

Dear Editor

I pleased to present you the review of manuscript entitled “Environmental variables determining the presence of an avian parasite: the case of the *Philornis torquans* complex (Diptera: Muscidae) in South America” of Cuervo *et al.* This study pretends provide a methodological framework to understand the potential distribution of *Philornis* complex, a parasitic fly group of birds. The manuscript is clear in their methodology (with exceptions, see general comments) and results and could be used as a powerful tool to predict the distribution of this flies along the distribution known of this complex and also, to conserve endangered birds. However, need a major review in some aspects. I recommend publish this manuscript when the questions are resolved by the authors.

General comments:

I detect four main problems

1. In Methodology, the authors not mentioned as we obtained their dataset. This is very important because is the baseline for any modelling niche study. I necessary that the author mention how sites were surveyed? how many replicates (or pseudoreplicates) have any sites? Seasonality? How standardized the information? Taxonomic authority that classify the philornis? Methodology.... Etc, etc... is completely necessary read this information.
2. The low amount of records not autocorrelated. This said me that all previous sampled were realized in closer sites. Although the authors adequately detail each step carried out through the recommendations of other manuscripts, I wish they could at least include in the discussion of the work somewhat more elaborated with respect to the predictions of the model with a larger number of data from the *Philornis torquans* complex.
3. In the methodology, the rationale for using this fly complex is because it affects only one threatened bird species. The authors could provide in the supplementary material and then in the discussion a potential or actual list of birds affected by this fly complex.
4. Shorten and rephrase part of the discussion. Please, take into account some of the suggestions written here take.

In particular, I have many other recommendations:

L56-58. Reorder! First taxonomy and then, reference!

L62. Please, clarify this. In the first sentences you tell me that there three genera, including *Philornis* generating Myasis. But then, you tell me that the larvae of *Philornis* are coprophagous, semi-haematophagous and subcutaneous. So, what type of feeding is myasis?

L70-71. How depend? It is obvious. Change the magnitude? You said this in the preceding sentence. Change the intensity? You don't said the prevalence. Please clarify or remove and reinforce the previous sentence.

L72. Reference after “...negligible”

L84-89. Please separate in two phrases.

L113. There is a problem here. The complex is choose because affect to yellow cardinal only? Or affect other endangered birds? Please add new examples or number of bird affected with respective references.

L118-121. I need more information. How field surveys? Where? How many replicates per site? In what season you sampled? What literature you consulted? Number of references? How many nest were reviewed in each site? ... please, provided ALL information that support the obtained dataset.

L.119-120 who determined the larvae? The authors used taxonomic key? Molecular depositories? Please provide these data.

L136-138. I am not convinced by using only 18 data to model the presence of *Philornis*. When I have worked in modeling, we have always been asked in journals for a number not less than 40 records and especially records that are not autocorrelated. I understand that sampling generates a bias. Questions: did you test the model with the 80 initial records, regardless of whether there is autocorrelation? Did you generate the model once you only considered 34 sites? My idea is that you test these models to see how substantive is the change between the initial model versus the clean version.

L201-202. Please, also provide a negative argument to small dataset. What level of precision is obtained with few data vs large dataset?

L206. Some reference?

L 209-211. Labud et al. 2003 show data about the movement? I don't think so. Contrarily, Showler & Osbrink 2015 effectively show movement >13 km in some cases. Please provide information about *Philornis* species that you use for modelling.

L250-251. Careful! The comparison that you mention has been studied in *Philornis* species? Do you have information about physiological curve of thermal tolerance? Metabolic exchange? Temperature stress or resistance? Thermal limits? Hypoxia? Provide any evidence about this comparison!

L253-256. Remove this and incorporate in the legend of the figure!

L301. Figure "3a" change capital letter and number

L336-342. Please, provide a brief sentences mention that could happen with a high number of records not autocorrelated? The model should be the same?

L343-344. You not mentioned how obtain the primary dataset. This is completely necessary for any modelling niche! Please provide all information in the Methodology section and subsections.

L349. Migrate is the same of movement? Please clarify this because the *torquans* complex move of some way. How move by day? By year? There is literature?

L350 *P. downsi* inhabits in Galápagos! That species are limited by the sea! In your case *torquans* complex is not limited for geographical barriers! if the authors don't suspect to *Philornis* change among states is necessary provide a explain to the potential movement.

L362-364. Along the latitudes is possible that *torquans* complex present reaction norm of its physiological minimum thermal temperature? Please provide a short sentence with some example or hypothesis please.

L367-370. Mention species, provide references please

L376. Cursive Protocalliphora

L375-378. Some redundant with the previous sentence. Please, shorten the sentence and this paragraph.

L381-382. How many time live a Philornis? There is some reference? Life table?

L401-406. In global warming scenario, how affect this to your results? Do you thinks tha could increase the infestation? The reproduction increase with the temperature? What other fitness traits increase/decrease with high temperatures?

L409-411. This must be mentioned before in the methodology!

L443-446. I thinks that this could develop more! Would it be possible for *Philornis torquans* complex to invade Chile through its own mechanisms? certainly, the authors do not have this clear, since they do not know the capacity of movement (or migration) of the complex as well as physiological aspects that could give a better explanation to the invasion in an area of Chile where average temperatures could ensure adequate development of the species.