The Dry Forest of the Madidi Region: Richness and Floristic Affinities

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Introduction

The dry forests found in the Madidi Region form an island between the more humid Amazonian and Andean forest that surround it, and it is considered the largest and best conserved relic in the Neotropics. The forests cover an area of 1,418 km² of which approximately 700 km² are in an almost pristine state.

From 2003 to 2005, we have carried out 8 expeditions to the dry forest with the objective of gathering information to gain a better understanding of richness and affinities of the vegetation with its neighboring vegetation types.

Methods

We visited 11 localities, many quite remote and of difficult access, in relatively pristine state of conservation. All plots here analyzed were 0.1 ha (20 x 50 m transect) and non-permanent where all stems DBH ≥ 2.5 cm were inventoried, so called modified Gentry plots. We also did general collecting and permanent 1 ha plots at the same localities.

Results

We collected 4,700 specimens; including 24 new records for the Madidi Region e.g., Kielmeyera paniculada (Clusiaceae), Luetzelburgia praecox (Fabaceae), Banara tomentosa and Xylosma velutina (Flacourtiaceae), and 10 new species e.g. Passiflora (1), Cereus (2), Yungasocerus (3) and Bauhinia all are currently in the process of being formally described. While our novelties of Amyris, Chrysophyllum (4) and Justicia are awaiting further collections of more and better material.

Table: Richness and Floristic Affinities

<table>
<thead>
<tr>
<th>Group</th>
<th>Location</th>
<th>Species richness</th>
<th>Floristic affinities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>Yarimita</td>
<td>2550</td>
<td>Floristic affinities</td>
</tr>
<tr>
<td>Group 2</td>
<td>Virgen del Rosario</td>
<td>2478</td>
<td>Floristic affinities</td>
</tr>
<tr>
<td>Group 3</td>
<td>Resina</td>
<td>1813</td>
<td>Floristic affinities</td>
</tr>
<tr>
<td>Group 4</td>
<td>Azariamas Canyon</td>
<td>105</td>
<td>Floristic affinities</td>
</tr>
<tr>
<td>Group 5</td>
<td>Pintata, Buena Hora-San Juan, and Azariamas Canyon</td>
<td>23</td>
<td>Floristic affinities</td>
</tr>
</tbody>
</table>

The dry forest share borders with humid Andean and Amazonian forests at the highest and lowest elevations respectively, as a consequence some species are shared among the formations.

Our PCA analysis of the composition of the 82 established plots indicate three relatively well defined groupings (1–3) and two groups that are a little more disperse and may integrate (4–5). Axis one we see primarily as a dryness axis while axis two is more difficult to interpret it may combine richness and elevation.

Analyzing species richness of the five groups at 2800 collections with 1000 repetitions using rarefaction; show that the average species richness varies within the groups established by the PCA.

Conclusions

The dry forest vegetation can be separated in five groups by composition.

There are two natural formations, group 3, located at the geographical midpoint at the lowest possible elevation, and group 1, located on the northeast facing slopes.

The groups 2, 4, and 5 are different in their mixture from these but show affinity to other surrounding vegetation types.

Literature cited