

Part II Foreword 2 + Photo



While the geologist has an eye on the Earth's shape and rocks, its minerals and the climatic factors that shape, bend, and shred the magnificent mountains and valleys transforming them into soils of different colors and quality, the very first attraction of biologists is that of an ecosystem, plants, animals, and the surrounding ecological forces. In this part, some of the forces that shape the vegetation, and the interactions among the physical and biological worlds, above and below ground, in rupestrian grasslands are revealed.

The rupestrian grasslands are ancient ecosystems where the land was colonized by a rich flora of herbaceous and shrubby species. Different combinations of plants and animals inhabit the different mountains with valleys acting as insurmountable oceans separating them, isolating them from one another. The diversity of plants is highly variable at every scale studied, with a high level of endemism and unique species compositions. Strong environmental and biological filters have shaped it all by limiting colonization by species adapted to soils high in nutrition, by eliminating those not adapted to the rigors of climate, fire and, possibly, herbivory. To survive, plants have evolved particular adaptations, be it phenological behavior or traits such as specialized underground organs that enable them to resprout repeatedly after damage, leaf orientation and trichomes to avoid excessive light and heat, or even new avenues such as the amazing capacity to feed on nematodes.

In spite of the importance that has come to be associated with remnant Atlantic forest patches because of the astonishing level of fragmentation and destruction they suffered during the last 50 years in Brazil, the existence of natural patches of relict Atlantic rain forests in the rupestrian grassland matrix is of major importance as well because many of them are still pristine, yet the knowledge about them is anecdotal. This part unveils some trends in the biology and natural history of these Atlantic rain forest relicts. Recent studies on the association of microorganisms and rupestrian plants are unraveling many new interactions, hence opening possibilities for an infinity of new studies. These might even include the very first events of colonization of bare rocks by microorganisms and rock-dwelling plant species. To survive in such harsh environments, disconnected sometimes by few centimeters, an important strategy is seed germination. In the rupestrian grasslands, these studies have revealed many germination syndromes, each adapted to small singularities of the habitats. But these fine-tuned adaptations do not end there, as the plant species of the rupestrian grassland have evolved a wide spectrum of possibilities and strategies.