



## MULTIDISCIPLINARY APPROACHES TO FIRE AND OPTIONS FOR INTEGRATING TRADITIONAL KNOWLEDGE WITH SCIENTIFIC - TECHNICAL RESEARCH IN CANAIMA NATIONAL PARK, VENEZUELA

Bibiana Bilbao<sup>1</sup>, Alejandra Leal<sup>1</sup>, Carlos Méndez<sup>1</sup>, María Dolores Delgado - Cartay<sup>2</sup>

<sup>1</sup>Departamento de Estudios Ambientales, Universidad Simón Bolívar, Apartado 89000, Caracas 1080, Venezuela. E - mail: bibiana.bilbao@gmail.com, aveleal@yahoo.com, carlos.menvall@gmail.com <sup>2</sup>Biodiversität und Klima Forschungszentrum BiK - F. Senckenberg Anlage 25. 60325 Frankfurt a.M. Germany. Visitors: Altenhöferallee 1. 60438 Frankfurt a.M. Germany. mdelgadoc@senckenberg.de

---

The high fire occurrence is of great concern in Canaima National Park (CNP), Venezuelan Guyana, where large treeless savannas occur despite the predominant vegetation is the forest. Some authors sustain that a long - term process of savannization is occurring, which is originally caused by fires, and conditioned by high vulnerability of forests, soil chemical and episodic drought stress. Considering a global change scenario, both the ecosystems and the human well - being could be at risk. This paper discusses results of a long - term ecological study on fire effects and contemporary fire regimes in savanna forest transition ecosystems of the CNP. We demonstrate that: a) fires can occur under a wide range of weather conditions and fuel characteristics, which in turn lead to a high variability in fire intensities, temperatures and spread rates, flame lengths, burn efficiencies and ashes production; b) wind speed and fine fuel load constitute the principal drivers of fire behavior; c) opposite to what was longer believed, fires never reach an annual frequency but occur every 2, 3 or 4 years, due to the low recovery rates of the vegetation; d) fire could lead to a variety of scenarios depending on the amount of biomass (176 - 1,271 g.m<sup>-2</sup>), live/dead ratios (0.36 - 3.60) and biodiversity (species abundance and composition). Based on it, we propose an alternative fire management system for the region. It involves the use of a system of prescribed, "patch - mosaic burning" as a management tool to reduce the risk of hazardous wildfires in the region. This approach is congruent with the traditional views of the local population, the Pemón community.