Supplementary material – Calculating arrival ages for Tyrannidae assemblages using Harvey´s et al (2020) phylogenetic hypothesis.

In this Supplementary material we re-analyzed the data presented in the main text, calculating the mean arrival ages for Tyrannidae assemblages using the phylogenetic hypothesis proposed by Harvey *et al*. (2020). All the procedure used to calculate mean arrival ages for each assemblage followed exactly the procedures described in the main text in the Methods section.

Some minor data processing was done in order to format the occurrence matrix with the names of species in Harvey´s phylogenetic tree, these procedures include the substitution of some species names in occurrence matrix by their valid synonym used in Harvey´s tree and bind synonym species in occurrence matrix. All these analysis and data processing can be fully reproduced by running the R script contained in https://github.com/GabrielNakamura/MS\_Tyrannidae\_AgeAssemblage.

The mean arrival ages of assemblages presented similar patterns from that calculated using MCC tree obtained from Jetz *et al.* (2012) phylogenies, with some differences, for example, the lower mean arrival ages of assemblages surrounding Amazon and Atlantic forests biomes in South America. Amazon and Atlantic Forest remains the regions with the higher values of mean arrival ages (Figure SX). Furthermore, tropical region still present assemblages with higher arrival ages than the temperate regions (Accessed with ANOVA F = 2522.53, p value < 0.001).

![Uma imagem contendo Diagrama

Descrição gerada automaticamente]()

Figure SX: Mean values of arrival ages calculated for Tyrannidae assemblages using Harvey´s et al (2020) phylogenetic hypothesis.

References

**Harvey MG, Bravo GA, Claramunt S, Cuervo AM, Derryberry GE, Battilana J, Seeholzer GF, Shearer McKay J, O’Meara BC, Faircloth BC, Edwards S V., Pérez-Emán J, Moyle RG, Sheldon FH, Aleixo A, Smith BT, Chesser RT, Silveira LF, Cracraft J, Brumfield RT & Derryberry EP**. **2020**. The evolution of a tropical biodiversity hotspot. *Science* **370**: 1343–1348.

**Jetz W, Thomas GH, Joy JB, Hartmann K & Mooers AO**. **2012**. The global diversity of birds in space and time. *Nature* **491**: 444–448.