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of divergence times, for some of the populations climate change events during the Pleistocene might have influenced their current distribution and genetic differentiation. Also, the timing and nature of historical volcanic events in the Tungurahua volcano suggests that volcanism may have played a role in the genetic diversity and distribution, especially for *P. tungurahuae*. Species distribution models showed no distribution overlap among species, suggesting that *P. schizantha* prefers areas with lower altitude, lower precipitation and lower humidity than *P. tunguraguae*. Our study shows that using multiple sources of information we can better explain current species distributions and genetic diversity.

Keywords: Population genetics, microsatellites, phylogeography

7B Niche differentiation in Neotropical singing mice

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Species distributions inferred from ecological niche models (ENM) assume accurate estimation of conditions in which species can survive and their corresponding geographic limits. Sister species of Neotropical singing mice (genus *Scotinomys*) segregate altitudinally in the highlands of Costa Rica and Panamá, where *S. teguina* occurs from ~1000-2900m and *S. xerampelinus* inhabits regions above 2100m. Previous data suggests that *S. xerampelinus* is limited by abiotic factors, whereas *S. teguina* is limited by the presence of dominant heterospecifics. We used ENM and C^{13} and N^{15} stable isotope data from hair samples to further explore the factors mediating altitudinal segregation. Predictive performance of ENM was high for both *S. teguina* and *S. xerampelinus* (AUC= 0.91 and 0.96, respectively). Interestingly, both ENM and isotope analyses showed the niche of *S. xerampelinus* to be nested within that of *S. teguina* (>95% for ENM, 71% for isotopes). Furthermore, the predicted distribution of *S. teguina* was ~30% larger in the absence of *S. xerampelinus*, supporting earlier findings of competitive exclusion. Our data suggest that biotic and abiotic factors interact to mediate the altitudinal distributions of Neotropical singing mice, and highlight the importance of integrating biotic and abiotic data to assess the accuracy and magnitude of niche differentiation.

8B Testing for the existence of a long biogeographical barrier perpendicular to the Amazon River

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In biogeographical discussions about lowland Amazonia, rivers have often been regarded as the main dispersal barriers. Accordingly, biogeographical subdivisions of the area typically follow the courses of largest rivers. A recent study by Higgins *et al.* (2011, Journal of Biogeography) described an erosion process, which can create edaphic borders that typically are oriented perpendicular to main river courses. That study documented how such a barrier of over 100 km in length in Peruvian Amazonia significantly affects the distribution of the majority of plant species. The study also identified on the basis of remote sensing data a potential dispersal barrier of over 1000 km long that goes perpendicularly over the Amazon River in western Brazil. No field data existed that would have allowed for an evaluation of practical significance of this potential barrier to species distributions. In 2012, a three-month expedition from March to June was organised by Brazilian, Danish and Finnish botanists to Juruá and Tarauacá rivers to investigate if the predicted dispersal barrier can be found. In this talk I will present preliminary results of species distribution patterns of Melastomataceae plant species over a stretch of ca. 500 km along the two rivers. According to the results, the predicted dispersal barrier exists and its significance in restricting plant species distributions is comparable to the barrier documented in Peruvian Amazonia.

Keywords: geology, Melastomataceae, rain forest, soil