

State of Nevada Conservation Credit System

2017 Draft Findings & Improvement Recommendations Report



December 15, 2017

STATE OF NEVADA

CONSERVATION CREDIT SYSTEM

The *Findings & Improvement Recommendations Report* is an annual product of the Nevada Conservation Credit System. The Sagebrush Ecosystem Technical Team of the Nevada Division of State Land's Sagebrush Ecosystem Program produces the report.



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INTRODUCTION

Key to the long-term success of the Nevada Conservation Credit System (Credit System) is the adoption of well-supported improvements to the Credit System. Improvements ensure Credit System policies, procedures, and tools continue to support achievement of the Credit System’s goal: for impacts from anthropogenic disturbances to be offset through restoration, enhancement, and protection that results in net conservation gain for sage-grouse habitat in the State of Nevada. Well-supported improvements depend on: (1) a process that identifies findings from both the operation of the Credit System and new science, and (2) thoroughly analyzed and documented recommendations that stakeholders can review before adoption.

This report contains improvement recommendations for the Credit System Oversight Committee - the Sagebrush Ecosystem Council (SEC) - to consider as part of the 2017 continual improvement process. The findings and improvement recommendations described in this report were identified and formatted through the annual process outlined below. The initial version, version 1.0, of the Credit System Manual and Habitat Quantification Tool (HQT) Methods Document were adopted by the SEC in December 2014. In December 2015, the SEC adopted 11, described in the *2015 Credit System Findings & Improvement Recommendations Report*, which were implemented in version 1.1 of the Credit System Manual and HQT Methods Document. In 2016, the SEC adopted 14 additional improvements, described in the *2016 Credit System Findings & Improvement Recommendations Report*, which were implemented in version 1.3 of the Credit System Manual, HQT, and other program documents.

Annual Process

Each year the Sagebrush Ecosystem Technical Team (SETT) synthesizes findings related to Credit System operations, achievements and challenges, along with any new science relevant to the Credit System. This process of synthesizing findings enables the SETT to identify implementation and policy issues, opportunities for program improvement, and emerging information needs. The SETT develops improvement recommendations for the Credit System that are based on the findings and are considered for adoption by the SEC at the annual *Credit System Improvement Meeting* each December. The findings and improvement recommendations are documented in an annual *Findings & Improvement Recommendations Report* to enable the SEC to make informed decisions and valuable improvements to the Credit System.

The process for producing this report is summarized in Section 3.3: Adaptively Managing the Credit System in the Credit System Manual. During the implementation of the first continual improvement cycle in 2015, the SETT defined a slightly revised five-step annual process, which is illustrated in Figure 1 below. The red circle indicates the steps in the continual improvement cycle during which this report is produced and the SEC considers adoption of the improvement recommendations in this report.



Figure 1: Credit System continual improvement process

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2017 DRAFT FINDINGS AND IMPROVEMENT RECOMMENDATIONS

Findings

This section contains a synthesis of key findings identified by the SETT, many of which are directly relevant to potential or recommended improvements to the Credit System. Findings not directly linked to improvement recommendations either support existing policy, require actions beyond the SETT's purview, are not currently actionable due to incomplete information, or lack of implementation resources.

The findings are categorized as "Operational Findings" or "Research & Monitoring Findings." Operational findings are derived from stakeholder feedback and from on-the-ground learning associated with testing and implementation of Credit System policies, procedures and tools. Research and monitoring findings are associated with new science or drawn from the results of monitoring data.

Improvements List

All potential Credit System improvements are captured in the *Credit System Improvements List*. The SETT uses the list to track and respond to stakeholder feedback – including suggested Credit System improvements and new findings – in an organized and transparent manner. It is also used to define work plan priorities with the SEC each year.

Improvement Recommendations

This section is a distillation of recommended improvements to the Credit System proposed by the SETT ranging from management strategies and policies to operational procedures and tools. Included are improvements that will affect the goal or scope of the Credit System, related policies and plans, state or federal agency partnerships, administrative responsibilities, or administrative liability, or improvements that will have a meaningful impact on credits and debits generated from future projects, or a meaningful impact on program operations. The SETT creates the improvement recommendations based on the findings and thorough analysis of potential improvements identified. The SETT presents these recommendations to the SEC for discussion and approval.

Within each category, the recommendation includes:

- Summary of improvement
- Specific improvement recommendation
- Rationale to support recommendation details

Potential improvements that the SETT does not currently recommend implementing, or that are not yet completely developed and ready for adoption, are tracked in the *Improvements List*.

Each finding and recommendation are summarized in the table below and detailed hereafter.

December Findings and Improvements Recommendations

- 1 Finding:** Permanent credits in some circumstances may not be a feasible option for either the credit developer or credit buyer.

Improvement: The SETT recommends that a multiplier of 12 be an option to allow the conversion of the permanent credit obligation into term credits that are likely to be readily available.

- 2 Finding:** Some map units within debit project areas hold extremely low to no habitat value for sage-grouse (e.g. cheatgrass monocultures, phase III conifer). These areas can be identified prior to field data collection and excluded from the HQT analysis when calculating Debits. This will reduce the cost of assessing Debits by reducing the cost of field data collection efforts.

Improvement: We recommend that cheatgrass monocultures and phase III pinyon and juniper (PJ) as identified and mapped, be removed from the analysis area on debit projects when calculating habitat function.

- 3 Finding:** Removal of anthropogenic disturbances is described within the CCS Manual as a means to generate credits, but reduced durability is a concern when removal occurs on public lands' rights-of-way without a commitment to monitor and maintain habitat as part of a project.

Improvement: The SETT recommends a contribution of 3 times the standard reserve account contribution based on the current CCS protocols for calculating a project's reserve contribution

January Findings

- 4 Finding:** Powerlines were split into two subtypes last year due to differences in opportunities for raven nesting. Recently acquired data on raven nesting frequency along distribution lines may enable further classification of this anthropogenic disturbance.

- 5 Finding:** Anthropogenic disturbance categories do not differentiate ancillary anthropogenic features, which can result in potentially inflated estimates of indirect effects of minor anthropogenic features when required to be located away from the immediate vicinity of the disturbance.

- 6 Finding:** The methods initially established to quantify the impacts of conifer removal and the credits awarded from the implementation of such actions are longer viable due to recent changes in the CCS

1 – ALLOW TERM CREDITS TO OFFSET PERMANENT IMPACTS USING A 12:1 RATIO

Finding

Permanent credits in some circumstances may not be a feasible option for either the credit developer or credit buyer.

- Only a small portion of debits generated from each debit project is expected to be needed to offset with permanent credits.
- The cost of financial assurances is significantly higher for permanent credits than temporary credits, and financial assurances are estimated to be up to half of the cost to generate credits.
- Credit developers are unlikely to be interested in generating both temporary and permanent credits from the same credit project.
- Credit developers are unlikely to sell or transfer permanent credits without clear understanding of demand for all permanent credits generated from the credit project.

Improvement Recommendation

Summary

Credit developers may not be willing to sell or transfer permanent credits due to the small quantity that may be needed during a transaction. The SETT recommends using a multiplier of 12 to convert permanent debits into term debits. The SETT will encourage sale of permanent debits as the primary option; however, if situations arise where permanent debits are not currently available; the CCS will provide an alternative to purchase term credits.

Specific Improvement Recommendation

In situations where a debit producer is not willing to buy permanent credits or when none are available, the SETT recommends using a multiplier of 12 that would be applied towards permanent debits. This would be equivocal to the State of Nevada's definition of perpetuity.

The SETT recommends that a multiplier be an option to allow the conversion of the permanent credit obligation into term credits that are likely to be readily available. The SETT will require credit buyers to research the availability of permanent credits within the system prior to considering using the multiplier. The SETT will work with specific credit developers to explain the benefits of permanent credit development for multiple debit projects' permanent credit obligations.

Rationale Supporting Recommendation Details

Perpetuities in Nevada are described by NRS 111.1031, which defines perpetuity as 365 years. A multiplier of 12 applied to 30 year term credits would roughly equate to the 365 years.

The cost to the credit developer to monitor, maintain, and manage a small number of permanent credits is extremely costly and is likely to result in the credit developer setting a very high price that may be viewed as unreasonable to a credit buyer. In addition to selling few permanent credits, the amount of credits sold may only be a portion of the credit project area, creating a potential situation where the credit developer would need to manage a smaller portion of their project while the remaining project area credits may be sold for a single term or not sold at all. This may create situations where it may not be financially reasonable or create an incentive for the credit developer to sell permanent credits.

2 – IDENTIFY AND ELIMINATE HABITAT OF DE MINIMIS QUALITY FROM FIELD DATA COLLECTION FOR DEBIT PROJECTS

Finding

Some map units within debit project areas hold extremely low to no habitat value for sage-grouse (e.g. cheatgrass monocultures, phase III conifer). These areas can be identified prior to field data collection and excluded from the HQT analysis when calculating Debits. This will reduce the cost of assessing Debits by reducing the cost of field data collection efforts.

- For debit projects, some areas captured within the project area may be disturbed (e.g. cheatgrass monoculture post-wildfire) and calculate 0% habitat function.
- Areas that hold no sage-grouse habitat value in most situations calculate zero habitat function; however, there are instances where some habitat types (e.g. phase III conifer) may calculate function if some shrubs or other herbaceous vegetation are present.
- Due to the large extent of many debit projects, the area where field data collection is required can be tens of thousands of acres, which increases staff time and costs to complete field efforts.
- Several categories have been identified that should be removed from the debit project area assessment if certain criteria are met; guidance including maps of phase III conifer and annual grass composition will be used to help identify these areas.

Improvement Recommendation

Summary

There are several habitat types that may be included in debit project areas that will yield 0% habitat function for sage-grouse, including phase III conifer and cheatgrass monocultures. These areas should be excluded from the HQT analysis when calculating debits. The SETT recommends using conifer and annual herbaceous canopy cover data layers developed by USGS, reclassified by the SETT, to use as boundaries to remove from current debit project areas.

Specific Improvement Recommendation

We recommend that cheatgrass monocultures and phase III pinyon and juniper (PJ) as identified and mapped, be removed from the analysis area on debit projects when calculating habitat function.

Debit projects quantify habitat function that currently exists and can be thought of as a snapshot of current conditions. We recommend removing those areas that calculate 0% habitat function from the project area map units to streamline data collection efforts. The SETT recognizes that some areas of high cheatgrass but low shrub cover are may not represent lost habitat and could be rehabilitated at some point in the future; however, when analyzing current conditions to assess credit obligation for debit projects, the current conditions are what the project proponent will be responsible for. As such, if the HQT will result in 0% habitat function for particular characteristics, they should be excluded from the project.

The exception to removing phase III conifer or cheatgrass map units will be in situations where these areas occur within 1 km of a lek. Areas near active leks will still be included within the HQT analysis regardless of habitat

quality. The SETT plans to remove these areas near leks from the phase III conifer or cheatgrass layers to be provided to verifiers.

The manual and automated User's Guide Documents will be updated in the Guidance for Delineating Map Units sections to reflect these changes.

Rationale Supporting Recommendation Details

Phase III PJ is defined as having greater than 20% canopy cover based on sage-grouse avoidance and survival (Coates et al. 2017c) and encroachment classification described by Falkowski and Evans (2012). The remote sensing techniques used to classify conifer cover in the USGS conifer cover map did not detect characteristics such as understory vegetation, tree age, etc. that are also used in determining pinyon and juniper phase or encroachment (Coates et al. 2017b), so the CCS conifer phases were defined using the USGS classification. The SETT has created a GIS polygon shapefile of phase III PJ that can be used to clip phase III out of the debit project area as non-habitat. The data were derived using the USGS 1m scale conifer cover classifications that were aggregated to 30m raster cells (Coates et al. 2017a). We reclassified the final USGS 30m conifer canopy cover raster file using a circular moving window neighborhood analysis with a 440m radius. During the HSI modeling process, three spatial scales were analyzed to identify the most appropriate scale for how each land cover variable, including PJ, affected sage-grouse selection or avoidance. The three spatial scales used represent the minimum (167.9m), average (439.5m), and maximum (1,451.7m) daily distance traveled by sage-grouse in the study. Of the sub-regions used in the analysis that incorporated PJ as a land cover variable, the 439.5m spatial scale was the top model in 11 of 16 sub-regions across Nevada. On average, the 440m spatial scale was the best predictor of how PJ influences sage-grouse habitat selection when developing the HSI. Therefore, we selected the average daily distance rounded to 440m to use as the spatial extent to categorize PJ phases, which best represents the biological impact to sage-grouse populations.

The SETT also created GIS polygon shapefiles of annual herbaceous canopy cover greater than 35% from USGS (Boyte and Wylie 2017). In the CCS, a map unit has zero habitat function when annual grass exceeds 30%. Therefore, we reclassified the USGS annual herbaceous layer to identify areas containing greater than 35% cover, to allow for a 5% standard error buffer. In addition to using the annual herbaceous layer to identify areas of cheatgrass, photo points will be required to visually assess that the area is predominantly cheatgrass before removal from the project area. These areas can be initially outlined using the annual herbaceous cover map provided in the Nevada Data Package, however this is to help identify potential areas that will result in zero habitat function and must be verified in the field to confirm it meets criteria.

The literature widely supports avoidance of PJ by sage-grouse (Freese 2009; Doherty 2008; Casazza et al. 2011; Baurch-Mordo et al. 2013). Female sage-grouse avoided PJ when canopy cover was greater than 3% within 800m of nest sites and tended to nest where trees were clustered compared to dispersed (Severson et al. 2017). Recent research has also indicated that sage-grouse experience higher mortality associated with Phase I PJ (Prochazka et al. 2017) and show strong avoidance of phase II and III PJ (Coates et al. 2017c). While sage-grouse may occasionally use greater than 10% canopy cover in phase II and III, it is very uncommon and strongly avoided; with every 1% increase in canopy cover in phase II and III, there was a 35% reduction in probability of selection (Coates et al. 2017c).

The literature also indicates sage-grouse avoidance of cheatgrass. One study in Nevada showed that sage-grouse selected nest sites containing an average of 7% cheatgrass cover compared to 13.3% cover at random locations (Lockyer 2012). Sage-grouse nesting habitat selection has also been shown to be negatively correlated with the abundance of cheatgrass in Wyoming (Kirol et al. 2012). Nesting and brood-rearing microhabitat data from 16 study sites across Nevada and California during 2009–2016 also demonstrated that sage-grouse generally avoided cheatgrass where it exceeded 5% cover in unburned habitats (Coates et al. 2017a). The effect was much stronger in

previously burned habitats where annual grasses were more prevalent; sage-grouse avoided areas with greater than 10% cheatgrass cover and used sites averaging 7.5% cover. At larger spatial scales, annual grass cover analyzed near leks averaged 2.2% within a 5km buffer, and inactive leks contained almost 5 times more cheatgrass (Knick et al. 2013).

In their current condition, phase III PJ and cheatgrass dominated landscapes have little to no sage-grouse habitat value. Naturally occurring phase III PJ woodlands lack a sufficient sagebrush understory and pose a significant threat from predators and are generally considered to have no habitat value. There may be exceptions where corridors within phase III PJ are identified for removal treatments in order to improve connectivity between existing sage-grouse habitat. Cheatgrass monocultures, while not sage-grouse habitat in their existing condition, could be rehabilitated and restored to habitat in the future but from the HQT perspective these areas will not calculate habitat function for sage-grouse.

References

- Baurch-Mordo, S., Evans, J.S., Severson, J.P., Naugle, D.E., Maestas, J.D., Kiesecker, J.M., Falkowski, M.J., Hagen, C.A., and Reese, K.P. 2013. Saving sage-grouse from the trees: a proactive solution to reducing a key threat to a candidate species. *Biological Conservation*. 167: 233-241.
- Boyte, S.P. and Wylie, B.K.. 2017. Estimates of Herbaceous Annual Cover in the Sagebrush Ecosystem (May 1, 2017): U.S. Geological Survey data release, <https://doi.org/10.5066/F7445JZ9>.
- Casazza, M.L., Coates, P.S., and Overton, C. 2011. Linking habitat selection and brood success in greater sage-grouse. In Sandercock, B., Martin, K., and Segelbacher, G., *Ecology, Conservation, and Management of Grouse*. Studies in Avian Biology (no. 39; pp. 151-167). Berkeley, California: University of California Press.
- Chambers, J.C., Pyke, D.A., Maestas, J.D., Pellant, M., Boyd, C.S., Campbell, S.B., Espinosa, S.P., Havlina, D.W., Mayer, K.E., and Wuenschel, A. 2014. Using resistance and resilience concepts to reduce impacts of invasive annual grasses and altered fire regimes on the sagebrush ecosystem and greater sage-grouse: A strategic multi-scale approach. Gen. Tech. Rep. RMRS-GTR-326. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 73 p.
- Coates, P.S., 2016. Casazza, M.L., Brussee B.E., Ricca, M.A., Gustafson, K.B., Sanchez-Chopitea, E., Mauch, K., Niell, L., Gardner, S., Espinosa, S., and Delehanty, D.J. 2016. Spatially explicit modeling of annual and seasonal habitat for greater sage-grouse (*Centrocercus urophasianus*) in Nevada and Northeastern California—An updated decision-support tool for management: U.S. Geological Survey Open-File Report 2016-1080, 160 p., <http://dx.doi.org/10.3133/ofr20161080>.
- Coates, P.S., Brussee, B.E., Ricca, M.A., Dudko, J.E., Prochazka, B.G., Espinosa, S.P., Casazza, M.L., and Delehanty, D.J. 2017a. Greater Sage-Grouse (*Centrocercus urophasianus*) Nesting and Brood-Rearing Microhabitat in Nevada and California—Spatial Variation in Selection and Survival Patterns. U.S. Geological Survey Open-File Report 2017-1087, 79 p., <https://doi.org/10.3133/ofr20171087>.
- Coates, P.S., Gustafson, K.B., Roth, C.L., Chenaille, M.P., Ricca, M.A., Mauch, Kimberly, Sanchez-Chopitea, Erika, Kroger, T.J., Perry, W.M., and Casazza, M.L. 2017b. Geospatial data for object-based high-resolution classification of conifers within greater sage-grouse habitat across Nevada and a portion of northeastern California: U.S. Geological Survey data release, <https://doi.org/10.5066/F7348HVC>.
- Coates, P.S., Prochazka, B.G., Ricca, M.A., Gustafson, K.A., Ziegler, P., and Casazza, M. L. 2017c. Pinyon and Juniper Encroachment into Sagebrush ecosystems impacts distribution and survival of greater sage-grouse. *Rangeland Ecology and Management*. 70: 25-38.

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- Doherty, K., Naugle, D., Walker, B., & Graham, J. 2008. Greater Sage-grouse Winter Habitat Selection and Energy Development. *Journal of Wildlife Management*. 72:187-195.
- Falkowski, M.J., and Evans, J.S. 2012. Mapping conifer trees in sage-grouse habitat using spatial wavelet analysis: a tool for prioritizing treatment of conifer encroachment. NRCS Completion Report 68-7482-10-525.
- Freese, M. 2009. Linking Greater Sage-grouse Habitat Use and Suitability Across Spatiotemporal Scales in Central Oregon. Corvallis, OR. Masters Thesis. Oregon State University.
- Kirol, C.P., Beck, J.L., Dinkins, J.B., and Conover, M.R.. 2012. Microhabitat Selection for Nesting and Brood-Rearing by the Greater Sage-Grouse in Xeric Bug Sagebrush. *The Condor*. 114(1):75-89.
- Knick, S.T., Hanser, S.E., and Preston, K.L. 2013. Modeling Ecological Minimum Requirements for Distribution of Greater Sage-grouse Leks: Implications for Population Connectivity Across their Western Range, U.S.A. *Ecology and Evolution*. 3(6): 1539–1551.
- Lockyer, Z.B. 2012. Greater Sage-Grouse (*Centrocerus urophasianus*) Nest Predators, Nest Survival, and Nesting Habitat at Multiple Spatial Scales. Master's Thesis. Idaho State University.
- Prochazka, B.G., Coates, P.S., Ricca, M.A., Casazza, M.L., Gustafson, K.B., and Hull, J.M. 2017. Encounters with Pinyon-Juniper influence riskier movements in greater sage-grouse across the Great Basin. *Rangeland Ecology and Management*. 70: 39-49.
- Severson, J.P., Hagen, C.A., Maestas, J.D., Naugle, D.E., Forbes, J.T., and Reese, K.P. 2017. Effects of Conifer Expansion on Greater Sage-grouse Nesting Habitat Selection. *The Journal of Wildlife Management*. 81: 86–95.

3 – REMOVAL OF ANTHROPOGENIC DISTURBANCES SHOULD REQUIRE AN INCREASED RESERVE ACCOUNT CONTRIBUTION

Finding

Removal of anthropogenic disturbances is described within the CCS Manual as a means to generate credits, but reduced durability is a concern when removal occurs on public lands' rights-of-way without a commitment to monitor and maintain habitat as part of a project.

Improvement Recommendation

Summary

The removal of anthropogenic disturbances that negatively impact GRSG has been anticipated since the conception of the CCS as a method to generate credits. Due to a lack of commitment to monitor and maintain existing habitat conditions, durability assurances are compromised when removal occurs on public lands' rights-of-way.

The verifiers will conduct a desktop analysis to ensure accurate calculations are made based on the uplift created by the removal of the disturbance. This eliminates the need for the full HQT process because field data collection is not required for this type of credit generation.

Specific Improvement Recommendation

The SETT recommends a contribution of 3 times the standard reserve account contribution based on the current CCS protocols for calculating a project's reserve contribution. These increased reserve account contributions are necessary due to the lack of the project's requirement for monitoring, maintenance, management, and securing financial assurances to conduct these activities when credits are generated in this way.

Within the CCS manual, Section 2.3.2 Credit Project Area and Management Action Types and 2.3.5 Developing Credits on Public Lands and Other Designations will be updated to reflect the improvement recommendation.

Rationale Supporting Recommendation Details

The risk of loss due to natural events, man-made disturbances and the lack of financial assurances to address those potential losses would create an unmitigated burden to the existing reserve account credits.

JANUARY FINDINGS

4 – Powerlines

Scientific research is lacking on indirect impacts of powerlines on sage-grouse populations, which creates difficulty in defining subtypes of this anthropogenic disturbance. Recently acquired data on raven nesting frequency along distribution lines may enable further classification and clarification of powerline subtypes within the CCS.

- Powerlines were split into two subtypes during the 2016 improvements report due to differences in opportunities for raven nesting. However, due to lack of scientific research, accurately categorizing indirect impacts of various structural types of powerlines is very difficult.
- Recently acquired data on raven nesting frequency along single and three phase distribution lines may enable further classification of this anthropogenic disturbance.

5 – Ancillary Features

Anthropogenic disturbance categories do not differentiate ancillary anthropogenic features, which can result in potentially inflated estimates of indirect effects of minor anthropogenic features when required to be located away from the immediate vicinity of the disturbance.

- Lumping anthropogenic disturbances into broad categories may not be representative of the actual impacts and at times may result in an overestimate of the indirect impacts of those anthropogenic features by a significant margin.
- Following consultation with a Science Work Group, we have identified specific features that can be considered ancillary and have assigned a different weight and distance associated with those features.

6 – Conifer Removal

The methods initially established to quantify the impacts of conifer removal and the credits awarded from the implementation of such actions are longer viable due to recent changes in the CCS.