



## Lessons for fire management: evidences from 20 years of knowledge about the effect of burning on wild mammals of the Brazilian Cerrado

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**ABSTRACT-** Fire is a major disturbance that affects biomes worldwide, altering vegetation structure and flora and fauna assemblages in Neotropical savannas. During the last 20 years several relevant studies have been published about the fire effects on Cerrado (Brazilian savanna) small mammals. These animals represent a relevant group in this vegetative domain (~115 species) and here we present an overall view about the results of such studies. We emphasize the application of this knowledge on fire management of natural Cerrado landscapes. The results obtained indicate that fire effects on mammals vary according to the structure and type of vegetation studied, the size of the burned area, the periodicity of the burning events, and the intrinsic characteristics of the taxonomic groups. For small mammals, direct fire-related mortality is uncommon, at least in grasslands and typical savanna habitats. In these habitats, however, short-terms changes in resource availability and habitat structure cause changes in community composition and habitat use by small mammals. Community composition changes drastically as a function of time since fire, with such changes being mediated by habitat use, daily activity patterns and diet. The evaluation of typical savanna habitats (cerrado sensu stricto) with different times since fire disturbance indicates that diversity and abundance of small mammals reached maximum values in the early successional stages (up to 2-3 years after fire events). These results support the hypothesis that a mosaic of areas representing different post-fire seral stages increases the regional diversity of this group (i.e., pyrodiversity promotes diversity). On the other hand, fire occurrence on forest formations (dry forests and gallery forests) has profound effects on small mammal communities. The burning of such environments causes local extinction of arboreal species (the most abundant species before fire events), invasion of “open habitat” small mammals, and also affects crucial ecological interactions, such as seed predation and dispersal of native tree species. Thus, the available information on small mammals indicates that fire management in the Cerrado must be done with patched fire events in “open habitats” (i.e., grasslands and savannas) and with actively fire protection of forest environments.

**Palavras-chave:** manejo integrado do fogo; mamíferos; Cerrado; cerradão; floresta de galeria.