An Illustrated Field Guide as a Tool for Conservation of Cacti Species in the Brazilian Chaco

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Antactaceae is one of the most diverse families in the Neotropical region with about 1480 species. These plants produce flowers and fruits that are important resources for different animal groups, especially in arid and semiarid ecosystems (Taylor & Zappi 2004). The family is the fifth most threatened among large taxonomic groups, since 31% of all species are under extinction risk, suffering from illegal extraction and trade, as well as habitat loss caused by human actions (Goettsch et al. 2015).

Currently, 262 species and 39 genera are described from Brazil (Brazil Flora Group 2015). Central Brazil is one of the most under-explored areas of cactus studies, since its representatives occur in scattered rock enclaves in the Cerrado, Pantanal and Semideciduous Forest areas (Zappi et al. 2018). Specifically, for Mato Grosso do Sul state, 18 genera and 32 species were listed in a recent checklist reporting a reasonable cacti diversity in the Chaco vegetation (Zappi et al. 2018). Thus, efforts to raise awareness about the biodiversity of the cacti in Mato Grosso do Sul are a priority.

The Brazilian Chaco is restricted to the extreme western edge of Mato Grosso do Sul state, in Porto Murtinho municipality. Its vegetation is classified as stepic savanna, consisting of shrubs that form a discontinuous canopy, with a predominance of Leguminosae, Bromeliaceae and Cactaceae (Pennington et al. 2000). In this region, Cactaceae is represented by 16 species, including columnar (8), globose (3), coplanar (2), epiphytic (2) and shrub (1) species. These species are poorly studied with regard to biological and ecological aspects and are locally threatened by the expansion of deforestation for pasture establishment (Gomes 2017). In fact, the Brazilian Chaco in general has been affected by deforestation associated to cattle grazing (Silva et al. 2008, 2011). Such a scenario highlights the need for initiatives that contribute

To this end, we collected data on vegetative (habit and height), reproductive (flower and fruit) traits, phenology (flowering and fruiting season), pollinators and seed dispersers of cactus species, and then we produced a bilingual (Portuguese and English) field guide in order to motivate activities of environmental awareness and to promote interest from the local community about Cactaceae (Fig. 1). Field guides are important tools for science popularization, providing knowledge in a well-illustrated and accessible language (Cavalcante et al. 2013).

The field guide *Cactos do Chaco brasileiro: Guia de campo ilustrado / Cacti of the Brazilian Chaco: Illustrated field guide* is richly illustrated, presents information about the geographic distribution, conservation status, general characterization, ecological aspects, potential mutualistic interactions, as well as illustrations of life-form, flowers and fruits of the cacti species that occur in the Brazilian Chaco (Fig. 2). We highlight the major threats they face in the region and suggest conservation strategies, especially for the species such as *Frailea schilinzkyana* and *Frailea cataphracta*, which are listed by the IUCN Red List of Threatened Species as vulnerable and near threatened, respectively (IUCN 2018). Additionally, lectures to the farmers and local community focusing on the importance of mutualistic interactions are being scheduled as part of a strategy for enrolling the local population in conservation activities. We believe this will awaken local interest for the cacti and will facilitate the planning of basic guidelines to start an effective action plan for cacti conservation and management in the Brazilian Chaco.

The field guide is available for download at: https://www.rufford.org/files/18851-1%20Field%20Guide.PDF or by emailing vnobrega.gomes@gmail.com

**References**


