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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Dear authors, I have reviewed your article and consider that the topic is relevant and of importance for the conservation of an emblematic species. Species distribution models can be a very important step prior to taking conservation measures, since they take into account climatic variables, as well as the land use of the region.

However, before being published, it is necessary to take into account some considerations regarding the structure of your manuscript. My observations are mainly directed towards the presentation of the results and methods, which in some cases are presented in sections of the text where they do not correspond.

Below is my list of observations and comments on your manuscript.

Title

Your paper does not show how social factors affect crane habitat; instead, your paper shows how climatic and land use variables were used to describe the habitat distribution of the species studied. Therefore, it is necessary to rewrite the title to a more proper one.

Introduction.

- Check the use of italics when mentioning the scientific name of the species.
- "In addition to ecological considerations, [...] ": please change "creatures" to "species."
- … "cultural heritage" (M. Li et al., 2022). Check citation.
- "Furthermore, climate change-induced alterations in the availability of suitable habitats and food sources present formidable challenges to the long-term viability of these **plants**." Which plants are you referring to? Please correct this wording.
- "To discern suitable habitat features, an HIS model serves as a tool for evaluating habitat quality", correct abbreviation to **HSI**, as presented in the table of acronyms and abbreviations.
- "Therefore, to predict the distribution of and suitable habitats for species of conservation concern, we applied Maxent modelling based on its ability to make accurate and unbiased predictions from limited presence-only data". Needs an appropriate citation.
- "Historical background". This section should have been previously presented in a synthesized form, presenting the

problems that led to the completion of this work and how your species distribution models can help with the stated problem.

- The introduction should follow a structure that moves from the global to the specific perspective, guiding readers towards your objectives. Then, in the final paragraph of the introduction, it is essential to clearly state your research questions and the objectives of your study.

Methods

2.2.2. Environmental Variables

- "Climate change poses a major threat to insect species survival, [...]". I don't understand how insects are relevant here. Please rewrite the phrasing.

2.3.4. Model evaluation and habitat suitability classification

- NLR acronym is not previously explained
- 3. Results
- "3.1. Selection of bioclimatic and Environmental Variables", this paragraph should be moved to the methods section, since it is not part of your objectives and also because it is a step prior to the realization of the distribution models. If presented within the Results section, it must be discussed later.

"3.3. Influence of Environmental Factors on the Distribution of BNC",

- "This suggests that the influence on the suitability of BNCs is relatively minor. However, permutation importance, a measure that directly assesses variable importance through observing the effect on model accuracy when shuffling each predictor variable value generated by Maxent randomly, indicates that", this sounds like a discussion, you need to move it to the corresponding section, or delete it from the text.

- In the "Results" section, you should succinctly present the results of your study, focusing on the methods used, which should have been detailed in the corresponding section. Only conclusions related to the research questions should be addressed, providing detailed results of the main analyses and avoiding any interpretation or discussion of the data.
- Any processing that leads to output should be mentioned in the methods section.
- "3.4. BNC Habitat Suitability Distribution"
- "To generate the habitat distribution map for the BNCs in Bhutan [...]", move to methods.
- "The results of this analysis shed light on the potential for expanding conservation areas." Avoid interpretations of your outcomes in this section.
- "To address the need for expanding conservation efforts, a comprehensive union analysis was conducted using the ArcGIS Pro platform." Move to methods.
- "Despite the challenges posed by the absence of roosting sites in certain areas such as Sephu in Wangduephodrang, Chuzagang and Umling in Sarpang, Doga in Paro, Chargharay in Samtse, Merak and Sakteng in Trashigang, and Tshenkhar, Menbi, Minjay, and Khoma in Lhuntse districts, conservation efforts can still be pursued. These efforts aim

to preserve and protect the habitats of the BNC species. Detailed information regarding the conservation potential of these areas [...], this whole sentence should be part of the discussion of your results.

- 5. Conclusion
- Here you should avoid repeating your results again, as in "The optimized Maxent model, [...].

Table 1. Since not all BIOS variables were used, it is not necessary to present all of them. If you still wish to use a table, it would be appropriate to present only the final set of variables you used for the SDM instead.

Figures 3 and 4 (a-j) should be included in the supplementary materials, as they are not directly employed in the results.