Dear committee,

PhD thesis of Antonín Macháč concerns ecological aspects of diversification in mammals, and includes also an idea paper on phylogenetic scaling. It consists of a general introduction and three chapters, published in the journal Global Ecology and Biogeography.

This thesis presents strong and innovative research results that were all published in a leading scientific journal. It is introduced by a well-written and structured introduction that weaves together threads from the three papers into a coherent picture of diversity dynamics across spatial and temporal scales.

Let me now highlight some of the key aspects of the three chapters of this exceptional thesis:

1) In the first contribution, the authors comprehensively analyse diversification dynamics in mammals. They apply a key idea of phylogenetic scaling on the whole clade of mammals and show that different types of diversification dynamics (constant, slowing, saturated) predictably change during the history of the clade. This is really intriguing! Some questions come immediately into my mind:
   - Why is there so much idiosyncrasy during initial phases of clade diversification?
   - All your PGLS analyses seem to be univariate. Did you consider interactions between variables? For example, the influence of range overlap on slowdowns could be mitigated by energy availability etc.

2) In the second contribution, authors study different aspects of diversity in mammals globally. They find that species richness is driven by productivity, while functional diversity depends primarily on time available for diversification. I read this paper a while ago, but I remember asking myself two questions:  
   - Will we really need to search for convenient phylometrics to index different aspects of clade history (time, diversification etc) for each studied clade anew? Given that phylometrics have their own logic and they are often correlated, can we hope to find a general set of phylometrics to use for similar kind of studies in different systems?
   - Out of the four major predictors of diversity (see your Table 1), niche diversity is lacking in this contribution. Probably for good reasons. Do you have any idea on how to include this potentially powerful predictor of diversity dynamics into macro-scale studies?

3) In the third contribution, authors present the concept of phylogenetic scaling and alike it to spatial and temporal scaling with the outlook of incorporating phylogenetic scaling into future studies of diversification, community phylogenetics and related areas of research. Although many of the presented ideas have been around for some time, I really command the authors for bringing them under one roof and conceptualizing the whole field of phylogenetic scaling.
   - However, one cannot help thinking about the limits of this approach. I can see a big advantage of this approach when studying mammals or even tetrapods, but can you imagine extending this concept to all metazoans, for example?
   - Can you distinguish “scale-dependence” from random noise?
The above-mentioned innovations themselves present a tangible contribution to the field of diversification dynamics with the potential to stimulate further research and discoveries.

To summarize, I am confident that this thesis is an exceptionally good basis to grant to its author the degree of Philosophy Doctor at Charles University.

I will be happy to discuss some interesting aspects of this thesis with its author during PhD defense process.

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