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Conserving tropical grassy biomes: fire management for biodiversity

Abstract
Fire is considered a key disturbance in many biomes playing an important role in the structure and functioning of grassland, boreal forest, heathland and savanna ecosystems. The use of fire for burning is widely used as a management tool in rangelands and conservation areas, particularly for biodiversity conservation in savanna ecosystems. This talk will question what we traditionally view as disturbances within ecosystems by examining the role that fire plays in structuring savanna ecosystems. It will also take a critical look at how fire ecology is integrated into management plans in savanna conservation areas across the world.

Fire has typically been seen as a major disturbance in savannas, however emerging results from a long-term burning experiment in Kruger National Park, South Africa, and from the savannas of northern Australia indicate that in some savanna habitats the fauna and flora are highly resistant and resilient to burning. This suggests that in some habitats fire may be less important as an ecosystem driver than previously thought. Historically most fire studies have focused on the effects of fire on vegetation, with only a handful having concentrated on faunal responses. Using a range of faunal taxa from invertebrates to birds, I examine how fires influence the composition, structure and functioning of savanna systems. I will explore the idea that variation in the resistance and resilience of biota to fire is linked to climate which mediates the relative importance of fire as driver of savanna structure by influencing the degree of habitat change in an environment.

In many conservation areas variability and flexibility in prescribed management burning are increasingly being promoted. I examine the central assumption made in this approach: that spatial and temporal fire patterns act as surrogates for biodiversity. Given the growing evidence in some savannas for the remarkable resistance of biota to burning, there is a need to take a more critical look at this pyrodiversity and patch burn paradigm for fire management in conservation and protected areas.