4.0 DESIRED HABITAT CONDITIONS FOR GREATER SAGE-GROUSE IN NEVADA

The desired habitat conditions for sage-grouse describe what is generally considered to be the highest quality seasonal habitat for greater sage-grouse, specific to Nevada. The desired habitat conditions do not specify what is and what is not habitat, but depict the characteristics of seasonal habitats that sage-grouse in Nevada are using most successfully, based on research in Nevada and the Great Basin. The desired habitat conditions are based on current knowledge of sage-grouse selection and demographic rates related to habitat conditions in Nevada and the Great Basin. Management to work towards these desired habitat conditions must be implemented using professional judgement that assesses ecological site descriptions (including current state and potential), adaptive management, and knowledge of authorized land uses and plans. Vegetation community responses to management techniques can be highly variable and may take years to reach desired conditions depending on a multitude of factors. Vegetation communities go through natural and human influenced successional stages over time that may or may not be progressing sites towards the desired habitat conditions. Therefore, monitoring and data collection must be conducted over a sufficient period of time to allow for an accurate accounting of whether or not a site is making progress toward the desired conditions.

The desired habitat conditions will be used to evaluate management actions and site conditions in sage-grouse habitat to ensure that 1) habitats are maintained if meeting desired conditions, or 2) habitats are trending toward these conditions if they are not being met. Management actions in sage-grouse habitats will include site-specific objectives using these desired habitat conditions as guidelines, while taking into account ecological site descriptions tied to state and transitions models. Progress of management actions will be evaluated through long-term monitoring and adaptive management. When habitat within the State is identified as not meeting these desired conditions and there are opportunities and resources available, the State will seek to work with private and public land managers to assess the causal factors and recommend adjustments in management to work towards the desired conditions. **The desired habitat conditions in table 4-1 should not be used to conduct land health assessments and are not regulatory, but are intended to help guide planning for current and future management using adaptive management as a part of the process.** In implementation, managers must have flexibility to manage for these desired sage-grouse habitat conditions along with other desired conditions on the site, taking into consideration existing permitted uses and corresponding management plans; as well, some sites may not have the potential to meet all desired sage-grouse habitat conditions specific to the site.

The State of Nevada recognizes that a resilient and resistant sagebrush ecosystem should be heterogeneous (a mosaic of multiple seral states) across the landscape and that achievement of these desired habitat conditions resulting in a large-scale homogenous landscape is not desirable within the State of Nevada. Thus, the State will work with land managers and advisors to work towards achieving or the continued maintenance of the desired conditions in Table 4-1, and to incorporate new science, adaptive management, and incentives in the future that will allow this to occur.

The desired conditions in Table 4-1 should not be reviewed, measured, or managed for, independently. Sage-grouse habitat suitability should be determined by the relationship among several indicator values including ecological site descriptions (including current state and potential) along with the relative abundance of habitat types across the landscape. These conditions apply to an area being used by sage-grouse for the appropriate life stage (microsites) and not across the entire site or landscape. The desired conditions for each seasonal habitat should only be assessed during the appropriate season of use (dates can vary annually based on climatic conditions) and in areas spatially mapped as the relevant seasonal habitat (expected from USGS in May 2015). Habitat types may not be mutually exclusive and therefore may have to be managed to meet multiple conditions or selected for the more limiting habitat in the area. It is important to understand that the desired conditions described for these habitat types are based on average plant productivity, structural data, supporting scientific literature, and expert opinion relative to sage-grouse use of sagebrush communities and they may not apply to all sagebrush communities in the planning area (Davies et al. 2006). These measures also do not account for inter-annual climate variation (e.g., precipitation) (Davies et al. 2006). Herbaceous vegetation, in particular, varies dramatically year to year; measurements for a single given year should not necessarily be used to adjust management decisions or actions. Individual indicator values do not define site suitability and overall site suitability descriptions require an interpretation of the relationships between the indicators, ecological site descriptions (including current state and potential), and other factors. In order to provide recommendations for management changes and adaptive management, professional expertise and judgment are required to properly assess current conditions. This should include but not be limited to inter-annual climate variation, and authorized uses and their associated plans.

These desired habitat conditions were developed by a team consisting of representatives from the USFWS, NDOW, USFS, USGS, and BLM. The team reviewed the Connelly et al. (2000) guidelines adding considerable detail and making adjustments based on regionally and locally derived data and analysis by the USGS. The State of Nevada's Science Work Group provided input on the science behind the desired habitat conditions.

Desired Habitat Conditions for Greater Sage-Grouse.

Site-specific objectives should be defined based on ecological site descriptions and current ecological state.

Life Requisite	Habitat Indicator	Objective	Notes
GENERAL/LANDSCAPE-LEVEL			
All Life Stages	Rangeland Health Indicator Assessments	Conduct assessments in sage-grouse habitat and develop site-specific objectives based off assessments	Pellant et al. 2005
Cover (Nesting)	Seasonal Habitat Needed	>65% of the landscape in sagebrush dominated cover	Aldridge and Boyce 2007
	Annual Grasses	<%5	Blomberg et al. 2012
Security (Nesting)	Conifer Encroachment	<3% phase I (>0- <25%cover) No phase II (25–50% cover) No phase III (>50% cover)	Casazza et al. 2011 USGS (In prep) (A)
Cover and Food (Winter)	Conifer Encroachment	<5% phase I (>0 - <25% cover) No phase II (25–50% cover) No phase III (>50%)	USGS (In prep) (A) USGS (In prep) (B)
	Sagebrush Extent	>85% sagebrush dominated land cover	USGS (In prep) (A) Doherty et al. 2008
LEK (Seasonal Use Period: 1 March – 15 May)			
Cover	Availability of Sagebrush Cover	Has adjacent sagebrush cover	Connelly et al. 2000 Blomberg et al. 2012 Stiver et al. (In press) HAF
Security[1]	Pinyon and/or Juniper Cover	<3% landscape canopy cover within 1 km of leks	Connelly et al. 2000 (modified) Stiver et al. (In press) HAF Baruch-Mordo et al. 2013 Coates et al. 2013 Manier et al. 2014
	Proximity of Tall Structures[2]	None within 3 miles (5 kilometers)	
NESTING[3] (Seasonal Use Period: 1 April- 30 June)			
Cover	Sagebrush Canopy Cover	≥20%	Kolada et al. 2009a Kolada et al. 2009b
	Residual and Live Perennial Grass Cover	≥10% if shrub cover is <25%	Coates et al. 2013 Coates and Delehanty 2010 Kolada et al. 2009a Kolada et al. 2009b
	Annual Grass Cover	<5%	Lockyer et al. (In press)
	Total Shrub Cover	≥30%	Coates and Delehanty 2010 Kolada et al. 2009a Lockyer et al. (In press)
	Perennial Grass Height	Provide overhead and lateral concealment from predators	Connelly et al. 2000 Stiver et. al. (In press) HAF Connelly et al. 2003 Hagen et al. 2007
Security[1]	Proximity of Tall Structures[2] (1 meter above shrub canopy)	None within 3 miles (5 kilometers)	Coates et al. 2013 Gibson et. al. 2013 Manier et al. 2014

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BROOD-REARING/SUMMER[3] (Seasonal Use Period: 15 May- 15 September) Early brood-rearing seasonal use period: 15 May- 15 June Late brood-rearing seasonal use period: 15 June- 15 September			
All brood-rearing sites			
Cover	Perennial Grass Canopy Cover and Forbs	>15% combined perennial grass and forb canopy cover	Connelly et al. 2000 Hagen et al. 2007
Cover and Food	Perennial Forb Canopy Cover	≥5% arid ≥15% mesic	Casazza et al. 2011
Early and late brood-rearing – Upland Sites Only			
Cover	Sagebrush Canopy Cover	10-25%	Connelly et al. 2000
Late brood-rearing- Riparian Sites Only			
Cover and Food	Riparian Areas/Meadows	PFC[5]	Prichard et al. 1998 Prichard et al. 1999 Dickard et al. 2015 Stiver et al. (In press) HAF
Security	Riparian Area/Meadow Interspersion with Adjacent Sagebrush	Has adjacent sagebrush cover	Casazza et al. 2011 Stiver et al. (In press) HAF
Cover	Perennial Grass Height	Provide overhead and lateral cover from predators, for thermoregulation, insects, etc.[6]	Connelly et al. 2000 Stiver et. al. (In press) HAF Connelly et al. 2003 Hagen et al. 2007
Late brood-rearing – Both Upland and Riparian Sites			
Food	Perennial Forb Availability and Understory Species Richness	Understory Species Richness- > 5 grass and forb species present	Casazza et al. 2011
WINTER[3] (Seasonal Use Period: 1November – 28 February)			
Cover and Food	Sagebrush Canopy Cover	≥10% above snow depth	Connelly et al. 2000 USGS (In prep) (C)
	Sagebrush Height	>9.8 inches (25 centimeters) above snow depth	Connelly et al. 2000 USGS (In prep) (C)

[1]Applicable to Phase I and Phase II pinyon and/or juniper.
[2] Does not include fences.
[3]Field collection data for these seasonal habitat delineations should only be taken in the areas mapped as that habitat type (maps expected from USGS in May 2015) and during the appropriate seasonal use period. Seasonal use periods are standardized for the purposes of this table, but may fluctuate annually due to climatic conditions.
[4]Species richness should include some forb species, with consideration given to sage-grouse preferred forb species listed in Stiver et al. In Press.
[5]Site does not have to meet PFC but should be showing progress in trending toward proper functioning condition or have an upward trend if functioning at risk.
[6] Applies to grasses within sagebrush-shrub communities adjacent to riparian area. Sage-grouse generally select for perennial grass heights that are greater than what is randomly available in a given site (USGS unpublished data). Selected heights in Nevada on average range from 4" - 8" (average droop height of live plants) depending upon resistance and resilience mapping and ecological site descriptions (USGS unpublished data). Generally, sites in the northern portion of the management area trend toward the upper end and those in the southern portion trend toward the lower end of the height range (USGS unpublished data).

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