How Wyoming Greater Sage-Grouse Core Areas Were Established

The Sage-Grouse Implementation Team (SGIT) used greater sage-grouse lek location and attendance data as well as areas of valid existing rights to produce the Greater sage-grouse core protection area map for Wyoming (Figure 1). A minor revision to the East Buffalo Core Area resulted in the map labeled “Version 2” being the basis of the original Executive Order in 2008 (Executive Order 2008-2).

Dr. Kevin Doherty applied a kernel density function to the lek location and attendance data to develop the original greater sage-grouse density map and what would later result in Doherty et al. 2010 and 2011. The red areas on both Figures 1 and 2 represent the breeding habitat for the top 65% of greater sage-grouse in Wyoming based on lek size and location. The maps illustrate population proportions at a given time, not trends over time. However, this method did not take into account late brood-rearing and wintering seasonal habitats. Therefore, during the 2010 revision of core area boundaries in Wyoming, both late brood-rearing and winter use were considered in the process and most of these seasonal habitats associated with birds in the existing core area were included in revised product (Figure 2). The eight local working groups assisted in the revision process by reviewing the core areas based on local knowledge and more detailed habitat imagery (1 meter NAIP) and reviewing new lek and development data. Other affected interests and the general public also participated.

Both the 2008 and 2010 (V.2 and V.3) core areas encompassed approximately 83% of the greater sage-grouse population within approximately 24% of the surface area of the state of Wyoming (Unpublished data - Wyoming Game and Fish Department, Gamo 2013).
Management Goals and Mitigation in the
Greater Sage-Grouse Core Population Area Strategy

The Wyoming Core Population Area Strategy represents a proactive identification of a set of conservation actions to maintain and enhance a viable and connected set of populations before the opportunity to do so is lost (Doherty et al. 2011). The strategy is based on the identification of important habitat areas for Greater sage-grouse and a set of actions that when taken are intended to ensure the long-term survival of Greater sage-grouse populations within Wyoming. The strategy follows an established hierarchy of avoidance, understanding that the primary mission is avoiding impacts to and protecting the best remaining habitat for Greater sage-grouse; minimizing impacts where they cannot first be avoided; and when Core Population Area thresholds are exceeded, compensating for any unavoidable impacts to Greater sage-grouse.

Avoidance
Preferred development plans avoid negative impacts in Core Population Areas and other Sage-Grouse Executive Order delineated habitats used by Core Population Area Greater sage-grouse. This maximizes protections for both Greater sage-grouse and sagebrush habitat. Avoidance can be both spatial and temporal.

Minimization
When development occurs within Core Population Areas and other Sage-Grouse Executive Order delineated habitats used by Core Population Area Greater sage-grouse, all reasonable options are pursued to minimize impacting additional suitable habitat and/or maintaining impacts below identifiable thresholds to the greatest extent possible. This may result in new disturbance within Core Population Areas, but the disturbance is managed to not exceed SGEO thresholds and no discernible impacts at the population level. Development plans are managed to limit disturbance to less than 5% and no more than an average of one oil and gas pad or mining site per section (640 acres) within the Density Disturbance Calculation Tool (DDCT) project area.

Compensation
The complexity of developing compensatory mitigation projects that provide biologically meaningful benefits to Greater sage-grouse populations requires that rigorous standards for mitigation are defined and developed. Performance standards (e.g., net benefit to Greater sage-grouse), monitoring requirements, and adaptive management plans should explicitly link landscape conservation actions to Core Population Areas and other Sage-Grouse Executive Order delineated habitats used by Core Population Area and Greater sage-grouse statewide landscape conservation objectives for Greater sage-grouse. The standards for developing mitigation projects are defined in attachment ???? and are based on published criteria for mitigating impacts to Greater sage-grouse developed by the USFWS (USFWS 2014) or other updated version:

The Use of the DDCT in Managing the Core Population Area Strategy
The 4-mile radius is literature-based, and 74-80% of nesting females would be expected to select nest locations within 4 miles (6.4 km) of their lek of capture/breeding. That radius along with documenting seasonal use and selection of greater sage-grouse habitats in Wyoming led to a 4-mile by 4-mile distance to describe and discuss possible impacts from disturbances within the strategy.

The 4-mile distance shows up within multiple studies indicating the distance has particular importance to greater sage-grouse in the West.

The literature supports the distance of 4 miles as falling within the reasonable range of buffers (Manier and others, 2014), and it is a recurring distance that explains more than just disturbances within the background of measurable impacts to greater sage-grouse in field studies. Using the 4-mile radius, the DDCT limits the exponential growth of an assessment area to avoid diluting the amount of existing disturbance being considered in conjunction with any one proposed development.

Wildlife managers agreed that increasing the size of a DDCT assessment area diluted the value of the disturbance calculation from a management and strategic limits standpoint. Therefore, 4 miles achieves both a realistic consideration of impacts and maintains a relevant assessment area, which is vital to the overall strategy for limiting human disturbance on the sagebrush landscape.

(Manier and others 2014, Fedy et al. 2014)

Connectivity Areas:

Connectivity corridors are recognized as areas important for maintaining the transmission of genetic material between populations. These corridors have been identified as the most likely dispersal routes of individuals between potentially isolated populations in Wyoming to identified populations in neighboring states, and between Core Population Areas located wholly within Wyoming. These corridors are important to reduce the threat of isolating populations in Wyoming where that isolation is more likely to occur across state boundaries rather than within the state. Connectivity corridors are managed to limit anthropogenic development and have been delineated such that they are large enough to increase the likelihood of natural immigration/emigration important for maintaining genetic variability in Wyoming Core Populations Areas and to allow migration in some instances.

Winter Concentration Areas

The identification of Core Population Areas is intended to capture all seasonal requirements for Greater sage-grouse; however there is recognition that in some cases Core Population Areas may not capture all annual Greater sage-grouse needs (Aldridge and Boyce 2007, Doherty et al. 2011). Specifically, winter concentration areas, defined as places where large numbers of Core Population Area Greater sage-grouse congregate and persistently occupy between December 1
and March 14, should be identified and protected. Identification of winter concentration areas should be based on the presence of winter habitat characteristics and confirmed by repeated observations and sign of large numbers of Greater sage-grouse. The definition of “large” is relative to the overall population size. In most core population areas, frequent observations of groups of ≥50 greater sage-grouse meet the definition. In Northeast Wyoming smaller group sizes of ≥25 may indicate winter concentration areas in marginal habitats.

**Core Population Area Monitoring and Management:**

A system of interagency coordination has been developed to monitor and track development and conservation activities across core areas to determine whether development actually meets the thresholds of the SGEO. (Attachment B)

MAP of core areas.

Citations:

- Aldridge and Boyce. 2007.
- Gamo, S. 2014.
- USFWS. 2014. Greater Sage-Grouse Range-Wide Mitigation Framework v. 1.0