Supplementary Information

Exploring plant α- and β-diversity patterns along tropical altitudinal gradients in the Southern Andes of Ecuador: a potential pathway to biodiversity conservation

Plant Biosystems

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Rarefaction analyses

The individual-based rarefaction, as described in the data analysis section, was performed in different ways for each growth form. For trees, the matrices were rarefied to the number of species expected in a fixed sample of 70 individuals, applied at both small and large spatial scales. We did not use the minimum number of individuals due to significant variation, especially at lower and higher elevations (min. 3 – max. 525 individuals per transect; min. 3 – max. 1180 per altitudinal band). This variation is expected given the characteristic vegetation types of the study area. Transects or altitudinal bands with fewer than 70 individuals were excluded from the analysis.

For shrubs, we calculated percent cover per species by summing the values across all subplots within each transect. At the small scale, the matrix was rarefied to 50% cover, and at large scale to 77% cover. For herbs, we followed the same approach; however, we first converted the Braun-Blanquet scores recorded in the field inventory into percent cover (Braun–Blanquet 1979). Rarefaction for herbs was applied at 60% cover at the small scale and 90% cover at the large scale.

Braun–Blanquet J (1979) Fitosociología. Bases para el estudio de las comunidades vegetales. Blume Ediciones, Madrid.

Rarefaction curves analyses

We performed rarefaction and extrapolation curves to assess the completeness of biodiversity sampling across regions (Jubones Valley and CNP), growth forms and altitudinal bands. The floristic dataset, structured as presence/absence data, was classified according to the 100 m-altitudinal bands. We used the "iNEXT" package in R (Hsieh et al. 2024), the data type was set to "incidence_raw" as species presence-absence was used, and subplots were used as sample units.

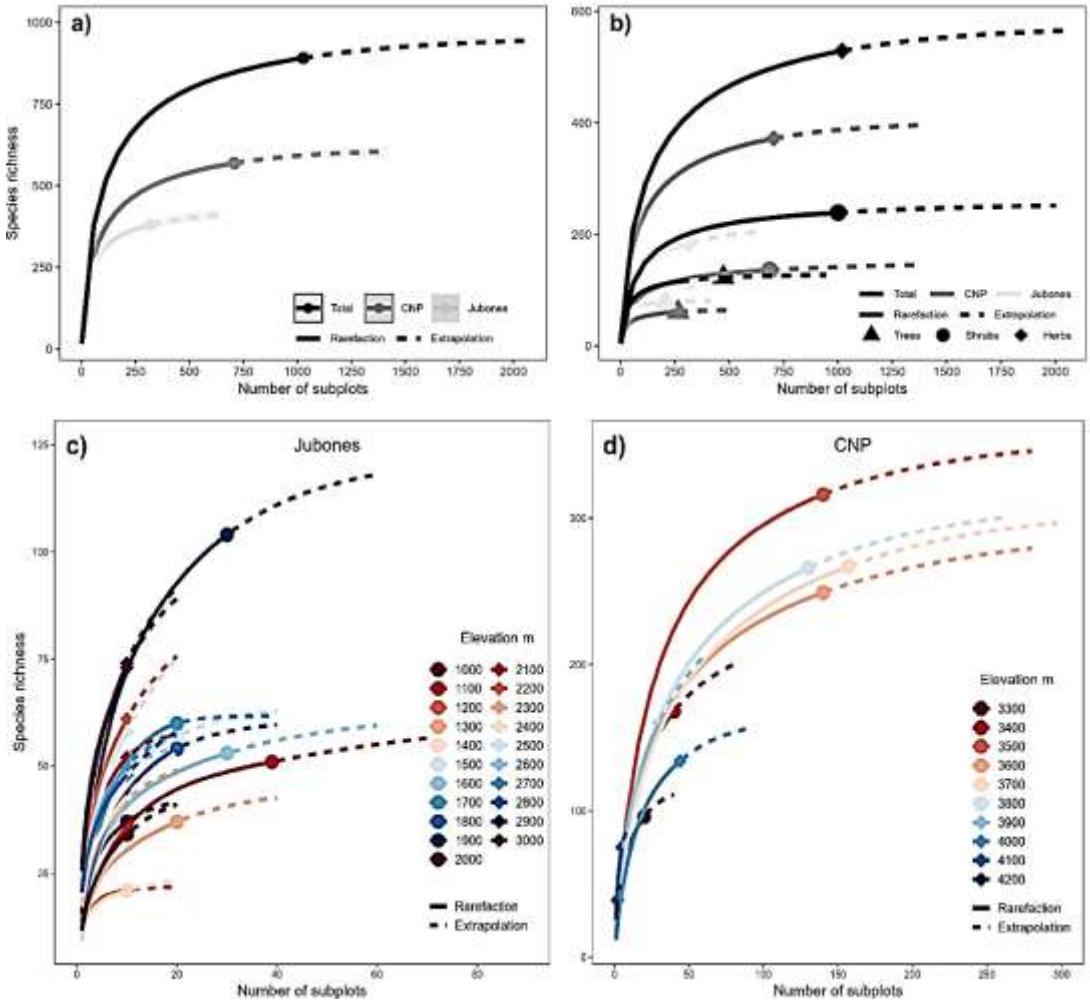

Fig. S3 Species richness rarefaction (solid line) and extrapolation (dashed lines) based on sampling effort (subplots) for: a) total sampling areas, Jubones Valley, and CNP; b) growth forms – trees, shrubs, and herbs; c) each altitudinal band in Jubones Valley (1000 to 3000 m); and d) each altitudinal band in CNP (3300 to 4200 m) in the southern Ecuadorian Andes

Hsieh TC, Ma KH, Chao A (2024). iNEXT: Interpolation and Extrapolation for Species Diversity. R package version 3.0.1.