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**Summary**

There is an increasingly amount of research analyzing and describing turnover in species composition(beta diversity) patterns in Amazonian tree communities at different spatial scales showing contrasting results with regards to how these hyperdiverse communities are structured (Duque *et al.* 2002, Higgins *et al.* 2011, Pitman *et al.* 2008, Tuomisto *et al.* 2003, Philips *et al.* 2005, Condit *et al.* 2002, ter Steege *et al.* 2006, Fine and Kembel 2011).Unfortunately, there are still very few studies that combine taxonomically standardized databases as well as the establishment of new plots in unexplored areas, a complete soil gradient sampling at landscape and regional scales covering different geological units, DNA barcoding, and functional traits information for Amazonian tree communities (Fine and Kembel 2011, Baraloto *et al.* 2012). The first step to have a complete description of floristic changes across the region is to create a comprehensive and taxonomically well standardized dataset of tree species abundance in plot networks to avoid the potential bias in the delimitation and assignation of names to the plant voucher specimens collected during the fieldtrips. This bias is exemplified in the results produced by the use of big data sets that come from different sources (see Emilio *et al.* 2010, Stropp *et al.* 2010, Honorio *et al.* 2009 and Pitman *et al.* 2008). For instance, Pitman *et al.* (2008) showed a strong and abrupt floristic disruption in terra firme tree communities along a longitudinal gradient in western Amazonia based on a 56 one-hectare plot transect established in Ecuadorian and Peruvian Amazonia. The plot network was established covering the major geological units and the underlying soil conditions that exist in western Amazonia. However, the analyses were performed with unstandardized data and at taxonomic hierarchically superior level (e.g. genus), this fact potentially biased the results reported in this study due to the exclusion of “morphospecies” that were individuals unable to be properly classified. Based on these antecedents, I visited the National Herbarium of Ecuador located in Quito to work with the plot network voucher specimens deposited in this institution that belongs to Ecuadorian subset plots. After updating and standardizing the taxonomy at species level to reduce the bias produced by unidentified morphospecies, misidentification, and wrong morphological delimitation of the specimens collected, I re-analyzed the dataset. These preliminary analyses show opposing results for the tree species turnover in western Amazonia as Pitman *et al.* (2008) and others authors propose in terms of the influence of geological formations and the underlying soil heterogeneity (Terborgh and Andressen 1998, Higgins *et al.* 2011). However, a complete sampling of soil conditions and morphospecies identification in the plot network remains incomplete. On the other hand recent works have demonstrated that the inclusion of functional traits values and phylogeny are fundamental issues to understand from the perspective of evolutionary time how the communities are structured. The functional traits in plants are directly related to the acquisition of resources to plant growth (e.g water, light, nutrients) and the regulation of conditions related to metabolism as water potential or temperature (Ackerly 2003). These traits vary across different temporal and spatial scales, the ontogeny and some traits like LSA (leaf size area) response to environmental conditions changes in terms of phenotypic plasticity. The traits are also linked to the phylogeny of plants groups; this relation is directly related to historical processes (e.g. disturbance by major geological events, fire) that potentially define regional pools with different functional trait values ranges. For instance, it has been demonstrated that local tree communities have higher values of wood density or bark thickness in the Guyana Shield region and this characteristic is related to the high abundance and diversity of some Fabaceae s.l clades (Chave et al. 2006, ter Steege 2000). For the sake of testing the influence of soil heterogeneity on traits values I developed a pilot study related to the change in functional trait range values (specifically leaf size area) in the same subset of plots that I re-visited to collect soil information. These plots are established along a soil and rainfall gradient that I will use to see whether the leaf size range values at the community level change or not in response to changes in environmental conditions at large scales. I sampled all the adult and juveniles in two 0.1 hectare subplots within the one hectare plots previously established by me and other collaborators in the Cuyabeno-Gueppi region in the Ecuador–Peru border. Both subplots are in different geological units and soils conditions and also different macro-topographic units. This will allow me to examine whether the change in leaf size range values is related to environmental filtering, which means that as whole the community exhibits a different pattern of leaf size due to soils and macro-topographic differences and also correlated to a different regional species pool. I can assume are characteristics of the regional pool in terms of ecosystem properties (wood density, productivity) and forest dynamics.

Additionally, in the one month I spent in the field I was able to establish an additional one-hectare plot in the lowest portion of Cordillera del Condor region. This area is located in the southernmost portion of the Ecuadorian Amazon on a geological formation of Cretaceous origin. The main characteristic of this area is the presence of tepui-like geomorphological formations (with extremely poor soils conditions) that resembles Guyana Shield tepuis. This area also represents the confluence of two different regional floras (western and central Amazonia). In fact, based on the collections of the tree flora I collected during the field trip I can assert that the forest located in this area are characterized by extreme dominance and floristically more similar to forest located in Guyana or Central Amazonia hundreds or thousands kilometers away from this area. This fact leads me to ask new questions about the role of distance, soils, phylogeny, and historical events in the determination of composition and structure of Amazon tree communities.

These preliminary activities are the first step to develop subsequent analysis and also more detailed experiments to assess the influence of soils heterogeneity in the ranges of functional traits and its correlation with changes in tree species composition. I also intend to include phylogenetic information at the community level to test whether a community exhibits a narrow range in functional trait values and is related to trait conservatism and convergent evolution. Convergent evolution is referred to the presence of similar trait characteristics in phylogenetically unrelated taxa. On the other hand, trait conservatism is the process by which very closely related taxa exhibit the same trait characteristics.