



Botanical advances in Southwestern Amazonia: The flora of Acre (Brazil) five years after the first *Catalogue*

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Abstract

Even though it is well known that the flora of Amazonia is severely under-documented, botanical research in the region has been stagnant for the past two decades or more. An exception to this trend has been the international collaboration in the state of Acre, Brazil. The objective of this study was to assess botanical progress in Southwestern Amazonia, specifically the evolution of our knowledge of the flora of the state of Acre five years after production of the first catalogue of its flora. Between 2006-2011, the Acre data-base recorded 2,110 determinations, and among these were 347 new records for Acre, representing an increase of 8.6% in the known flora, which as of 2011 comprised 4351 species. Of the new records, 6.6% (23) were new records for Brazil and 14.4% (50) represented genera new to Acre. The new records comprised 322 species of vascular plants and 22 of non-vascular plants. The most significant finding was that one of every six identifications was a new record for Acre; the total flora of Acre is estimated to be at about 8,000 species. Advances in documentation of the Acre flora have been achieved through institutional partnerships, attention to rescuing and “cleaning” data, mobilizing taxonomic specialists, distributing duplicates to herbaria with significant Amazon collections, and undertaking expeditions to regions of the state that were poorly known or unknown. Indeed, the botanical inventory of Amazonia overall and the management and conservation of the Amazon flora can be realized only through programs that are systematic, integrative and participatory. Every effort must be made to guarantee that the inventory of Amazonia proceeds at least as rapidly as deforestation and development. This necessarily means far greater investment in training, employing, and supporting the field work of productive taxonomists.

Key words: biodiversity, botanical inventory, Brazilian Amazon, taxonomy

Introduction

The Brazilian Amazon represents 49.3% of that country's territory (Kress *et al.* 1998), but in the admittedly incomplete checklist of Brazil's vascular flora (Forzza *et al.* 2010) the Amazon accounted for only 36% of the total number of species recorded from Brazil. Moreover, the 11,793 Amazonian vascular plant species they recorded (Forzza *et al.* 2012) comprise 33% of the 40,000 species estimated to occur in the Amazon region (Mittermeier *et al.* 2003).

Despite the Amazon's high diversity and despite studies strongly suggesting that plant diversity in the region has been underestimated (Hopkins 2007), floristic inventory efforts have decreased substantially in the past 20 years (Hopkins 2007, Sobral & Stehmann 2009). One notable exception to this pattern is the state of Acre, located in Southwestern Amazonia on the frontier with Bolivia and Peru. There, floristic inventory was kept at a high rate via collaborative research between the Universidade Federal do Acre (UFAC) and The New York Botanical Garden (NYBG) (Silveira *et al.* 1997), reaching a milestone with the publication of the first catalogue of the Acre flora in 2008 (Daly & Silveira 2008).

Amazonia to be well-collected (Vale & Jenkins 2012). In contrast, Schulmann *et al.* (2007) has estimated that 43% of the Brazilian Amazon has never been collected, 28% has been poorly documented, and only 2% can be considered well-collected. Emphasizing geographic gaps in sampling may not be a viable strategy for Amazonia as a whole because of the immensity and large number of sampling gaps, and it may be that strategies for future botanical inventory on a larger scale in Amazonia should focus on under-sampled vegetation types and regions indicated as most likely to harbor novel taxa (e.g., Hopkins 2007).

Conclusions

Acre is thus far the only region in Amazonian Brazil where an initiative to document a state flora is being implemented effectively. The key to its success thus far has been rescuing and “cleaning” and integrating data, forging institutional partnerships, addressing “black holes,” and mobilizing taxonomic specialists. Indeed, the botanical inventory of Amazonia overall and the management and conservation of the Amazon flora can be realized only through programs that are systematic, integrative and participatory. Every effort must be made to guarantee that the inventory of Amazonia proceeds at least as rapidly as deforestation and development. This necessarily means far greater investment in training, employing, and supporting the field work of productive taxonomists. The discovery of new records for the Acre flora, one for every six determinations, continues apace, meaning that botanists need to maintain the pace of their work, not just in Acre but in the Southwestern Amazon Ecoregion as a whole, rescuing data for the relevant parts of Peru and Bolivia and mounting tri-national expeditions, in order to advance botanical knowledge of this region of high importance for conservation.

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