This PhD-study aimed to provide better floristic and ecological knowledge on saxicolous vegetation mats occurring on inselbergs inserted into the Atlantic Forest in SE Brazil. The results indicated the existence of a particular phytogeographical region in the Atlantic Forest, comprising inselbergs harbouring a highly diverse flora, which was termed Sugar Loaf Land. Thus, the results of this thesis increase our understanding regarding the composition and structure of plant communities on inselbergs, and provide insights about drivers of plant species diversity on these outcrops. It is argued that the use of complementary approaches in this PhD framework, which includes floristics, patterns of species diversity and distribution, population genetics and functional ecology, are fundamental to the development of conservation strategies and management of the unique vegetation on inselbergs.