Effects of different experimental fire regimes on the herbaceous-subshrub vegetation layer in Integrated Fire Management areas in Cerrado open savannas

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ABSTRACT – Integrated Fire Management (IFM) has been an alternative to the no-fire policy in force in Brazil until 2012. Some Cerrado vegetation types (grasslands and savannas) have evolved with fire. Therefore, the no-fire policy is inefficient for the Cerrado, since attempts to protect it from fire for a long time favor the continuity and accumulation of fuel and increase the susceptibility to large fires in the dry season. This study aimed to evaluate the effects of the IFM on the herbaceous-subshrub layer of the vegetation in two protected areas of the Cerrado that implemented IFM in 2014. Thus, we established three experimental fire regimes: MF=management fires; LF=late fires and C=control (fire protection) in six areas. In each area, we established two 50 x 50 m plots for each treatment (36 in total), and in each plot we established two lines (10 m each) for herbaceous and subshrub vegetation sampling (720 m in total) in 2017 (T1) and 2018 (T2) using the line interception method. We performed a spatial ordination analysis (nMDS) of the areas, treatments and samplings; we measured (in cm) species vegetation cover, litter cover and bare soil projections; we calculated species richness and diversity (Shannon and Simpson) using Hills numbers and finally we calculated the importance value (IV) for each species. nMDS grouped only the areas, but did not group the treatments. In T1, there was no significant difference in vegetation cover, litter cover and bare soil between treatments. In T2, control plots presented greater vegetation coverage compared to the management burns; and greater litter coverage and less bare soil compared to the two burning treatments. Late burns presented lower litter coverage and more bare soil. Species richness and diversity were greater in the burning treatments compared to the control. *Trachypogon spicatus* (Poaceae) was the species with the highest IV in all treatments. This study contributed to improve information on the effects of IFM on the herbaceous-subshrub layer of the Cerrado, which is largely neglected in research and decision-making on vegetation management and conservation.

Keywords: Prescribed burns; patch-burn mosaics; conservation; protected areas; Jalapão, Tocantins state

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