

Uchucay micro-refugium: an inter-Andean forest relict with significant arboreal richness in Azuay Province, Ecuador.

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Abstract: The Uchucay community reserve belongs to Gualaceo canton in Azuay province; it maintains an important inter-Andean native forest relict, which has been conserved for its relevance in both generation and regulation of water flow. However, little was known regarding its biodiversity; for this reason, by means of 50 x 2 m transects, we studied the richness and floristic composition of woody species with a diameter equal to or greater than 2.5 cm.

Methodology: Seeking to document the tree diversity of the flora of Uchuyau, the best conserved forest areas were selected and eight 50 x 2 m transects were located (Gentry, 1982); the transects were drawn parallel to the maximum slope. In each transect all woody stems were measured with a DBH (diameter at chest height) greater than 2.5 cm; their height was also estimated with the help of a Suunto clinometer. A sample was collected for subsequent botanical identification. Each sampling point was geo referenced according to the World Geodetic System 1984, using the Universal Transverse Mercator projection (UTM), zone 17.

Results: We registered 57 species belonging to 47 genera and 32 families. The analysis of alpha diversity (table 1), indicates that they are moderately diverse forests, with a richness of species that ranges between 12 and 18 and an average diversity of 2.5 in the Shannon index. According to the diversity and fairness indices, transects 5 and 4 are the most diverse, while according to the Chao-1 estimator, the site of transect 6 would be the one with the highest species richness.

Floristic structure and composition: Average density recorded indicates that they are dense forests with an average of 67 stems per 100 m², while the basal area shows an average of 0.77 m² per 100 m², which means 77 m² per ha, a value that corresponds to mature forests. The forest shows a predominance of *Weinmannia fagaroides*, *Clusia oblonga* and *Clusia flaviflora*, which are dominant trees that make up the upper canopy. Other important species are: *Rugea* sp., *Oreopanax* sp., *Viburnum triphyllum* and *Myrsine coriacea* which are species that although abundant are found under the canopy, often providing a closed curtain of the forest edge.

Endemism: Three locally endemics are: *Oreopanax avicennifolius*, *Miconia hexamera* and *Gynoxys dielsiana*. Other native tree species have also been found, such as: *Prunumopsis montana*; *Podocarpus oleifolius* and *Stryx cordatus*, which were probably important in the past but, due to deforestation and triline encroachment, their populations are decreasing; they are considered as threatened species that are most at risk due to impending global warming and climate change in the Andes.



Mountain ecosystems, a palimpsest of plants, animals and microorganisms with their physical environment, undoubtedly contribute to the well-being of the complex adaptive system in the neotropics.

Tropandean landscapes have been subjected to different disturbance types that have caused their fragmentation, shredding, biodiversity loss and farmscape degradation, leading to important changes in their composition, structure and function. These effects imply definitive disappearance of a large number of landscape attributes specific for the Tropical Andes.

At present it is necessary to determine areas of high biocultural heritage, integrating mechanisms to protect their native forests, maintaining these areas and establishing connection zones between them, preserving the culture that made them viable in the first place. These could become the only way of environmental sustainability that citizens could use to improve their quality of life in the so-called Satoyama socioecological production landscape.

Uchucay Community Reserve undoubtedly has a very important area of remnant vegetation, represented by High Montane Evergreen Forest and Herbaceous Páramo vegetation and has a key microrefugium for Andean tree species such as *Podocarpus oleifolius*.



Gynoxys dielsiana , endemic species
registered in Uchucay Reserve

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Weinmannia fagaroides, the dominant species of the cloud forest in Uchucay.

