



Herbario Nacional de Bolivia (HNB)

The Floristic Inventory of the Madidi region: Preliminary Results

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Introduction

When the project started in 2000 we estimated that the Madidi Region would contain approximately 5,000 species of vascular plants. After almost 7 years of collecting we can say that the Madidi Region houses potentially 10,000 species. We will here present the advances we have made, as far as documenting diversity, getting a better understanding of the flora and vegetation, educating students and increasing the research capacity in Bolivia.

Methods

The sampling methods we have used are: general collections, quantitative inventories of 1 ha and 0.1 ha (permanent and non-permanent plots respectively), intersection lines in grassland and structured quantitative inventories of epiphytes, as well as phytosociological inventories.

Results

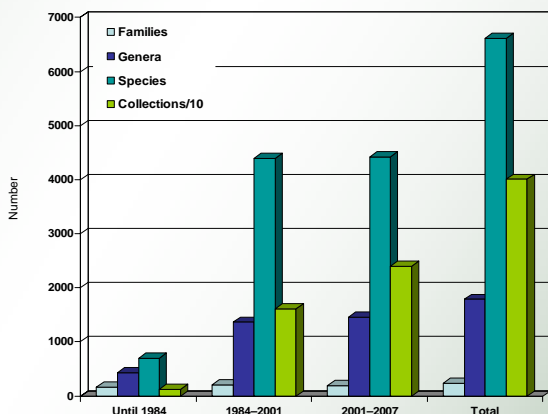
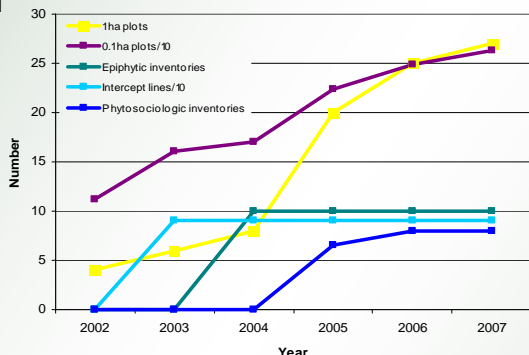
To date we have recorded collections that document a total of 7,113 species, 6,608 species of vascular plants and 505 species of bryophytes. Chao's index¹ estimates the total richness of an area using the number of singletons and doubletons, and in our case indicates that 10,012 species can potentially be found in the area (table) that is about half the flora of Bolivia in an area of only 10% of the territory.

We have made a total of 28,471 collections, sampling 4,422 species; we have installed 27 permanent plots and 263 non-permanent plots, 90 intercept lines, and 80 phytosociological inventories (fig 1).

Group	Number of collections	Family	Genera	Species
Vascular	28471+11586*	228	1786	6608
Bryophyte	1000	77	229	505
Total	40057	305	2015	7113

*Collections before the start of the project

Fig 1



Bolivia was late to be explored botanically, and is still lacking behind many countries in Latin America. In the Madidi Region only 1,204 collections had been made until 1984. The establishment of the National Herbarium was a significant impulse to collecting in the Madidi Region; more than 16,000 collections were made during a 15 year period. The Madidi project has been responsible for most of the collecting in the last 7 years adding almost 24,000 collections to the basis for botanical knowledge.

The diversity of vascular plants species, genera, and families decrease with increasing elevation, but the intensity of collecting is almost parallel (fig 2). More collecting is needed to provide enough data to eliminate collecting bias at this scale.

Fig 2

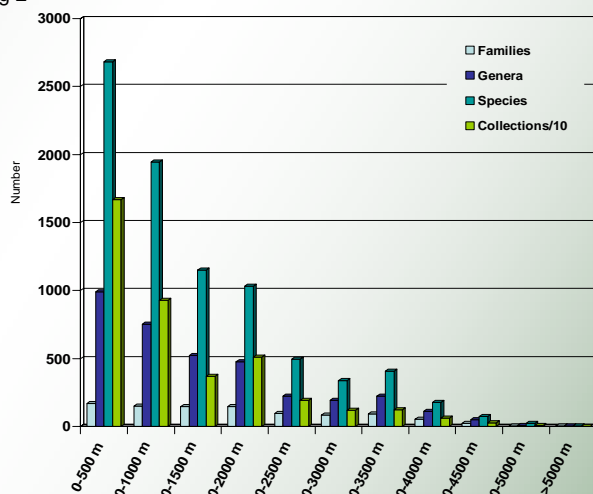
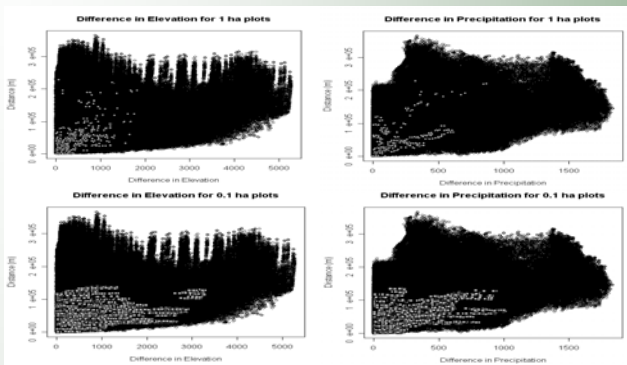


Fig 3



A sampling of several thousand points at random provides an image of the environmental space (elevation and precipitation) of the Madidi Region (black areas on fig 3). On top are the plot locations where we have made intensive inventories. It is immediately obvious that large parts of the elevational and humidity gradients have yet to be sampled.

The project has taught 35 volunteers informally in field and herbarium techniques. 21 students has with the projects support worked on their thesis for advances university degrees in forestry, agronomy, and biology; 12 have so far graduated.

The project has produced 1 book and 43 articles and been mentioned numerous time in the local press. Information as well as knowledge has been incorporated in several conservation initiatives and management plans in Bolivia.

Literature cited

1 Chao, A. 1984. Non-parametric estimation of the number of classes in a population. Scandinavian Journal of Statistics 11: 265-270.