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Modelling the distribution of the moss species *Hypopterygium tamarisci* (Hypopterygiaceae, Bryophyta) in Central and South America

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Abstract: The pleurocarpous moss *Hypopterygium tamarisci* is widely distributed in Africa, S and SE Asia, Australasia, Oceania, as well as South and Central America, where it extends into Mexico and the Caribbean. It is a species of mainly mountainous tropical and warm temperate areas. The present study focuses on the actual and the potential distributions of *H. tamarisci* in the New World south of the Tropic of Cancer. It aims to find ecological conditions for this area that determine the distribution of this species by making use of species distribution modelling techniques. We use a data set from verified herbarium specimens and a set of collection records downloaded from the GBIF (Global Biodiversity Information Facility) database. The potential distribution models of *H. tamarisci* were developed with Maxent (Phillips et al. 2006) based on the collection datasets and a set of uncorrelated bioclimatic and edaphic variables. The predicted distribution of the species matches the actual collecting localities very well. A maximum temperature below 29°C in the warmest month is the most important ecological variable that determines the presence of *H. tamarisci*. Second most important variable is the precipitation in the warmest quarter, for which *H. tamarisci* shows an increasing probability of presence under wetter conditions. The models predict the potential occurrence of the species in the Guiana Highlands, where the species does not occur. Several explanations for this mismatch are being discussed, but a satisfactory explanation is wanting.

Keywords: Autecology, bioclimatic variables, Caribbean, Central America, distribution modelling, edaphic variables, Guiana Highlands; *Hypopterygium tamarisci*, South America.

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