

8. Habitat Linkages					
<b>ISSUE 8.1</b> Movement of GrSG is becoming increasingly limited by a reduction of suitable and available habitat linkages <i>within populations</i> .					
<b>OBJECTIVE 8.1.1</b> Maintain or reestablish linkages within populations where fragmentation and isolation of occupied habitats has occurred (e.g., NESR, NWCO populations).					
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
8.1.1.1	Within GrSG population areas, prioritize and refine mapped intra-population linkages that are most important to GrSG movements and dispersal.	CPW	2008	<b>CPW:</b> CPW Researchers T. Apa and B. Walker have demonstrated several intra-population linkages in NWCO with radio telemetered GrSG. Specifically, GrSG linkages exist between Management Zones 1 and 2, 2 and 3a, 3a and 5, and 5 and 6 in the NWCO population. Management Zone 3a has been identified as a key linkage that maintains the opportunity for gene flow through much of the NWCO population.	<b>CPW:</b> GrSG linkages exist between Management Zones 1 and 2, 2 and 3a, 3a and 5, and 5 and 6 in the NWCO population. Management Zone 3a has been identified as a key linkage that maintains the opportunity for gene flow through much of the NWCO population.
8.1.1.2	In high priority GrSG intra-population linkages (see strategy 8.1.1.1), pursue opportunities to protect areas from permanent loss (e.g., management plans, easements, land exchanges, acquisitions).	BLM, CPW, Land Trusts, Counties, Private Landowners, SLB, USFS	2009 and ongoing	<b>CPW:</b> CPW is continually looking for opportunities to protect key intra-population linkages. CPW is pursuing several conservation easements in the NWCO intra-population linkage areas identified above. CPW also includes the need to protect these areas in land use comments to BLM and other entities. <b>PPR</b> - Maintenance of intra-population linkages is one of several management strategies employed in WMPs.	<b>CPW:</b> CPW closed a 15,156 acre conservation easement in the NWCO intra-population linkage between Management Zone 5 and 6 in 2012.
8.1.1.3	In high priority GrSG intra-population linkages (see strategy 8.1.1.1), pursue opportunities for improving GrSG habitat (e.g., piñon-juniper removal, protection/enhancement of existing sagebrush communities; see "Habitat Enhancement" [pg. 349] and "Piñon – Juniper Encroachment" [pg. 396] strategies).	BLM, CPW, LWGs, NRCS, Private Landowners, SLB, USFS	2009 and ongoing	<b>CPW:</b> CPW has conducted a number of PJ removal projects to maintain intra-population linkages. A number of additional areas would still benefit from vegetation treatment.	<b>CPW: NWCO</b> - PJ removal in the Peck Mesa portion of Management Zone 5 maintains linkage to MZ 2. <b>PPR</b> - PJ removal has occurred in North PPR to reconnect isolated areas of habitat.
<b>ISSUE 8.2</b> Genetic interchange and movement of GrSG <i>between populations</i> may become increasingly limited by the lack of suitable linkages (see also Issue 5.2).					
<b>OBJECTIVE 8.2.1</b> Pursue opportunities to develop and maintain linkages between GrSG populations.					
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
8.2.1.1	In linkage areas between GrSG populations, prioritize and refine mapped inter-population linkages that could offer GrSG movement opportunities and potential for genetic interchange. Address issues of isolated populations during the prioritization process.	CPW	2008	<b>CPW: General</b> - In 2012, CPW refined the habitat linkage areas between GrSG populations across the range in CO. These were originally developed in the CCP. It is assumed these linkages will allow for movements between populations and will decrease the probability of extinction. The linkage data is updated as information is available and during SAM mapping updates every 4 years.	<b>CPW:</b> These linkages are being considered "general" habitat in the BLM Sage-grouse EIS and will have the same level of protection as general habitat on BLM and Forest Service lands. Recent radio telemetry has demonstrated that GrSG use the linkage area between NP and MP.
8.2.1.2	In high priority GrSG inter-population linkage areas (see strategy 8.2.1.1) that are on public lands, work to protect and improve habitat characteristics for GrSG (see "Habitat Enhancement" strategy, pg. 349).	BLM	2009 and ongoing	<b>BLM:</b> No specific actions have been implemented to improve habitat in linkage areas. Any management activities proposed in linkages do consider the potential implications to SG movement within and between populations.	

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8.2.1.3	In high priority GrSG inter-population linkage areas (see strategy 8.2.1.1) that are on private lands, work with willing landowners to protect and enhance habitat characteristics for GrSG (e.g., management plans, conservation easements).	Counties, CPW, Land trusts, LWGs, NRCS, Private Landowners	2010 and ongoing	<b>CPW:</b> These linkages are being considered "general" habitat in the BLM Sage-grouse EIS and will have the same level of protection as general habitat on BLM and Forest Service lands. CPW is pursuing conservation easements in linkage areas between NWCO and MWR, between MWR and PPR, and between MP and NESR.	<b>CPW:</b> CPW has secured a conservation easement in the Yellow Jacket Pass area, a linkage between <b>NWCO and MWR</b> . <b>MP</b> - A 1,115 acre conservation easement was completed in the linkage between MP and NESR in 2008.
8.2.1.4	Using results of population genetic testing (see Strategy 5.2.1.1), review prioritization of inter-population linkages.	CPW	2008 and ongoing	<b>CPW:</b> Preliminary genetic evaluations presented in the CCP indicate some genetic separation of NP, NESR, and MP from the remaining populations. Additional, genetic work in relation to linkages has not yet been conducted, however, CPW will be participating with a multi-state genetic study beginning in 2013. These results will be used to inform linkage evaluations and potential future transplants of GrSG.	