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# Appendix N

Greater Sage-Grouse Habitat Baseline  
and Habitat Update Protocol



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## GREATER SAGE-GROUSE HABITAT BASELINE AND HABITAT UPDATE PROTOCOL

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### BACKGROUND

Habitat for Greater Sage-Grouse (GRSG) is the most critical element in any efforts to manage and conserve the species in its range across the Western United States. Consequently, considerable time and expense has been dedicated to identifying current, historical, and potential expansion of GRSG habitat and how it functions to provide the life sustaining elements for the species. Conservation of habitat is the foundation for this land use plan amendment (LUPA). Any GRSG conservation effort in Utah, as stated in the Conservation Plan for Greater Sage-Grouse in Utah (State Conservation Plan) (UDWR 2013), must be “designed to protect high-quality habitat, enhance impaired habitat and restore converted habitat to support, in Utah, a portion of the range-wide population of GRSG necessary to eliminate threats to the species.”

According to Manier et al. (2013), GRSG are currently estimated to occupy 165 million acres (668,000 square kilometers) across the western United States and Canada (Knick and Connelly, 2011), and this range encompasses tremendous variability in habitat conditions, anthropogenic activities, and GRSG populations. Development of comprehensive monitoring approaches lead to formal recognition that habitat selection assessments are needed to utilize approaches that address multiple spatial scales to represent selection processes of the animals (Connelly et al. 2003; Stiver et al. 2010). The first-order (1) is the geographic range and defines the GRSG population of interest, and within this geographic range (2) characterization of the second-order hinges on large, relatively intact regions of habitat identified using subpopulation distributions (for example, geographic connections among leks or regional population connectivity using genetics) to link habitats to GRSG use. The third-order (3) requires refinement from broad delineations of the species range in a given area to the seasonal habitats (for example, nesting and winter habitats), patch selection, and migration habitats. Finally, assessment can be made of fourth-order selection (for example, daily site selection and behavioral observations) by (4) quantifying food and cover attributes and foraging behavior at particular sites. In practice, selection of food items is nested within selection of feeding site because selection of a particular site determines the array of food items available to be selected; importantly, habitat value and

use will best be determined using a combination of these characteristics (not one alone). To accurately characterize GRSG habitat/range selection for a given population at the first- and second-orders, or landscape spatial scales, the migratory nature (seasonal movements) of the population must be well understood (see Connelly et al. 2000), and this may include very large areas on an annual basis. It has been suggested that migratory populations may range across hundreds of square miles (Connelly et al. 2003).

## **HABITAT IDENTIFICATION PROCESS**

The UDWR is the primary entity responsible for management of GRSG populations in Utah and is also the lead entity in identifying and mapping GRSG distribution. Information on the distribution identification process followed in Utah was summarized and is included in the Utah Greater Sage-Grouse Management Plan (State Management Plan) (UDWR 2009). Although this plan has been superseded by the State Conservation Plan, the now dated Management Plan provides relevant information on the habitat identification process.

Following Doherty's work in Wyoming, Montana, and Colorado (Doherty 2008), core Utah GRSG breeding habitats were mapped. The mapping was accomplished utilizing occupied lek densities and associated male GRSG maximum lek attendance data for the period 1999 – 2008 (10 years), referred to as the breeding bird density mapping. The breeding bird density mapping identified four density levels or parameters. The first parameter identified areas where 25 percent of the state's total 10-year average spring breeding GRSG males (indicator for populations) are located. These areas symbolize the highest statewide density of breeding males on leks and can also be viewed as high priority leks or those leks and associated habitats that individually contribute the most to the state's GRSG total population. The second parameter identified areas where 50 percent of the state's total breeding GRSG males are found. This was repeated for the 75 percent and 100 percent of spring breeding GRSG males until all occupied leks were classified. Viewed from the converse, the total known spring GRSG statewide population was indicated by the combined area of all parameters.

The breeding bird density mapped habitat was further refined over time as additional population and habitat area inventory, studies and other information were available. This included information provided by other field specialists, other agencies, local and special interest groups, private landowners, and academia. Adjustments to habitat boundaries have been made based on verified information. The mapped occupied habitat boundaries in each population area include areas currently occupied by a population or populations of GRSG and are based upon the location of occupied leks, the identification of nesting and brood rearing habitat, and associated winter and other habitat.

For decades prior to the current review, the UDWR has been supporting research and community-based conservation efforts to learn more about the ecology of the species. Appendix 8 of the State's 2013 Conservation Plan contains a listing of research studies and reports on GRSG conducted in Utah. To facilitate this effort, the UDWR established ten Local Area Working Groups under the general direction of Utah State University, with the first established as far back as 1996. These Local Area Working Groups were composed of private interests and governmental entities, and were tasked to assess the local nature and scope of the threats to the species, and to recommend a course of action to address those threats. Because of this

early and ongoing assessment, the State of Utah is fortunate to have a high level of knowledge about many of the populations including seasonal range, migration routes, and other factors known to be essential to maintenance of the species, all in the context of Utah's unique conditions.

GRSG distribution in Utah is highly influenced by the geography of Utah, which is characterized by mountainous terrain, separated by broad valleys in the Great Basin, and by deeply incised canyons in the Colorado Plateau. GRSG habitat may be found in intact blocks in the Great Basin, or in disconnected "islands" of habitat in the Colorado Plateau.

The UDWR's broadly depicted occupied GRSG habitat maps are intended to encompass the range used throughout the year by known GRSG populations. Broad based maps that identify the GRSG range are necessary to include a variety of important seasonal habitats and movement corridors that are spread across Utah's geographically diverse and naturally fragmented landscape. GRSG, frequently described as "landscape-scale species", may use multiple areas to meet seasonal habitat needs throughout the year and the resulting patchwork of habitats (e.g. winter, breeding, nesting, early brood-rearing, late brood-rearing, transitional, and movement corridor habitats) can encompass large areas, sometimes ranging between 180,000 and 1.2 million acres. Broad range maps increase the likelihood that all seasonal habitats (including transition and movement corridors) are included, especially where there are information gaps on GRSG populations' habitats. Inevitably these GRSG range maps include a patchwork of GRSG habitats and non-habitats. Non-habitats, in and of themselves, may not provide direct habitat value for GRSG (e.g. deep canyons or water bodies), but may be crossed by GRSG when moving between seasonal habitats.

To assist in refining GRSG occupied habitat in Utah, telemetry and GPS data has been collected for a portion of the GRSG populations in the state. Telemetry and GPS data provides UDWR with site-specific data on how GRSG use the landscape. Telemetry information provides a snapshot of how GRSG used the landscape in specific years but does not necessarily represent how those same birds use the landscape every year. To ensure all potential areas used by GRSG are identified and adequately managed to maintain and enhance GRSG populations, non-sagebrush habitat types (i.e. alfalfa fields) adjacent to telemetry locations are likely included in UDWR occupied GRSG range maps. Similarly, for populations where there is no telemetry data, the UDWR occupied GRSG range maps are intentionally broad in an attempt to include all possible areas, adjacent or nearby, that may be used by GRSG as habitat or movement corridors. In general, maps are refined as additional information on habitat conditions, GRSG habitat use patterns, population susceptibility to stochastic events, and impacts of vegetation treatment are available.

In summary, broad maps are more likely to include all seasonal habitat areas important for each population and can be refined as management agencies gain more information. Occupied habitat maps used as a baseline for this LUPA currently include known use areas, areas of potential habitat, as well as areas of non-habitat.

## **PLANNING REQUIREMENTS**

Though the BLM and Forest Service manage the habitat for wildlife species, the UDWR is the agency primarily responsible for managing GRSG in Utah. In the past, the UDWR has been the

primary repository for information regarding GRSG habitat in Utah. The range maps represent a broad combination of information sources, including intact sagebrush areas, field observations, radio-telemetry data, historic habitats, professional judgment, and sagebrush areas adjacent to the previously mentioned areas. Since telemetry data has not been collected for every GRSG population in the state, to refine the broader identified ranges, the aforementioned other sources of information are used in conjunction with telemetry and GPS data to create the GRSG range maps. For BLM's and the Forest Service's purposes of maintaining and enhancing GRSG persistence on the landscape, all GRSG occupied range identified and mapped by UDWR is included as the baseline for planning to ensure that all habitats that are or may be necessary for long-term GRSG persistence are including for assessment and evaluation in the planning process.

In general, the planning schedule and analysis process required a cutoff point for any further consideration of additional habitat information. For this reason the March 2012 version of the UDWR GRSG range map was used as the baseline for the planning amendment. Without the establishment of the a clear cut-off point, the BLM and Forest Service would constantly be in a process of revising baseline information, which would prohibit the agencies from ever being able to complete this LUPA process and begin implementing measures that are needed to reduce or eliminate identified threats to GRSG and prevent listing as threatened or endangered species. However, there is general recognition that the identification and mapping of GRSG habitat is an ongoing effort.

The mapped occupied range map used as a baseline for this planning process is not intended to represent a survey-grade boundary of GRSG habitat and is not expected to be exclusively used at the project-level. In this sub-regional LUPA the BLM and Forest Service are making broad-scale land use planning decisions that are connected with similarly broad-scale LUPAs being simultaneously completed across the range of GRSG (see **Section 1.1** of the Proposed Plan/Final EIS). Based on the scale of planning (landscape level), baseline habitat represented in this LUPA primarily represents first and second order habitat selections discussed in the Background section above.

Not only is the scale of mapping appropriate given the scale of planning, but it is also appropriate given the stated goals and objectives of this LUPA. Through this planning process the BLM and Forest Service aim to not only stop the decline of GRSG populations, but to increase populations, which may require protection and restoration of historic use areas, or stated another way, protection of potential habitat near existing GRSG populations that does not currently support GRSG populations but is ecologically capable of doing so with proper management.

## **HABITAT UPDATES**

As expressed in the 2013 State Conservation Plan, the implementation of any plan should be accompanied by efforts to refine mapping of habitats, which includes this LUPA. These efforts should be coordinated among federal, state and local agencies, private landowners, GRSG working groups and academia that may choose to participate. On-the-ground projects should also contribute to this refined habitat mapping effort, at a level commensurate with the decisions to be made.

Habitat map updates will be made when agencies with special expertise and legal jurisdiction for GRSG and their habitat gain more information on the presence/absence of GRSG; obtain new or additional baseline population data, including information on the distribution and connectivity of GRSG populations with other populations; identify GRSG seasonal habitats and movements; and identify and quantify sagebrush habitats, the condition of those habitats, and connectivity within populations.

While refinements to habitat maps are necessary and appropriate, the Proposed Plan includes management that gives the agency's discretion to authorize actions in non-habitat areas under identified conditions. This eliminates the need to make constant site-specific adjustments to GRSG habitat management area boundaries through the land use planning processes, which is neither consistent with the landscape nature of management actions in BLM RMPs or Forest Plans, nor consistent with application of conservation measures at a scale and timing needed to protect GRSG.

Prior to considering proposed actions within Priority Habitat Management Areas (PHMA) or General Habitat Management Areas (GHMA), an evaluation should be conducted by a qualified biologist in collaboration with federal and state biologists, including a field investigation if needed. To this end, additional site-specific information associated with local surveys could result in a more precise delineation of habitat boundaries. If during implementation of the Proposed Plan or evaluation of a proposed action there are discrepancies between the LUP maps and the on-the-ground conditions, the on-the-ground information should be used to determine where the management included within this LUPA would apply. A similar site-specific review process has been effectively employed while GRSG occupied habits have been under interim management, allowing proposed projects in areas identified as non-habitat to proceed.

When considering new or local information for application of management actions, the goal is to provide a transparent and consistent scientific-based process for adjusting GRSG habitat that will promote conservation of GRSG in Utah. To that end, the following would be considered when updating the GRSG habitat delineations:

### **Occupied Habitat**

- Determination of adjustments in the delineation of mapped occupied GRSG habitat would be coordinated among federal, state and local agencies, academia and technical specialists through a GRSG Working Group.
- Adjustments in mapped occupied GRSG habitat will be based on the best available information, including field observations and inventories, radio-telemetry data, habitat assessments, site visits, supporting research and science, restoration treatments, disturbance, technical expertise, and accepted modeling (including ground-truthing).
- Review of GRSG mapped occupied habitat and proposed adjustments could occur anytime there is a need to adjust the habitat baseline. At a minimum, the BLM would evaluate the mapped occupied habitat boundaries approximately every 5 years in conjunction with land use plan evaluations.

- In general, boundaries would not be adjusted to exclude non-habitat areas if those areas are wholly contained in the mapped occupied habitat boundaries, considering the level of habitat identification needed commensurate with the level of decision-making.
- Habitat altered by fire would not be removed as occupied habitat. If the BLM and Forest Service, in consultation with other agencies, determine that rehabilitation or restoration of mapped GRSG habitat is not feasible and that the area no longer contributes to any part of the GRSG lifecycle, adjustments may be made to exclude the area.
- Determinations on adjustments to mapped occupied GRSG habitat would be by consensus of the GRSG Working Group. If consensus cannot be reached, the BLM Utah State Director or the Forest Supervisor would determine whether habitat boundary adjustments should be made.

### **Priority and General Management Areas**

- Because PHMA and GHMA boundaries are a land use plan action, adjustments are a BLM and Forest Service responsibility and will comply with the applicable BLM or Forest Service planning regulations and policies.
- Adjustments in delineation of PHMA and GHMA would be coordinated among federal, state and local agencies and interested parties.
- Adjustments in delineation of PHMA and GHMA would be based on the best available information, including field observations and inventories, radio-telemetry and GPS data, habitat assessments, site visits, supporting research and science, restoration treatments, disturbance, technical expertise, and accepted modeling (including ground-truthing).
- Review of PHMA and GHMA boundaries would generally be done approximately every 5 years (for the BLM, this would be in conjunction with land use plan evaluations), unless more frequent adjustments are needed.
- Consistent with landscape-level decision making, PHMA and GHMA would be identified at a first- and second-order level (Manier et. al. 2013), and as such, boundaries would generally not be adjusted to exclude non-habitat areas if those areas are wholly contained within the LUP-identified boundaries.
- Areas within PHMA and GHMA that are not currently used by GRSG, but are capable ecologically capable of supporting GRSG would not be removed from PHMA/GHMA boundaries.
- The GRSG Working Group would make adjustment recommendations to PHMA and GHMA to the BLM Utah State Director or Forest Supervisor, who will make the final determination on whether the boundary adjustment is appropriate.
- New areas of mapped GRSG occupied habitat could be identified as either PHMA or GHMA following the appropriate BLM and Forest Service planning rules and procedures. The administrative process through which boundary adjustments will be made would be determined on a case-by-case basis.

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