1. MZ: Five

2. Populations included:

   Central Oregon
   Western Great Basin
   Klamath OR/CA
   Warm Springs Valley, NV

3. For each **population** do the identified priority/core areas capture redundancy and representation? If not please clarify why and what needs to be changed. If so, please provide a brief description of your rationale.

   Central: Redundancy and representation appear to be captured adequately. In Oregon, priority habitats capture 95% of all known breeding locations, 98% of known wintering locations (which was expected since this was based on telemetry data) and 89% of known summer locations. Priority habitat and low density habitat combined capture all but 3% of known summer, 1% of known breeding, and 1% of known wintering habitat. Most of the sites within this population (with the possible exception of the southwestern site) probably have some connectivity with other sites in this population, though we do not currently have a robust genetics study to verify that. Although a lot of the known habitat is mapped, we do not recommend removing any of these habitats from the priority mapping. Since this populations' habitat/landscape appears more similar to landscapes in extirpated populations than extant populations, we do not feel we can lose any of the priority habitats within this populations. Further, the low density habitat should be …..*describe its role here*

   Klamath: The Klamath population is all that remains from a population that once extended throughout the Devil's Garden Area of California, which had at least 46 known leks as recently as the 1970s, and was well connected to populations in Oregon and the Western Great Basin. By the early 2000s, only one known lek remained on the Clear Lake National Wildlife Refuge, with less than 10 males. Since 2005, birds have been translocated from Oregon and Nevada to prevent extirpation. A small amount of priority habitat is mapped for the area, but not connected to the Western Great Basin or Central Oregon populations. Redundancy is not adequate and resistence is poor. This population would be at immediate risk of extinction with supplementation. There is no priority habitat mapped in this population for Oregon because we have not documented birds there recently.

   Western Great Basin: Redundancy and representation appear to be captured adequately in the Oregon portion of this population based on the fact that priority habitats include most of the known distribution of birds (see rationale in Central above).

   The Nevada portion of this population includes the Buffalo/Skedaddle, Massacre, Vya, Sheldon, Black Rock, Pine Forest and Lone Willow Population Management Units. Currently identified priority habitat encompasses an area greater than the 85% core breeding density as

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reconstructed by the Nevada Department of Wildlife using methods described by Doherty et al. 2010, but utilizing the 10-year average for lek attendance rather than the most recent peak. Redundancy and representation are adequately captured both within the Nevada portion of this population and certainly within the Western Great Basin population as identified by Garton et al. 2011.

The California portion of the Western Great Basin includes the majority of the Buffalo-Skedaddle Population Management Unit. Priority habitat in California includes 100% of known sage-grouse distribution. This population was part of a much larger population that was connected to the Klamath population into the 1970's. Habitat degradation, including juniper expansion and spread of exotic grasses have been extraordinary in this region. The extant population is well connected and adequately captures redundancy, but further losses would jeopardize the long term existence of sage-grouse in California. Recent population trends have shown consistent increases, demonstrating that the population exhibits positive growth rates during years of favorable environmental conditions. Habitat suitability is low in much of the currently occupied habitat and habitat conditions need to be improved to increase resistance of this population.

Over 8 analysis periods conducted by Garton et al. (2011), average rates of change in the Western Great Basin were <1.0 in 3 of those periods and the minimum population estimate was determined to be 5,904 males in 2007 based on counts at 393 leks. Garton et al. indicates that this population has a 0% chance of declining below N*e*=500 within the next 30 years.

Warm Springs Valley, NV: This is a small population that exists in southern Washoe County within the Virginia Population Management Unit. Only two confirmed active leks comprise this population; however, lek size is relatively large (avg. >40). The identified priority habitat encompasses the majority of use areas. Extensive research has been conducted within this particular PMU. Some individuals have dispersed to the southern portion of the western Great Basin population during the winter, so there is the possibility of genetic interchange. There is an indication of this within work conducted by Oyler-McCance suggesting a relationship with the Lassen population in California. Representation and redundancy are at risk within this population due to its small size, proximity to urbanized setting and threats from invasive species.

4. At the **MZ scale** is redundancy and representation accurately captured by the priority/core areas? If not please identify why and what needs to be changed. If so, please provide a brief description of your rationale.

   The Oregon portion of this MZ appears to adequately capture redundancy and representation in the priority/core areas. Within the Nevada portion of this MZ, redundancy and representation are adequately captured within the western Great Basin population, but is at risk within the Warm Springs population. Connectivity of the western Great Basin population between the California, Oregon and Nevada portion has been demonstrated through telemetry and genetic investigations.

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5. Identify populations for which resistance has been lost:

   a. For those populations listed above, which populations **are still resilient** to further disturbances, assuming that no further threats occur.

      The Western great basin core: From an Oregon perspective, is the most robust population in Oregon and therefore is the most resilient. We still have healthy sage-grouse populations in the Pueblos, Steens, Hart Mountain, and Trout Creek areas.

      Within the Nevada portion of the western Great Basin, populations are experiencing a slight increase. When considering habitat characteristics, populations appear to be most stable within the Lone Willow, Sheldon, Black Rock and Vya Population Management Units if no further threats are realized.

   b. For those populations listed above, which **populations have lost their resiliency** (assuming no further threats occur).

      The Klamath population has very low resiliency and there are no documented birds in Oregon.

      Central: This population appears to have lost, or is rapidly losing its overall resiliency. Resiliency depends in part on the timeframe of our analysis. Based on Garton et al.'s SAB chapter, this population appears fairly resilient in 30 years, but not in 100 years. Also, the landscape's characteristics in this population are more similar to landscapes that exist where there are extirpated populations of birds than landscapes with extant populations.

      Western great Basin: The Western Great Basin is most resilient in MZ5, but reducing threats alone is not likely to ensure long-term persistence in some areas. Resiliency needs to be improved in the California portion of the Western Great Basin with increased habitat suitability in terms of shrub densities and native grasses and forbs.

      The Warm Springs population in southern Washoe County may be close to a threshold if additional threats occur. This population is very near to urbanization, has experienced large wildfire and energy development in the form of a utility scale transmission line (345kV Alturas line) and water transfer pipeline (Vidler Water), and is experiencing some pinyon and juniper encroachment. However, the core use area of the population (Spanish Flat) remains intact and benefits from higher elevation precipitation regimes.

   c. For those populations listed above, which **populations are at most risk for further threats**?

   The Klamath is most at risk, with a few birds remaining in California as previously described. In California, the western portion of the Western Great Basin is at marginal habitat suitability and threatened by continued habitat degradation by a variety of threats.

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In Oregon, the Klamath population is most at risk, followed by the Central and then the Western Great Basin populations. Since we are not familiar with the status of the smaller NV population within this MZ, but suspect this may fall between Klamath and Central populations.

Within the Nevada portion of the western Great Basin population, the Lone Willow population (connected with Oregon) faces threats from lithium and uranium exploration and extraction. Both the Massacre and Buffalo/Skedaddle PMUs face high risk due to invasive species being pervasive within the understory of lower elevation sagebrush communities. Improper livestock grazing practices and wild horse utilization has caused severe habitat degradation in some instances, especially with respect to meadow, spring and riparian habitats.

See above for Warm Spring, NV population.

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