

Dear authors,

I really like the outcome of your revision. I think that both introduction and discussion have been substantially improved with clear structure and a nice flow of ideas. Although I still think that an isolation by resistance test would be appropriate, I see the merit of the authors incorporating landscape features in their analyses. Finally, I think that consideration of null allele frequencies in their markers result in more reliable estimates of inbreeding. Therefore, I only have minor comments aimed at providing some feedback to improve the manuscript.

Abstract

L28: What do you mean by “productivity”? Generation of biomass in an ecosystem?

L42: Without any quantitative comparison of pollinator communities between drove roads and agricultural matrix, I still find too speculative this statement.

Introduction

L52 “This genetic impoverishment can limit evolutionary potential.”

L64: What do you mean by “subjected to strong adaptation pressures”?

L68-69: I do not know if I agree with this statement. For example, overpopulation of ungulates in many regions has been reported by numerous studies. I think that this sentence should be rephrased to focus specifically on those groups exhibiting population declines (Large frugivores?)

L76-79: This sentence is quite wordy, try to synthesize it.

L124-134: I think that this paragraph is not necessary. You could include two sentences in the previous paragraph, one indicating the effects of drove roads in pollination and another explaining the effects of persistent seed banks.

Methods

L248: Please, indicate the number of microsatellite markers used in your analyses.

L260: Did you compare the models including and excluding inbreeding? This test is very useful to examine if there is evidence of inbreeding in each of your populations. You should get this information in the output of the analysis.

Results

L373-375: It would be good to provide at least a quantitative estimate such as the coefficient of variation.

A few comments about the results from Bayesass and Migrate:

You should have a migration rate of each population with the remaining populations, but I only see a migration rate for each population. Did you estimate the mean migration rate of each population with the remaining ones? If so, you should indicate it. One option to make more visual the information included in Table 6 could be a network plot. You could be interested in the approach used in Castilla et al. (2016) where migration rates are presented in this way. Sorry for the self-advertisement and of course no need of citing this work!

You must provide the standard errors of your estimates to check if they overlap zero and thus migration is negligible.

It is interesting the difference in the magnitude of historical and recent migration rates. It seems like migration was intenser in the past according to your estimates. I wonder if the decline in the use of drove roads could be linked with this reduction in the recent migration. How do the authors interpret this result?

Discussion

L546-549: Maybe an idea for these future studies could be to estimate mean dispersal distance separately for populations in drove roads and agricultural matrix using the approach implemented in the software SPAGeDi. Probably you will need to increase sampling size (sampling area and number of plants).

L550-552: I do not catch the message in this sentence. Please, rephrase it specifying the ecosystem functions provided by mobile pastoralism and what covers more than a half of the global land.

Figures and Tables

The number of tables is too high. I provide some suggestions in this regard:

1. Move Table 2 to supplementary material.
2. Add geographic coordinates of populations to table 3 and remove table 1. The rest of the information in Table 1 is redundant.
3. Move Table 5 to supplementary material.
4. I think that you could include the information of tables 7, 8 and 9 into a single table. The structure of the models is practically identical. You can maintain the explanatory variables in the first column, then two columns for each response variable including its corresponding coefficient and p-value.

I think that the figures still require some improvement.

Although Figure 1 is illustrative of the landscape and human management in the study area, I don't think that it is informative. One option could be to move it to supplementary material. Other option could be to combine Figure 1 and 2 into a single figure. I would suggest removing the second panel and maintain the panel with Iberian Peninsula with the framed area and the landscape map showing the spatial location of populations. Then I would add a third panel with the picture used in Figure 1.

Figure 4: I would suggest removing the grid lines inside the panels and increase font size.

References

Castilla, A. R., Pope, N., Jaffé, R., & Jha, S. (2016). Elevation, not deforestation, promotes genetic differentiation in a pioneer tropical tree. *PloS one*, 11(6), e0156694.