Fire and flooding resilience in *Mimosa* L. of the Brazilian Pantanal

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INTRODUCTION

The Pantanal ecoregion, in south-central Brazil, is one of the largest floodplains in the world. Cycles of flooding and periodic fire have been determinant to the diversity of species in the ecoregion. In the flora of Pantanal, *Mimosa* is the most diverse genus of Leguminosae. However, there are no data in the Pantanal ecoregion about which species of *Mimosa* are resilient to fire and/or flooding. This study aimed to investigate morphological adaptation in the *Mimosa* genus in terms to the resilience to fire and flooding.

MATERIAL AND METHODS

We verified taxa of *Mimosa* occurring in the Brazilian Pantanal, by means of the revision of literature, herbarium data, personal observations, plant collections and field notes taken while on expeditions to Southern Pantanal. We evaluated the geographical coordinates for each taxon through the Quantum Geographic Information System (QGIS), reviewed images of the fire history in Pantanal (from 1985 to 2022), and analyzed the data obtained in partnership with the Laboratory of Environmental Satellite Applications (LASA/UFRJ).

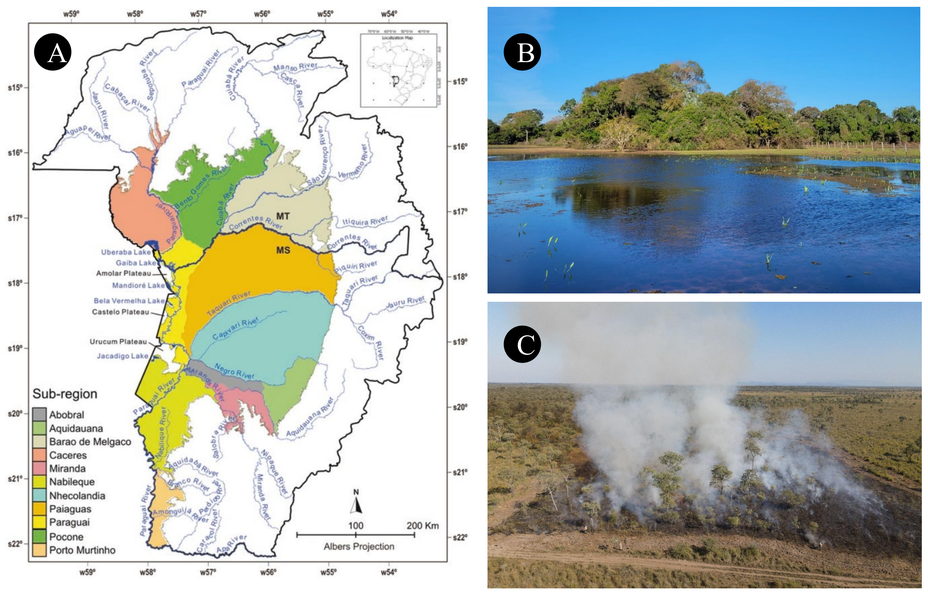

Figure 1. A - Brazilian Pantanal subregions; B - Flooded capão in Abobral subregion, on May 2023; C - Fire experiment in PELD plot area, in Nabileque subregion, on June 2022. Image A – Damasceno & Pott, 2021; Photos: B - Vivian Nakamura, C - Alexandre Pereira.

RESULTS

Among the 45 taxa of *Mimosa* in the Pantanal ecoregion, 27 taxa were present in flooding environments, such as swamps, temporary ponds, and riparian forests. Considering the fire events, 21 taxa showed resilience to this ecological filter in areas with a history of periodic fires that usually occur in the dry seasons of the year.

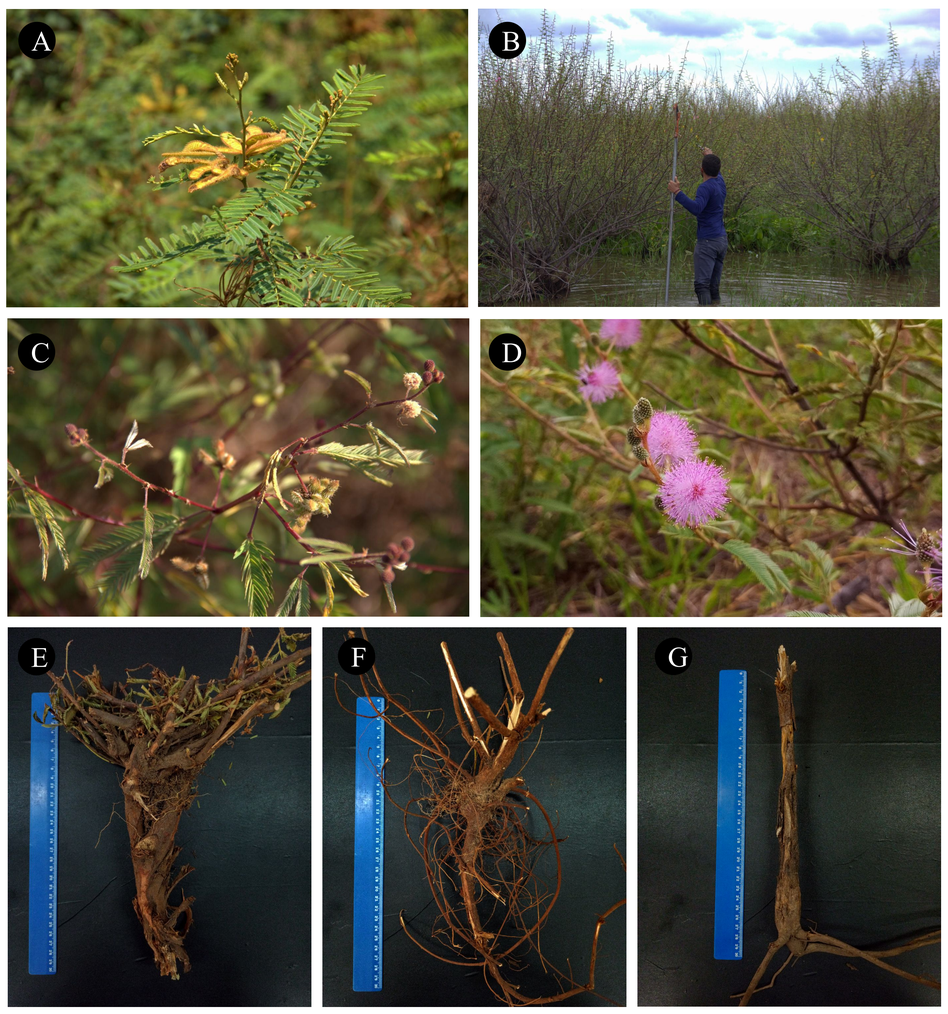

Figure 2. Examples of species resilient to the flooding and fire. A - *M. pigra* var. *pigra*; B - *M. weddelliana* Benth. in temporary ponds; C - *M. polycarpa* var. *spegazzinii*; D - *M. xanthocentra* var. *xanthocentra*; E, F, G - Underground structure on *M. weddelliana*, *M. xanthocentra* var. *xanthocentra* and *M. polycarpa* var. *spegazzinii*, respectively.

FINAL REMARKS

46% of *Mimosa* species are resilient to the fire and 60% to the flooding. The resilience of *Mimosa* species of the Pantanal can be related to the presence of underground structures that possibility the regrowth after disturbance. These species usually form populations with many individuals in Pantanal areas.

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