Exploring plant diversity of tropical Africa

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Video Abstract

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Abstract

Africa contains some of the most species-rich regions in the world. The tropical zone of this continent, for example, harbors the second largest extent of rain forest after the Amazon basin. However, tropical Africa is in the midst of major ecological shifts in response to human pressure and global climate change. Unfortunately, an incomplete understanding of plant diversity in this fragile region may hinder conservation efforts. In an attempt to remedy this, an international team of scientists created the RAINBIO database, a compilation of data gathered from the vast worldwide network of herbaria – or libraries of dried plant specimens. The researchers analyzed over 600,000 specimens for collecting date, geographic occurrence, and growth form (think: trees, herbs, and vines). The results provide an important perspective on plant species richness across the African tropics. For example, Cameroon, Tanzania, and the Democratic Republic of Congo are estimated to be the most species-rich countries. Central African forests were found to have the highest amount of endemism, with 30% of the species in that region found nowhere else in the world. The study inventoried just over 3,000 tree species within tropical African forests, almost 4 times fewer than the Amazon basin. Further delving into this dataset, the researchers were able to map the historical progression of botanical exploration across the region. The exploration of tropical Africa appears to have progressed first along major rivers and coasts and then sporadically through the continent, the result of both accessibility and political situations in the region. The data also suggest an alarming trend: a reduction in botanical data acquisition during the last decade. In an attempt to point botanists, conservationists, and politicians in the right direction, the authors present areas of high priority for both conservation and future research. Based on their analyses, parts of Tanzania, Atlantic Central Africa, and West Africa are identified as the most in-need of further exploration. This study highlights the unparalleled utility of herbarium data in understanding the distribution of biodiversity and the drivers of these patterns. Only when provided with accurate information of this nature can policymakers generate informed decisions about how to effectively manage our fragile biological resources.