The ‘salo’ vegetation of Southwestern Amazonia

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Abstract. This paper presents a first account of the salão vegetation of southwestern Amazonia, a frequent but poorly known formation and unusual in that it is a lowland moist tropical environment in which virtually all of the plant diversity is accounted for by herbs. The salões occur along canalized portions of the Purus and Jurua rivers basins, and their substrates consist of exposed parent materials that characterize much of this sector of Amazonia but are usually overlain by a relatively thin (<1 m) layer of soil. They are constantly moist seeps or ‘seepage banks,’ and the lower portions are seasonally submerged. Strata are recognizable in the vegetation, and the physiognomy and composition of each vegetation band of the salões is likely determined by the slope, the parent material, and (for lower bands) the duration of flooding. To date the salão flora has registered 66 species: 11 bryophytes, 12 ferns, and 43 angiosperms. Five of the bryophyte species, two ferns, and one grass, Arundinella berteroniana, are found in most if not all salões and can be considered indicators of this vegetation type, while most of the pteridophytes and other angiosperms occur more sporadically. None of the species is endemic to the formation and only four to the region; most are associated generally with the margins of rivers, lakes, and streams, often on rocky or sandy substrates. The floristic and conservation significance of this formation lie in its apparent affinities with montane regions, in the fact that 21 species and eight genera are recorded for the Acre flora only from the salões, and in its local value as a source of filtered potable water.

Introduction

Long-term floristic surveys in the southwestern state of Acre, Brazil have revealed the existence of an unusual vegetation type, locally called salão (pl.: salões), that occurs along short stretches of the river margins in both the upper Rio Jurua and particularly the upper Rio Purus basins (Figure 1).

There are few previous reports on the salões in the literature. The geologist Antônio Teixeira Guerra (1955, p. 39) appears to have been the first scientist to comment on the salões, which he described as steep levees of hardened clay along strongly canalized stretches of the upper Purus and Jurua and tributaries. Subsequently, Roque (1968), citing an unpublished paper by A. Mendes entitled ‘O Lago Amazônico’, defined salões as ‘telluric tables formed by levees near steep riverbanks, exposed in summer when the rivers recede.’ The origin of the term is uncertain; some local persons have said that the name was inspired...
by the similarity between the echo off the walls of a salão (literally ‘salon’) and that which one hears in a large room or hall.

The salões are steep to vertical banks (barrancos), with a hard but brittle substrate that is covered in places by a fine layer of sediment and is constantly moist from seepage. Water is filtered in such a way that small waterfalls of crystalline water often form, a stark contrast to the region’s muddy rivers.

Most salões are at least partially flooded annually, but they are resistant to erosion. Where they are merely steep, they permit the development of large ferns and scattered shrubs, vines, and the occasional small tree, while those that are vertical or nearly so support herbaceous vegetation dominated by small angiosperms, ferns, and bryophytes (Figures 2–3).

The occurrence of this formation outside of Acre is a certainty, but its total range is uncertain. The only references we have been able to locate outside of Acre are on the labels for three herbarium collections from nearby sites in SW Amazonia. One is S.F. Smith et al. (1100) (NY) from Tambopata in the departamento of Madre de Dios in essentially contiguous Peru; the label describes the habitat as a ‘seepage bank.’ Similarly, Prance et al. (14504) (NY), from the upper Rio Purus basin (Rio Ituxi) in Amazonas but near Acre, is a collection of Adiantum petiolatum that refers to a ‘seeping riverbank,’ and the label for Prance et al. (8702) (NY), a collection of Paspalum melanospermum from Rondônia, Brazil gives the habitat as ‘seepage at foot of cliff.’

The salões figure in a modest number of articles about geomorphology, mostly from the 1990s, but we are unaware of any publication heretofore that examines their flora. During the past 10 years, expeditions of the joint research program of the New York Botanical Garden and the Universidade Federal do Acre have observed and opportunistically sampled the flora of various stretches of salão. The objectives of the present paper are to present the first list of the flora that characterizes the salões of Acre, discuss their geographic distributions and ecological preferences, and suggest a list of potential indicator taxa.

The soils of southwestern Amazonia

Sombroek (1984) divided the soils of Amazonia into four large regions according to their parent material, the most distinct region being a broadly defined southwestern Amazon that corresponds roughly to the area covered in Figure 1. This region’s diverse soils are derived principally from Tertiary Andean sediments of marine, fluvial, lacustrine, and volcanic origin, collectively called the Solimões Formation (Sombroek 1984; Gama 1986; Latrubesse et al. 1997).

The Brazilian state of Acre falls in this southwestern region, and indeed its spectrum of soils is largely a reflection of its proximity to the diverse geological formations of the Andean Cordillera (Latrubesse, et al. 1997). Unlike the heavily weathered kaolinitic oxisols (latosols) and ultisols (argisols) and 1:1