# What do we know about subtropical and tropical old-growth grasslands resilience and restoration?

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## Abstract

Where grassland values were recognized, their resilience to disturbances has been studied and they have been targeted for ecological restoration. Conservation awareness has recently been raised on subtropical and tropical old-growth grasslands, but we show here that more research on their resilience and particularly on their restoration is needed and that not enough information is available to improve the chances of success of large-scale restoration projects. While subtropical and tropical old-growth grasslands are resilient to the disturbances they have evolved with, such as fire (and extensive grazing for some of them), they are poorly resilient to disturbances which strongly degrade their vegetation and alter soil structure (e.g. cultivation, mining, quarrying); restoration after such disturbances is cost- and labor-intensive and the outcomes are often far beyond the expectations. Restoration after changes in grazing and fire regimes, exotic species invasion and afforestation slightly improves the restored plant communities. However one of the major pitfall lays in plant species reintroduction as they are difficult to propagate, particularly those with Underground Storage Organs, and species from the herbaceous layer constituting the matrix of these plant communities.

**Keywords:** fire, grazing, recovery, resistance, tropical grassy biomes

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