. [Wockner et al. 2005. The Habitat Assessment Model: A tool to improve wildlife habitat management. CPW Report.] Similar forage availability/allocation models have been completed for all other portions of the range except the southwestern corner of NWCO (Blue Mountain) and southern portions of PPR.</p> <p><b>See Appendix F: Big Game Populations in GrSG Habitat</b></p>	<p><b>CPW:</b> Elk populations have been reduced to or below population objectives in most portions of the NWCO, NESR, and MWR areas. For instance, elk populations in NWCO have been reduced by nearly half (from 108,959 in 2000 to 56,853 at the end of 2011-see attached table). Efforts to bring elk populations to objective continue in other areas. Populations of deer and pronghorn are generally below long-term objectives due to other environmental conditions. Forage availability/allocation models that facilitate consideration of GrSG habitat objectives when planning deer, elk and pronghorn population objectives have been completed for all portions of GrSG habitat in Colorado, with the exception of the southwestern corner of NWCO and southern portions of PPR.</p>
6.2.2.2 (a)	Encourage the consideration of specific sage-grouse habitat objectives when revising BLM Wild Horse Herd Management Plans, where applicable.	BLM	Ongoing	<p><b>BLM:</b> The Sand Wash Wild Horse Herd Management Plan has not been revised since the CCP was completed. As wild horse issues are identified, SG habitat objectives will be considered when recommending appropriate management changes.</p>	<p><b>BLM:</b> See CCP for discussion and references.</p>

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.2.2.2b				<p><b>CPW:</b> CPW harvest strategies are designed to meet DAU-specific population objectives for big game. The DAU planning process is open for public comment and is aimed to manage big game populations at sustainable levels and considers the total number of wild and domestic ungulates on the landscape. MP - No specific guidelines have been developed associated with GrSG habitat objectives and wild ungulate distribution and utilization. However, DAU plans (D-9) address deer management objectives for Middle Park. In theory, a healthy deer herd at or below objective should produce a healthy rangeland which would positively benefit GrSG habitat. PPR, NESR, NP - CPW has not developed specific GrSG habitat objectives with respect to wild ungulate distribution and Big Game DAU plans do not specifically address GrSG habitat objectives when determining appropriate herd population objectives.</p>	
6.2.2.2	Develop guidelines to influence wild ungulate distribution and utilization levels in order to achieve GrSG habitat objectives.	CPW	2009		
6.2.2.3	Implement guidelines (where possible) to influence wild ungulate distribution and utilization levels in order to achieve GrSG habitat objectives.	CPW	2011 and ongoing	<p><b>CPW:</b> CPW revises herd management objectives on an approximate 10 year schedule. Many big game populations in sage-grouse habitat peaked in the early 2000's. CPW has aggressively reduced elk populations throughout GrSG range to bring these herds to desired objective levels.</p>	<p><b>CPW:</b> Elk populations have been reduced to or below population objectives in most portions of the NWCO, NESR, and MWR areas. For instance, elk populations in NWCO have been reduced by nearly half (from 108,959 in 2000 to 56,853 at the end of 2011- see attached table). Efforts to bring elk populations to objective continue in other areas. Populations of deer and pronghorn are generally below long-term objectives due to other environmental conditions.</p>
<b>Issue 6.3</b>	Funding and socioeconomic issues				
<b>Objective 6.3.1</b>	Identify funding, prioritize projects				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.3.1.1	Identify potential funding sources for GrSG habitat conservation (see CCP Appendix F, "Available Funding Opportunities for GrSG Habitat Conservation").	CCP SC	2008	<b>CPW:</b> The constituent agencies that make up the CCPSC have pursued new funding sources through their individual budget processes.	<b>CPW:</b> BLM has brought additional project money to CO. NRCS has designated funds specifically for habitat enhancement and conservation in CO. There are 3 jointly-funded private lands biologist that have been hired to administer these projects. CPW has secured \$2.1 million of Species Conservation Trust Fund monies for GrSG habitat projects.
6.3.1.2	Assist local work groups in developing a process to evaluate management options and set priorities for funding habitat improvement projects.	CPW	As needed	<b>CPW:</b> General - CPW, BLM, NRCS, and private lands biologists meet routinely to plan and implement projects. Some LWGs are more involved in this process than others. CPW sagebrush habitat coordinator, hired 2011, will be developing landscape management plans and local implementation plans that will prioritize where to treat and what treatments will be most effective in our sagebrush ecosystem. MP and PPR -- CPW meets annually with LWGs where projects are proposed, discussed and reviewed. Funding is available for work on private land through NRCS programs; however many private lands tend to be in valley bottoms not used by grouse or are industry owned. The PPR LWG has not developed a process to annually review and implement habitat projects. NP and NESR - CPW meets bi-annually and annually (respectively) with the LWG and has requested habitat implementation project ideas. The BLM and CPW have initiated GrSG improvement projects. CPW and BLM consider GrSG habitat needs when deciding whether to implement a project for big game. The NP LWG has not developed a process to annually review and implement habitat projects. NESR - An influential LWG member initiated a habitat enhancement project on his private land. The LWG toured this project to get additional project ideas.	<b>CPW:</b> Communication between agencies and with the LWGs is frequent and available whenever the LWG wants.
<b>Objective 6.3.2</b>	Address indirect costs of responsible GrSG management				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.3.2.1	Assist local work groups in developing procedures to conduct cost-benefit analyses of the economic impact of different grazing management options that benefit GrSG.	BLM, CPW, CSU Extension, LWGs, NRCS, Universities, USFS, USFWS	Ongoing		

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.3.2.2	Identify opportunities to compensate landowners for the cost of implementation of management options and facilitating practices to benefit GrSG (e.g., grazing banks, conservation easements and other options).	BLM, CPW, Land Trusts, NGOs, USFS, USFWS,	2008 and ongoing	<b>CPW:</b> Both traditional NRCS programs and the expanded Sage Grouse Initiative (SGI) funds are available to assist with the cost of implementing grazing systems. FWS's Partners for Fish and Wildlife also funds projects in GrSG habitat.	<b>CPW:</b> This process occurs annually.
6.3.2.3	Provide funding to private landowners and land managers to implement grazing management options developed in strategy 6.2.1.2.	BLM, CPW, Industry, NRCS, SLB, USFS, USFWS	Ongoing	<b>CPW:</b> General - Both traditional NRCS programs and the expanded Sage Grouse Initiative (SGI) funds are available to assist with the cost of implementing grazing systems. FWS's Partners for Fish and Wildlife also funds projects in GrSG habitat. NP - CPW, BLM, NRCS, USFS and USFWS work with Owl Mountain Partnership to implement grazing management improvements on private and public lands.	<b>CPW:</b> This process occurs annually.
6.3.2.4	Conduct a cost-benefit analysis of the economic impact on local communities when planning for the management of the wild ungulates.	CPW	As needed	<b>CPW:</b> Cost-benefit analysis for wild ungulates in relation to local communities has been conducted at large scales but not for PPR specifically. NP and NESR - The big game DAU plans for NP consider the economic costs and benefits with respect to wild ungulate management.	
6.3.2.5	Continue support for HPP and game damage programs that address wild ungulate herbivory on private land.	CPW	Ongoing	<b>CPW:</b> General - CPW continues its support and oversight of the Habitat Protection Program. HPP committees receive 5% of the big game license fees collected in their area to use for damage mitigation and habitat improvement. CPW monitors HPP projects to ensure that they do not impact GrSG populations. NWCO, MWR, MP, NP, PPR and NESR - All GrSG habitat has an active HPP committee.	
<b>Issue 6.4</b>	Lack of cooperation, communication, and respect among stakeholders				
<b>Objective 6.4.1</b>	Foster information sharing				
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness



Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.4.1.1	Ensure that private land managers, permittees, conservation groups, and other interested publics are encouraged to be involved in land management planning (e.g., AMP planning, DAU plans) that involve sage-grouse habitats.	BLM, CPW, USFS	Ongoing	<p><b>BLM:</b> BLM conducts public scoping meetings and provides opportunities for public input during our planning process. During local project planning, all affected parties are involved in development of proposed management actions. The public is notified of proposed action and the BLM receives comments during the NEPA process.</p> <p><b>CPW:</b> General - CPW harvest strategies are designed to meet DAU-specific population objectives for big game. The DAU planning process is open for public comment and is aimed to manage big game populations at sustainable levels and considers the total number of wild and domestic ungulates on the landscape. Public meetings are announced and held for the majority of CPW plans and proposed research projects. CPW is pursuing additional opportunities for input including web based surveys and to review documents on-line. CPW encourages participation from multiple parties on the LWGs. Various parties are represented on the LWG and are involved with GrSG habitats and planning.</p>	
6.4.1.2	Develop a public outreach/education program about domestic and wild grazing and GrSG needs (e.g., create a traveling display to be used at schools, county fairs). Be certain that part of the educational material identifies the contribution of landowners to sage-grouse conservation. [See Information, Communication, and Education Strategies 12.2.1.1, 12.2.1.2, 12.2.1.3, and 12.2.1.4]	CPW	2009	<b>CPW:</b> Has not been done specific to grazing.	
6.4.1.3	Develop an internet website through which local work groups can share information. Include a link from the CDOW website. <b>[See Information, Communication, and Education Strategy 12.3.2.1]</b>	CPW	2008 and ongoing	<b>CPW:</b> CPW has all conservation plans, research, and basic information about GrSG posted on its website.	

Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
6.4.1.4	Establish controlled or regulated tours to impart an understanding of the various aspects of GrSG habitat. Be certain that part of the educational material identifies the contribution of landowners and public lands to sage-grouse conservation. Have a training and/or education program for the people who lead lek-viewing tours. [See Information, Communication, and Education Strategies 12.2.1.1, 12.2.1.2, 12.2.1.3, and 12.2.1.4]	CPW	2009	<p><b>CPW:</b> NWCO - CPW has coordinated, helped coordinate, or participate in several private lands habitat tours over the past 4 years to look at land management practices in GrSG habitat, most recently as part of the WAFWA Sage and Columbian Sharp-tailed Grouse Workshop in summer 2012. Lek viewing tours in NWCO are conducted and regulated. MP - The Middle Park LWG has hosted several public habitat tours over the last decade, many of which highlighted habitat treatments that were conducted to improve GrSG habitat and livestock grazing. PPR - Several field trips to the PPR that discuss GrSG habitat, sagebrush, and mitigation have been conducted over the past 5 years. Lek tours are not given in the PPR population as most leks are too difficult to access. NP - Owl Mountain Partnership and NP HPP have led several tours (usually at least one per year) to discuss habitat improvement projects across public and private ownership boundaries. These tours generally discuss GrSG habitats as well as the importance of the mix of public and private land for conserving GrSG habitats. CPW has developed a watchable wildlife brochure for lek viewing in NP. NESR - CPW organized a LWG tour to review and discuss habitat improvement projects in NESR. Tour focused on private land and the importance of private land for the NESR GrSG population. CPW is not aware of lek viewing tours in NESR. The majority of leks are located on private land and landowners do not allow public access.</p>	<p><b>CPW:</b> During these tours proper grazing is touted as a valuable contribution to GrSG conservation.</p>
6.4.1.5	Develop elementary, middle, and high school curricula that include grazing and grouse management, to fit Colorado educational standards. [See Information, Communication, and Education Strategies 12.2.1.2 and 12.2.1.4]	CPW	2009	<p><b>CPW:</b> MP - During the summer of 2012 CPW and NRCS participated in the first NW Future Farmers of America school program to combine the principles of livestock grazing and natural resource management. Students were introduced to science principles practiced in grazing and wildlife management, specifically GrSG, in a field setting. Students were from high schools in Grand, Jackson and Moffat counties. This plans to be continued in future years.</p>	