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Assessment of the PhD Thesis entitled "The sources of variation in the genus *Anthoxanthum* L."

Candidate: Zuzana Chumová – Department of Botany, Faculty of Science, Charles University in Prague

Evaluator: João Loureiro – Department of Life Sciences, Faculty of Sciences and Technology, University of Coimbra

The PhD Thesis presented by Zuzana Chumová entitled "The sources of variation in the genus *Anthoxanthum* L." is highly relevant to the field of biosystematics and evolution of the *Anthoxanthum* section *Anthoxanthum* taxa, contributing with important information to understand the relationships among taxa of this section. It does so, by structuring the document around three main objectives corresponding to three case studies, all of which already published in relevant journals of the area: genome size and ploidy variation in the genus, role of B-chromosomes in intraspecific variation of genome size, and species origin and phylogeny of the diploid members of *Anthoxanthum* section *Anthoxanthum*. The document of the Thesis also included a general introduction that helps to contextualize the work and resumes the main results and achievements.

Overall, the PhD Thesis is very well written (there are some typos, but none greatly distracts the reader) and is presented in English, which is not the native language of the candidate. The work itself comprises the application of several different methods, from field work throughout all the distribution range of the studied taxa, flow cytometry, chromosome counts, molecular cytogenetics, genetic analyses, niche modelling, among others, which reveals the skills and techniques acquired by the candidate during the development of the Thesis.

Therefore, this PhD Thesis positions the candidate and its supervisor as renowned experts in the genus, contributing with further recognition to the Charles University in Prague.

In order to clarify some aspects related with the subject and contents of the PhD Thesis, I have the following questions to the candidate:

- In the introduction, it is referred that two types of polyploidy exist: autopolyploidy and allopolyploidy. By which mechanisms, both types of polyploids are formed? Are the rates of each type comparable? Are there any evidences in the literature about which type is prevalent?
- Why does intraspecific variation in genome size has been considered and still remains somewhat controversial? Can the candidate make an overall overview of the literature on this subject and present some of the advances made in the study of this important phenomenon?

- What does the literature report about the origin of *Anthoxanthum amarum*, which is clearly an intriguing high polyploid in the section? What is the candidate's view about the origin of this taxon?
- Are there morphological evidences to distinguish the "Mediterranean diploid" as a separate taxon? Considering the results obtained, what are the next steps to deal with this entity?
- Do you believe that hybridization is a frequent phenomenon among some members of the section? If so, what evidences can support that view?
- No mixed ploidy populations were observed in the examined taxa. What kind of processes may have been limiting the establishment of neopolyploids in nature?
- What was the criteria to select the two plastid regions (*trlL-trnF* and *rpl32-trnL*) and the ITS markers? Are there any other genetic markers that could have been used to elucidate the genetic relationships among populations?

I will leave some further questions to the PhD Thesis Defence.

With my best regards,

Coimbra, 30th of May 2018

João Loureiro

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