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BUILDING UTAH SAGE-GROUSE HABITAT GUIDELINES

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In 2000, Connelly et al. published habitat guidelines for the greater sage-grouse (*Centrocercus urophasianus*). Although, they stated that the guidelines may not be appropriate for universal application to range wide sage-grouse habitats and that, when available, local data should be prioritized, their guidelines were used for conservation planning purposes throughout the range of the species. This was problematic for Utah, in that most of the Utah sage-grouse range falls in desert shrub areas which receive less annual precipitation than the areas that provided the data to develop the original guidelines.

To correct this problem, we combined habitat vegetation data for female sage-grouse nest and brood locations collected across the state of Utah from 1998 to 2013, with vegetation, climatic, and elevation data in a cluster analysis. Using this approach, we identified three distinct clusters of sage-

grouse breeding (i.e., nesting and early brood-rearing) and late brood-rearing habitats in Utah. We named these clusters Low, Wasatch, and Parker (Figure 1). For each cluster, we subsequently identified specific vegetation characteristics, or guidelines, which can be used to assess sage-grouse habitat conditions based on local conditions.

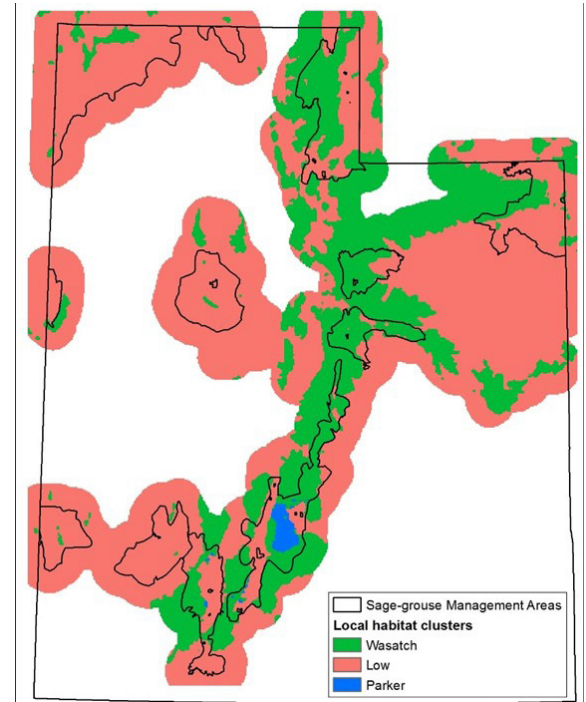


Figure 1. We identified three unique greater sage-grouse (*Centrocercus urophasianus*) habitat clusters for Utah - Low, Wasatch, and Parker.

We identified substantial discrepancies between our recommended guidelines and those presented in Connelly et al. which were also adopted by the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) in their 2015 resource management and land-use plan sage-grouse amendments. In general, sage-grouse in Utah select sites with sparser and lower vegetation conditions than Connelly et al.'s guidelines would recommend. The discrepancies were greater in the more arid Low cluster than in the higher elevation Wasatch and Parker clusters.

Although, Connelly et al. provided separate recommendations for drier habitats, none of the studies they referenced occurred in the sagebrush semi-desert shrublands of the southern Great Basin in particular for Utah. We demonstrated lower sagebrush cover and shrub height to be more

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UTAH COMPENSATORY MITIGATION PROGRAM FOR SAGE-GROUSE

By Alan Clark, retired from the Utah Department of Natural Resources

The Utah Sage-grouse Compensatory Mitigation Program (CMP) was established to offset the impacts of permanent disturbance to greater sage-grouse (*Centrocercus urophasianus*) habitat in Utah. The program defines permanent disturbance as a human caused action that results in a loss of habitat for at least 5 years. The CMP encourages responsible economic development that avoids or minimizes permanent disturbance within sage-grouse habitat in sage-grouse management areas (SGMAs). However, where avoidance or minimization is not possible, the CMP provides a mechanism for mitigation (called credits) that results in an increase to or protection of sage-grouse habitat to offset the impacts from permanent disturbance (called debits).

How can credits be generated?

The CMP records mitigation credits and debits in acres. One credit equals one acre of habitat. Under the CMP, an individual can accrue credits within an SGMA by: 1) creating functional habitat for sage-grouse adjacent to existing occupied habitat, 2) creating corridors linking two areas of occupied habitat to facilitate safe movement, particularly by broods, and 3) protecting existing occupied habitat from development through a conservation easement and ensure the habitat quality is maintained. Projects must be completed within a SGMA in Utah to accrue credits.

What is required after credits are generated?

Projects that create or protect habitat must be verified by the Utah Department of Natural Resources (DNR) before they become credits that can be sold. In addition, the credits generated by projects must be monitored to guarantee their persistence over time. Credits must have a life of at least 20 years but also need to match the longevity of the permanent disturbance. A monitoring procedure has been developed by the Great Basin Research Center. Training will be provided to certify individuals who wish to be able to verify credits in the future.

Who can generate credits?

Utah's CMP provides three approaches to generate mitigation credits. These include: 1) State Sponsored Program, 2) Term Mitigation Credit Program, and 3) Conservation Bank Program. Although there is some overlap, each approach was designed to address a particular mitigation need. The State Sponsored Program is focused on completing the mitigation needed to offset permanent disturbance to sage-grouse habitats on private and Utah State and Institutional Trust Lands (SITLA) lands. The Term Mitigation Credit Program was designed to allow private landowners and SITLA to develop credits on their land, and sell them to anyone needing credits. The Conservation Bank Program was patterned after traditional conservation banks used with endangered or threatened species. It was designed to be used on private land and is similar to the Term Mitigation Credit Program except with stronger protections and requirements. It also needs to have a regulatory requirement on the entity that created the disturbance to mitigate.

Who has to mitigate?

The CMP does not regulate or require anyone to complete mitigation for permanent disturbance in sage-grouse habitat. The requirement to mitigate is up to the land management agency, landowner, or other regulator involved in the disturbance of the habitat. The CMP only regulates how mitigation credits are generated when mitigation is required. The program has been designed and implemented so that it can provide mitigation for permanent disturbance to sage-grouse habitat on any land ownership anywhere in Utah. Because the program is not regulatory on the entities creating the disturbance, the decision on how the mitigation is completed or what is required, is dependent on the landowner or other regulator where the disturbance occurs.



Since 2005, Utah partners have removed over 500,000 acres of conifer encroachment to benefit sage-grouse. Research completed by Utah State University confirms that female sage-grouse that use these areas have higher nest and brood success. Photo by Todd Black.



Female sage-grouse standing on edge of conifer treatment. Photo by Nicki Frey.

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UTAH COMPENSATORY MITIGATION PROGRAM FOR SAGE-GROUSE, CONT.

When should mitigation occur?

Mitigation needs to be completed before the permanent disturbance occurs. As the program becomes operational, the State Sponsored Program will maintain a reserve pool of credits so there is no net loss of habitat.

If I have to mitigate, how do I find someone with credits to sell?

The Credit Exchange Service (CES) is the tool that was created to track the development, maintenance, and transfer of credits to mitigate for permanent disturbance. The CES is administered by the DNR. The CES will track credits generated in any of the approaches using any of the actions discussed above. Contact the DNR for a list of Credit Providers.

Does the rule require a 4:1 mitigation ratio?

The mitigation ratio is the ratio of credits needed to offset each acre of permanent disturbance (a debit is 1 acre of permanently disturbed habitat) of most habitat types in a SGMA. As explained above, the mitigation rule does not regulate disturbance, only how credits and debits are tracked and managed. The rule recommends a 4:1 mitigation ratio, but the actual ratio required is set by the regulatory agency, if one is involved. For example, mitigation for disturbance on federal lands is determined by the relevant federal land management agency. The rule does require the state to complete mitigation at a 4:1 ratio on state lands other than SITLA. When the state is carrying out mitigation for disturbance on private and SITLA lands, a 4:1 mitigation ratio will be used.

Why is a 4:1 mitigation ratio recommended?

The 4:1 mitigation ratio was adopted in the Greater Sage-grouse Conservation Plan adopted by Utah in 2013. The 4:1 ratio accounts for indirect impacts that may come from permanent disturbance, differences in habitat quality, and uncertainty of mitigation success so that detailed analysis of these factors can be avoided and costs for other than habitat creation are reduced.

Why might this be interesting to me as a landowner?

If the market develops for credits needed by disturbers on federal lands, private landowners can develop credits on their property and then sell them to disturbers on the open marketplace through a private negotiation and sale. The Credit Exchange Service will track the transfer of credits but will not regulate the private sale. Good habitat for sage-grouse is also good land for livestock grazing, so sage-grouse mitigation credits could become a second source of income for private landowners without conflicting with livestock grazing.

How can a private landowner generate credits?

Projects to generate credits include several options. A landowner could create “functional habitat” and corridors for sage-grouse from areas that are not currently habitat. Landowners can also generate credits by protecting occupied habitat in SGMA’s through a conservation easement, then ensuring that it remains habitat. “Functional habitat” is sage-grouse habitat created through a credit generation project. It must meet several key requirements, including: it is adjacent to existing occupied habitat, has a live sagebrush canopy of at least 10%, and no more than 1% canopy cover of conifer trees over 0.5 meters (20 inches) in height. A corridor is an area of land that facilitates sage-grouse movement between two or more areas of occupied habitat. It contains less than 1% canopy cover of conifers and at least 15% ground cover in perennial grasses, shrubs, and forbs, and is at least 100 acres in size with a width of at least 2,000 feet. Protected habitat is an area of habitat occupied by sage-grouse that is preserved from permanent disturbance through a conservation easement for at least 20 years and is maintained in sage-grouse habitat (nesting, brood-rearing, wintering, or corridor) for the length of the easement.

Where can I find out more?

The rule establishing the program can be found on the Utah regulation website. Information on the program will be available in the future on the DNR website. You may contact Tyler Thompson, Watershed Program Director at 801-510-7062 for additional information.



Sage-grouse require expanses of a sagebrush to survive. Research completed in Utah by Utah State University has confirmed female sage-grouse that use conifer treatments benefit from them with higher nest and brood success. Slide by Terry Messmer.

BUILDING UTAH SAGE-GROUSE HABITAT GUIDELINES, CONT.

appropriate for the Low and Wasatch clusters for both breeding and late brood-rearing habitats than the federal plans “desired conditions” and “standards” would suggest for Utah. In contrast to the 15% guideline recommended in federal plans, our very low sagebrush cover guideline of $\geq 1\%$ in the arid Low cluster, and of only $\geq 5.4\%$ sagebrush composition of shrub cover in the Wasatch cluster, suggests that land management agencies should re-examine sage-grouse habitat standards across Utah.

Connelly et al. suggested 15-20% sagebrush cover for breeding sage-grouse in both mesic and xeric sites. This is comparable to our recommended breeding habitat guidelines of $\geq 14\%$ sagebrush cover for the Wasatch cluster and $\geq 17\%$ sagebrush cover for the Parker cluster. However, our sagebrush cover guideline for breeding habitat in the Low cluster was only $\geq 7\%$. In contrast, the USFS recommended sagebrush cover of 15-25% for breeding sage-grouse on USFS lands throughout the Utah. For breeding sage-grouse, federal plans adopted a guideline of sagebrush height at 16-32 inches in mesic sites and 12-32 inches in xeric sites. Our recommendations were similar with respect to our Low cluster, where we recommend shrub heights ≥ 12 inches. For the other Utah clusters, our results indicated that shorter shrub heights likely suffice: ≥ 9 inches in Wasatch; and ≥ 5.5 inches in Parker.

Although sage-grouse habitats in Utah were dominated by sagebrush species, other species of shrubs are also important. For example, in the Low cluster shrub cover measured at nest and brood sites, sagebrush was less than half of the composition of all shrub species. Thus, in addition to using habitat categories consistent with Connelly et al., we provided guidelines for shrub cover and height and percent sagebrush composition of shrub cover.

Similar to the BLM and USFS, we provided specific recommendations for forb and grass cover and height. These parameters were originally one recommendation in Connelly et al. Forbs and grasses are distinct vegetation types that are measured independently in the field because they respond differently to environmental conditions, and thus can be managed separately. Thus, grass and forb characteristics should have separate recommendations, but for comparison purposes we combined forb and grass values.

For breeding sage-grouse in arid sites, habitat standards in federal plans were at least 15% combined grass-forb cover; our recommendation for combined grass-forb cover in the more arid Low cluster is $\geq 7\%$. The grass-forb height standard for breeding habitat was > 7 inches in both arid and mesic sites in federal plans. Our recommended grass height guidelines for breeding sage-grouse ranged from ≥ 3.5 inches in Parker to ≥ 4.7 inches in Wasatch to ≥ 6 inches in the Low cluster. Again, our guidelines differed substantially from the federal plans. Connelly et al. recommended $\geq 25\%$ grass-forb cover in mesic sites for breeding sage-grouse; our results suggested a guideline of grass-forb $\geq 12\%$ in Wasatch and $\geq 5\%$ in Parker.

For brood-rearing sage-grouse Connelly et al. and the USFS recommended sagebrush canopy cover of 10-25% in both mesic and arid sites; our guidelines for late brood-rearing habitat sagebrush cover range from only $\geq 4\%$ in the arid Low cluster to $\geq 17\%$ in the Wasatch cluster and $\geq 16\%$ in the Parker cluster. Connelly et al.'s sagebrush height guidelines were 16-32 inches for brood-rearing sage-grouse, whereas our guidelines suggest a shrub height of ≥ 8 inches in the Wasatch cluster, ≥ 4.3 inches in the Parker cluster, and ≥ 10 inches in the Low cluster. Connelly et al. recommended grass-forb cover of $\geq 15\%$ for brood-rearing sage-grouse. Our recommendations are comparable but have slightly lower cover percentages for combined grass and forb cover: $\geq 7\%$ in Low; $\geq 14\%$ in Wasatch; and $\geq 8\%$ in Parker.

We did not provide any recommendations for maximum habitat values. Based on the distribution of data from known nest and brood sites, we did not see any recorded habitat values that were so high they might be considered detrimental to sage-grouse. This does not imply that sagebrush communities are always suitable and beneficial to sage-grouse, even if certain habitat category values (e.g., sagebrush cover and height) may be too high or dense in some areas to provide optimal conditions.

Citation for Connelly et al. is: Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin 28:967–985.

Utah's Community-Based Conservation Program Mission

Utah's Community-Based Conservation Program is dedicated to promoting natural resource management education and facilitating cooperation between local communities and natural resource management organizations and agencies.

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