

Effects of grazer density, season and land cover on bird guilds in a restored conservation area

General comments:

The study developed a comprehensive global model of terrestrial herbivore populations, considering eco-physiological traits of various species. The model, coupled with a global vegetation model, predicts the maximum potential and current biomass of herbivores, revealing significant declines in large herbivores and dominance of small species.

I generally believe this approach is interesting and could be used in the future to address important ecological topics.

However, several parts could be reduced and slightly restructured to for better clarity. Every section could be framed with a short overview of what is to come so that the reader does not get lost. The introduction should prepare the reader better about the potential relationship between grazer presents/impact on landscape and occurrence of birds. It would be interesting to get an overview of the different bird guilds to understand their behaviour and occurrence better.

The results/discussion part should state more clearly where their assumptions are based on, they used complicated statistics so they should be able to back up their results with statistical output. Very weak/hesitant wording (e.g. it seemed it increased) should be replaced with better language and statistics. Simultaneously, the link to other studies is very weak and rarely shown. Also the ecological significance is missing in many places. The results/discussion part seems like a mere iteration of results without going deep into the discussion part. The discussion itself was unfortunately not very well structured, the ecological significance and link to existing literature poorly provided. I made some suggestions but it should only serve as an orientation that should be applied to the rest of the manuscript. This whole section should be revised.

The conclusion is not a real conclusion but entails many parts that should be moved in the discussion part. Again, very weak and hesitant arguments that should be replaced by more concrete language. The whole conclusion should be rewritten. I stopped at one point, my earlier comments in the conclusion can be applied to the rest of the conclusion. The conclusion should finish with a broader application of their work and not an "This indicates ..." sentence.

There are too many figures in the results, I believe not more than 4 or 5 figures should be shown. Information presented here can definitely be summarised into less figures.

Abstract:

19-20: Should the focus of the study be impacts of cattle or more on birds? You might have to rethink your opening sentence.

20-21: the connection to birds is a little bit weak. Try to relate it more to habitat requirements of birds, or why birds are impact by habitat changes (food/shelter/eggs)

24-28: These are not objectives but what you did. Objectives would be:

1. Determine the relationship between the abundance and species richness of birds across four foraging guilds and the area utilization patterns of Highland cattle and Konik horses within an alluvial grassland.

2. Examine the impact of seasonality and land cover on the spatial distribution of individuals and species within various bird guilds present in the grazed area.

30. Not clear to me how the hourly position of grazers relates to weekly transect counts of birds to answer and fulfill your objectives. Maybe more like this: We will utilize GPS-collars on all grazers to evaluate the frequency and density of their hourly positions, thereby assessing their area utilization patterns (grazing intensity?). Weekly transect counts of birds will be conducted to characterize their distribution within the grazed area, while land cover surveys will be undertaken to describe the habitat (to relate the bird occurrence to habitat type, maybe make clear what habitat type means?).

36: What do you mean bird species and individuals?

34-36: You relate this mostly to grazing intensity. It's not clear how the occurrence relates to habitat type in terms of cover? Maybe clarify in the methods section better.

40: The wording heterogeneous landscape is very sudden. If you make a statement like this, you should also relate the results to it.

41: Same here with regards to feeding ecologies? You did not mention that you look at birds with different feeding habits. This is confusing.

I feel the abstract needs a bit more attention. It has to be rewritten in a way to prepare the reader better for what is to come.

Introduction:

45: The first sentence should describe all the players of the study and the problematic. You only say that grazing is a common management tool. Would rephrase to make it more interesting

49: you should talk especially about the diversity of birds species in grasslands here/give examples

52: you could prepare the reader here that you are next talking about birds. Maybe just by saying "...associated species, such as birds.

60-62: this sentence feels a little bit out of place, not exactly sure what you mean

64: what are landscape features? How do they affect species?

67: or the feeding behaviour? You mean "**and**" the feeding behaviour?

90: What exactly did they say about why grazed areas in both seasons are important for skylarks?

91: birds that are in enclosures? Or grazers in Enclosures?

100: you could improve the transition by starting this sentence with: In this study, we aim to address this gap by investigating how the species richness and abundance of individuals within a bird community....

105-108: Could be rephrased, maybe something along the lines like this: We focused on elucidating the relationships between the numbers of individuals and species within these four guilds and the density of cattle and horse GPS positions within our study area—a recently

restored alluvial grassland within a French nature reserve. Additionally, we evaluated the dynamic interplay between bird and grazer densities across different seasons and varying land cover conditions.

110: the hypothesis is unclear, maybe: We hypothesize that the presence of birds within the grazed area is contingent upon not only grazer densities but also on seasonal variations and habitat characteristics, owing to the distinct ecological behaviors of birds across different foraging guilds.

Methods:

134: name the source of the satellite imagery

135: The observer? Someone estimated the cover in the field? Or you did it in QGIS with the help of digital tools? How often did you analyse the land cover characteristics?

I think an overview of when you did what and in which frequency at the beginning could be useful in general.

141: assumed or you determined?

145: I'm a bit confused with the observer walking along the grid cell. In the field? How did you know where the grid cell boundaries are?

146-148: suggest to move to beginning of paragraph

How do the land cover types relate to open/heterogeneity of habitat?

161-163: rephrase, e.g. To counteract the natural succession facilitated by willow and poplar saplings encroaching upon the meadows and to foster a heterogeneous environment, large grazers were progressively introduced to the test enclosure. The introduction began with horses in September 2018, followed by cattle in January 2019.

164: were increased sounds weird, as if some external force was responsible for the birth. Would rephrase

172: does this mean the initial cattle were only tracked for 6 months? Meaning you have data points of different lengths?

172-175: too long. Shorten

176: the two additional collars were used on cattle that were already collared or on additional cattle?

182-184: would mention this earlier

192: I would start the paragraph with something like this sentence.. E.g. "To determine the density distribution of the animals over the study area, we recorded hourly GPS points.... "

204: how can birds show connection to the area?

213-216: It could be nice for the reader to have general information as what was when sampled and how often in the same place of the paragraph (e.g. always top)

219: cut-off distance?

226: is this the right wording? Foraging ecology means where they feed? And not what they feed?

233: "on a control non-grazed area"

241-242: Similar comment as before. Only once?

249: UTM grid?

Results/Discussion

Relation to grazer density? Season? Presence of birds between one guild and another

Reading the results made me realise that you did not sufficiently enough talk about potential relationships of grazer density and birds in the introduction (e.g. more insects near ungulates, meadow height influencing foraging, etc)

331: if you combine results and discussion, I would expect further explanation of the patterns observed in this first paragraph

351: Should be elaborated further

360-363: would expect more explanation here is as well

379: it seemed it decreased? Or the statistical analysis backed it up. Generally you

383: You mention uncertainty a few times. What do you mean exactly? Variation? Too many confounding factors

406: is this a common phenomena? Have other studies observed this?

439: does it make sense to calculate season per grid cell? And not by site?

Conclusion

459: seemed to profit or profited?

461: seemed to be important or was important

462-465: should not be in the conclusion but discussion

465-467: rather discussion

468: seemed

470: may suggest

Figures

2a:b: what do you mean by the segment of bird abundance?

So you only had the grazer densities 5 and 125? That's a huge difference.

Y axis label: would change to number of bird individuals, could be confusing otherwise

3: A lot of information in one figure. Very hard to read. Could be changed into several figures or some of it moved into appendix.

Sub-titles naming the bird guild could be helpful too.

Fig. 4: Not really sure what this figure is meant to tell us. There is no difference. I suggest moving this to the appendix and making 2 figures of Fig. 3

Fig. 5: Number of bird species