Review of: "Social and Environmental Drivers of Black-Necked Crane (BNC) Habitat Suitability in Bhutan: Insights from Maxent Modelling and Conservation Implications"

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Potential competing interests: No potential competing interests to declare.

1. 'Black-necked crane' and 'BNC' are used interchangeably throughout the abstract. Best practice is to not use abbreviations in the abstract.
2. The term 'habitat' includes both abiotic and biotic factors. Since no data on the 'biotic component' was incorporated during the analysis, the term 'environmental niche' is a more suitable term.
3. The statements throughout the manuscript can be shortened. For instance, *the black-necked crane (herein referred to as BNC), scientifically classified as Grus nigricollis, represents a distinguished avian species endemic to the high-altitude regions of Central Asia, as documented by BirdLife International, (2023)*

This can be shortened to – The black-necked crane *Grus nigricollis* (herein referred to as BNC) is a rare and globally threatened avian species, endemic to the high-altitude regions of Central Asia (BirdLife International, 2023).

4. The statements can be shortened; another example – *Due to the potential interdependence among diverse factors, the incorporation of all environmental variables, geomorphic conditions, foraging conditions, and anthropogenic types in the model increases susceptibility to overfitting. To mitigate this concern, the research adopted ENMTools version 1.0.6, an R package developed by Warren et al., (2021). The primary objective was to perform a comprehensive correlation analysis for each environmental element, elucidating the contribution rate of individual variables and retaining solely those exhibiting more considerable contributions (Lu et al., 2020). This methodological approach was employed to refine the model by excluding variables with lower contribution rates, ensuring a more robust and focused representation of influential factors in the ecological niche modelling process.*

This can be shortened to –

Due to the potential interdependence among diverse factors, the incorporation of all environmental variables, geomorphic conditions, foraging conditions, and anthropogenic types in the model increases susceptibility to overfitting (Lu et al., 2020). To mitigate this concern, we performed a correlation analysis for each environmental variable in ENMTools v 1.0.6 (Warren et al., 2021) and eliminated the layers with correlation coefficients > |0.9| (Lu et al., 2020).

5. Text: *In terms of conservation status, BNCs have been classified as vulnerable by the IUCN according to Liu et al., (2013).*

Comment: Liu et al. (2013) did not do IUCN red listing; Birdlife International does that. Cite the correct reference. BNC's current Red List status is 'Near Threatened,' and not 'Vulnerable.'

6. Use of only AUC as an evaluation metric is not wise. AUC will anyways be high (>0.9) with such a low number of occurrence records. Use additional metrics such as TSS, AIC, etc.

7. Black-necked Cranes are not year-round residents in Bhutan. They migrate to Bhutan during the winter months. Was it the yearly or winter NDVI layer that was used for the analysis?

8. The correlation coefficient threshold of |0.9| for environmental layers is very high. The general practice is to set it as |0.75|.

9. References are usually not cited in the results section. All methodological details and references to go in the materials section. Specific comments or inferences from the results can go to the discussion section where appropriate references can be cited.

10. A few of the 10 variables used in the final analysis have contributed very little to the final model. Variable selection is a sequential process; it does not end with the correlation analysis. You eliminate the variables contributing very little (percent contribution <2%) to the model and re-run the model, checking the evaluation parameters (AUC, AIC, TSS, etc.). You repeat the process till you are left with the bare minimum number of variables, removing which leads to a drastic decline in evaluation parameters. You can also provide the information from each successive model run in a table format.