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Com arribar-hi: GPS - 41° 21' 43.55" N, 02° 09' 38.64" E; transport públic - Bus 150, Plaça Espanya

25 Març 2014, 12:00, Sala Salvador

Mauritia flexuosa palm swamps of the neotropical Gran Sabana region: natural or human made?

per

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Abstract: *Mauritia flexuosa* L.f. is one of the more widely distributed neotropical palms and is intensively used by humans. This palm can grow in tropical rainforests or can develop a particular type of virtually monospecific communities restricted to warm and wet lowlands of the Orinoco and Amazon basins. It has been proposed that, during the Last Glacial Maximum (LGM), the *Mauritia* swamp communities were restricted to the centre of the Amazon basin from where they expanded favoured by the Holocene warmer and wetter climates. It has also been suggested that some of these palm communities might have been the result of human dispersal during the last millennia. Here, we evaluate both hypotheses using the case study of the Venezuelan Gran Sabana (GS) region, where the *M. flexuosa* swamp communities (locally called *morichales*) are common and well developed. The *morichales* did not reach the GS until the last 2000 years, as manifested by sudden increases of *Mauritia* pollen paralleled by similar trends in charcoal particles as proxies for fire. The situation was very similar to the present, characterised by extensive burning practices affecting savannas and savanna-forest ecotones but rarely *morichales*. This strongly suggests that human activities could have been responsible for the penetration of the *morichales* to the GS. A meta-analysis of the available records of *Mauritia* pollen across northern South America shows that this palm has been present in the region since at least the last four glacial cycles. During the LGM, *Mauritia* was likely restricted to few but widespread sites of favourable microclimatic conditions (microrefugia) from where the palm expanded during the Holocene. During the last 2000 years, *Mauritia* underwent a remarkable expansion in northern South America, which includes the GS. It is proposed that humans could have played a role in this regional expansion of *Mauritia* communities.

