

## **Review of the PhD thesis "Drivers of avian diversity on an altitudinal gradient of Mount Cameroon" by Eric Djomo Nana, MSc**

In his PhD thesis, Eric Djomo Nana focused on yet very little explored topics involving aspects of avian ecology in tropical African forests. He took an advantage of natural habitats of his native region in Cameroon and, in cooperation with the team of experts on avian ecology, conducted challenging research in enigmatic environment of tropical forests. In particular, he focused on the community structure and factors forming it along the altitudinal gradient, because, as he quotes, these gradients have been recognized as generators of diversity and refuges of endemism. Very successfully he took the opportunity to collaborate with the Czech colleagues, and as a co-author of the presented articles, he contributed to our understanding of factors driving bird communities in tropical ecosystems.

The dissertation is initiated with a general introduction, in which the issues are presented on 11 pages (except references). This section is written concisely and clearly. It is particularly focused on specificity of the study area, which is reasonable resolution due to dissimilarity of targetted habitats with those in temperate Europe, but unfortunately only less space was put on avian ecology in the tropics in a broader context. For example, it is documented in previous studies that population densities of birds, their foraging specialization, mating systems, reproductive effort as well as predation risks differ more or less markedly between tropics and (much more explored) temperate habitats. Then I would welcome if student will concern more on emphasizing these differences as a possible starting point generating his own hypotheses outlined in the introduction and consequently tested in the attached papers.

Six following chapters consist of four papers either published or accepted for publication in journals with IF, one submitted study and one finished manuscript. With one exception, Eric Nana Djomo is the first author all of them, suggesting his diligence and ability to find his own place in a team of differently focused biologists.

Considering the sequence of papers (or chapters), I would prefer just reverse sorting. By my opinion, the studies five and six, dealing abundance-area relationships in the communities along the altitudinal gradient and comparing two mountain bird communities, if ranked as initial chapters, they can more illustratively imagine the surveyed assemblages which can then easily help us to understand the nature of particular drivers such as predators, parasites, and habitats treated in the remaining papers in a wider context. The Chapter 4 did not seem me in a first look to fit thematically into the dissertation, but I can agree with the author who logically justifies why he included this paper too (page 11). BTW, this chapter evokes some questions, such as why just the greenbuls have so negligible sexual dimorphism, how (or whether at all) it is associated with the mating system of the species and whether this 'greenbul model' is more or fewer representative among birds in tropical forests in Cameroon.

In the Chapter (Study) 2 (on page 33) I do not understand what kind of explained variable was included in the model as the analysis of covariance requires normally distributed data while the daily survival rates represent a binomial response. Did you use some kind of transformed proportions? I found no clear description in the method section. This study also shows that numbers of ground-nesting species gradually decreased with increasing elevation (Fig. S2,

page 55) but no such pattern in nest predation risk was detected along this altitudinal gradient (Fig. 1, page 50); if not the nest predation risk, which crucial factor might then be responsible for remarkably reduced diversity of ground-nesting birds in the top mountains (as other groups have not so obvious pattern)?

A minor comment I have to using the abbreviations. All of them should be exactly specified in their first mention in the text which would also be the case of the "ARSR" on page 14; readers then must search for explanation elsewhere (in this study on page 109 of upper numbering). As the ARSR is relatively little studied in the tropics, the more it attracts our attention. If surprisingly high local abundances of species were revealed at high altitudes with limited available area, may I speculate (except possible explanations on page 114) that this interesting result could refer to an actual situation due to some recent incident in the environment (e.g., habitat loss or reduction)? In such a case, increased hormonal levels in captured birds may indicate some form of environmental stress signaling risks for the populations in the future. Is this idea meaningful in some way in futural research in your study area?

I am convinced that this dissertation is one successful output of the complex challenging project, in which a number of sub-topics covering avian ecology were treated, particularly their diversity in relation to altitude and habitat as well as interactions with parasites and nest predators of which effects was found to play an important role in forming the communities under study.

I conclude that the PhD thesis offered by Eric Djomo Nana meets all the factual and formal attributes put on this type of scientific work and I can recommend it to the last official step toward its successful defense and conferring the relevant academic degree.

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