



## Interações interespecíficas nos Campos Rupestres - Microrefugia and endemism in the rupestrian grasslands

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All over the world, mountain regions present a wide range of environments otherwise only seen over broad latitudinal distances and are responsible for a great biological diversity. In southeastern Brazil, the vegetation of the *Espinhaço* Mountains is mostly represented by a unique flora known as rupestrian grasslands (*'campos rupestres'*). This vegetation comprises one of the most speciose and highly endemic flora of the tropics, and many factors would be responsible for this high biological diversity, such as the great latitudinal variation, the presence of a mosaic of phytophysiognomies, the ancient age of these geological formations, and the great variety of microclimates. Many small areas present idiosyncratic microclimates which host several microendemic plant species. Many of them displays all traits of a relict population in a microrefugium: it is restricted to a small area, shows low genetic diversity, low dispersal and is also isolated. The term 'microrefugia' was framed by Rull *et al.* (1988) in an attempt to explain the persistence in time of high-mountain species on the Venezuelan *Tepuis*. It is thought that during the Pleistocene dry phases in South America, small favourable sites might have favoured the persistence of some species in mountain ecosystems, which are well suited to hold microrefugia. With the arrival of more humid climates at the end of Pleistocene, many of these species were still present and could readily recolonize the adjacent areas. However, Pleistocene glacial and interglacial periods may affect mountain species in different ways. In some cases, rapid warming periods are suggested to have promptly reduced distributional ranges and depleted genetic diversity of organisms, thus being confined to microrefugia, such as the case of some species in the rupestrian grasslands. The presence of plants in microrefugia is likely to be an adaptive strategy more common than previously expected, and these conditions make these microrefugia priority areas for conservation.