INCORPORATION OF GREATER SAGE-GROUSE POPULATION SPACE USE INTO CCS VERSION 1.8

Finding

The observed extirpation of local leks at a greater rate from anthropogenic disturbances in Nevada than expected (Gibson et al. 2018, Pratt and Beck 2019, Coates et al. 2020, Kirol et al. 2020), as well as new and emerging science on direct and indirect impacts from anthropogenic disturbances to greater sage-grouse population demographics (Harju et al. 2010, Kohl et al. 2018, Coates et al. 2020, Kirol et al. 2020,) has made apparent the need for the SETT to reevaluate how the Habitat Quantification Tool (HQT) analyzes and interprets impacts from anthropogenic disturbances to Nevada's sage-grouse populations. The current version of the HQT measures the loss of habitat functionality from respective disturbance projects on existing habitat but does not account for impacts to populations from surface disturbance projects. The inclusion of greater sage-grouse space use location data around lekking and breeding habitat as a variable in the HQT would result in a more thorough analysis of impacts from surface occupancy projects, and would achieve increased conservation for greater sage-grouse particularly where it is needed: around leks and their respective clusters, with more emphasis around the larger, more important leks and populations within the state (Kohl et al. 2018, Pratt and Beck 2019, Kirol et al. 2020).

Improvement Recommendation

Specific Improvement Recommendation

In February 2023, the SETT obtained a Space Use Index (SUI) layer from Coates et al. (2023) that was derived from physical sage-grouse location data from lekking and breeding sites across Nevada and then extrapolated for the remaining leks and breeding sites with a high degree of statistical confidence. The high use areas around the leks developed by the SUI vary in size depending on the size of the lek and the proximity to other leks. The SETT has run multiple scenarios for different debit project types that indicate the inclusion of the SUI within the current HQT version represents the most scientific based approach to evaluate the impacts from anthropogenic surface disturbance projects and achieves a more representative mitigation value for sage-grouse. The inclusion of space use data will allow Nevada's CCS to parallel current scientific approaches, more appropriately offset surface disturbance impacts and achieve the necessary conservation to aid in the protection of Nevada's sage-grouse populations.

The SETT recommends the following:

- Multiply the Habitat Suitability Index with the Space Use Index (HSI * (1 + SUI))
    - Debit Projects only
    - More accurately represents suitability and use near leks
- Updating the Distance to Lek layer to incorporate the new population science
    - To be used in both Debit and Credit calculations

The SETT recommends changing the title “Dist_Lek” to “Space_Use_Index” as well as the corresponding figures where appropriate throughout the User’s Guide. In the Habitat Quantification Tool Document, the SETT recommends adding a section that explains the origins and use of the Space Use Index, similar to the Habitat Suitability Index sections. These will be updated following action taken by the Council.

Rationale Supporting Recommendation Details

Greater sage-grouse populations continue to decline, and loss of habitats, especially critical lek site habitats and the area around leks, where high sage-grouse space use indicates the area where the majority of their life history strategies are accomplished, are contributing factors. Recent studies show that nest success was negatively correlated with the amount of sustained disturbance within 4 km of nest locations (Kirol et al. 2020), and females attending those leks had nest site selection decrease by 50% when surface disturbance from mining increased from 0 to 12% (Pratt and Beck 2019). Furthermore, adult female mortality risk during breeding season has shown to be 19 times higher for females within 1.6 km of active mining operations (Pratt and Beck 2019). In Idaho, Utah and Wyoming, Kohl et al. (2019) found that power lines negatively affected lek trends up to 2.8 km and nest and brood success were lower up to distances of 2.6 and 1.1 km, respectively. Based off Coates et al. (2020) range-wide population analysis, of the leks that are currently at the warning stage, Nevada has a high proportion of those leks close to crossing the threshold to trending downward due to a decreasing intrinsic growth rate (extirpation). Therefore, proper interpretation of surface disturbance impacts is paramount to obtain the appropriate mitigation and conservation for sage-grouse.

Moreover, not all extrinsic factors limiting sage-grouse populations in Nevada can be solely linked to the spatial extent of anthropogenic surface occupancy projects (i.e., mining, wind, solar, power lines, etc.), but can also be tied to larger environmental factors such as varying fire and climate regimes (Bissonette 2017, Coates et al. 2016 and 2017). However, recent research (Pratt and Beck 2019 and Kirol et al. 2020) point towards when “press” disturbance (sustained disturbance after initial human activity) from anthropogenic surface disturbance activities reaches a certain level on the landscape, other extrinsic disturbances (e.g., climate variation, non-historic fire cycles and environmental and demographic stochastic events) that limit sage-grouse populations are masked from observation because of the overriding effect of surface disturbance to individual populations.

Because of the need for increased conservation to offset significant impacts to greater sage-grouse populations from projects near leks and high space use areas and corridors, and ensure ample conservation gain for greater sage grouse, the multiplier (HSI * (1 + SUI)) is not recommended for credit calculations. Most of the acreage within credit projects are currently incentivized, earning an 8-time multiplier for meadow habitats, and uplift opportunities such as Pinyon-Juniper removal and lowered baselines for degraded habitats where additional credits can be generated by implementing conservation practices. Preservation projects in the CCS are currently given full credit value, which is dissimilar to other mitigation programs, where preservation is given partial value. The evaluation of credit projects, however, will be guided by this improvement, as proximity to leks and high space use habitats are considered within the analysis. As well, the improvement may lead to higher demand for credits as credit demand could potentially be increased by debit projects that are in closer proximity to sage-grouse high space use habitats.

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