

<b>17. Population Monitoring and Targets</b>					
<b>ISSUE 17.1</b>	It is important to assess GrSG population size and trends, but current methods of estimating population size from lek counts make many untested assumptions.				
<b>OBJECTIVE 17.1.1</b>	Assess GrSG population size and trends and provide for the long-term monitoring of GrSG.				
<b>Reference Number</b>	<b>Conservation Strategy</b>	<b>Responsible Parties</b>	<b>Timeline</b>	<b>Implementation</b>	<b>Effectiveness</b>
17.1.1.1	Maintain consistent current GrSG lek count protocols (include searching for new leks), but use research results to establish protocols for future population monitoring and record keeping, including mechanisms to assure consistent implementation and reporting. [See also Research Strategy 21.8.1.1]	CPW	Ongoing	<b>CPW: General</b> - Lek counts follow state protocols (leks are counted at least 3 times annually within certain date ranges to incorporate early, mid, and late season lek attendance). All data is compiled for each population and provided to the statewide grouse coordinator and the GIS Specialist. Searches for new lek sites and rechecks of historic lek sites occur with variable frequency depending on the population. CPW is evaluating the use of Dual Frame sampling to search for new leks and to estimate the proportion of leks that are counted during standard lek counts. Dual Frame sampling has been investigated in north-central and northwestern NWCO, NP and PPR. CPW Researcher B. Walker is evaluating male GrSG movements and lek attendance during the breeding season to better understand some of the variability inherent in lek counts. <b>PPR</b> - Due to difficult counting conditions from the ground, active leks in the PPR are flown at least three times during the breeding season using a helicopter. Inactive leks are generally visited at least once to document any if any renewed activity is occurring. <b>NP</b> - CPW has consistently counted leks in NP for 40 years and provides one of the best long-term data sets in GrSG range.	Consistent lek count protocols have been in place and fully implemented since 1997 in all populations. All lek data is housed in CPW's GIS data base and with the CPW Grouse Coordinator therefore consistent reporting is also achieved across all populations.
17.1.1.2	Consider and implement conservation actions to achieve the GrSG male population targets outlined in this plan (see "Colorado GrSG Population Management Zones", pg. 248).	CPW	Ongoing	<b>CPW: General</b> - CPW uses lek counts (3-year running averages of high male counts by population and/or management zone (in NWCO)) as the primary indicator of population trend and the need for, or adequacy of, conservation actions. These trend data are updated for each population each year. NP, MP, and NESR are currently within the population target zones in the CCP. NWCO, MWR, and PPR are currently below the population target zones. CPW has implemented a number of conservation actions to conserve populations, including protecting and enhancing habitat, and conducting more intensive monitoring to determine important use areas, seasonal movements, etc., via radio telemetry. All actions are reported in various chapters of this document.	<b>See Appendix I: Population Trends</b>
17.1.1.3	Develop statistically defensible methods to estimate GrSG population size and/or trends. [See Research Strategies 21.8.1.1, 21.8.1.2, 21.8.1.3, and 21.8.1.5]	CPW, Universities	Begin by 2010	<b>CPW/CSU: NWCO, PPR</b> - CPW Researcher B. Walker and graduate student are evaluating methods to better estimate GrSG population sizes through intensive radio-telemetry of male GrSG, including male movements and lek attendance during the breeding season, and intensive Dual Frame sampling in the PPR to compare results to traditional lek counts.	

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17.1.1.4	Coordinate with private landowners to gain access to expand GrSG lek search areas.	CPW	Ongoing	<b>CPW: General</b> - CPW works with many private landowners on an annual basis to monitor known active, inactive, and historic lek locations. CPW has access to the vast majority of known leks. CPW annually collaborates with private landowners to conduct expanded lek searches in areas of high quality modeled habitat as the opportunity arises and staff time allows. <b>PPR</b> - Most lek counts in the PPR are conducted by helicopter flights. CPW Researcher B. Walker is studying the use of Dual Frame sampling and lek count accuracy and has permission from private landowners to access leks so that required double counts can be performed.	CPW has access to or is able to monitor from nearby roads on at least 98% of known leks.
17.1.1.5	Develop a single, statewide, standardized lek data base for all Colorado GrSG population, and update data annually.	CPW	2008 and update annually	<b>CPW: General</b> - CPW has compiled population-specific lek data into statewide totals for many years. CPW instituted updated procedures to standardize the collection and reporting of lek data, through the use of a standard reporting spreadsheet in 2011. CPW biologists have also worked with the CPW GIS section to increase the accuracy and completeness of spatial lek data in recent years, including the annual correction of lek locations, activity status, and high male count.	
<b>ISSUE 17.2</b> Population targets are based on current population estimates and potential habitat conditions, but habitat conditions and availability are expected to change over time.					
<b>OBJECTIVE 17.2.1</b> Reevaluate population targets as habitat conditions change and knowledge increases with regards to GrSG behavior and population dynamics.					
Reference Number	Conservation Strategy	Responsible Parties	Timeline	Implementation	Effectiveness
17.2.1.1	Use adaptive management approach (see pg. 10) to re-evaluate current population management zones.	CPW	2010	<b>CPW: General</b> - CPW uses lek counts (3-year running averages of high male counts by population and/or management zone (in NWCO)) as the primary indicator of population trend and the need for, or adequacy of, conservation actions. The current running average is compared to the targets annually for each population.	