

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

Author(s): Vanessa Gabrielle Nóbrega Gomes, Wellington Santos Fava, Paulo Robson souza, Daniela Zappi & Andréa Cardoso Araujo

Source: Cactus and Succulent Journal, 90(3):201-202.

Published By: Cactus and Succulent Society of America

<https://doi.org/10.2985/015.090.0308>

URL: <http://www.bioone.org/doi/full/10.2985/015.090.0308>

BioOne (www.bioone.org) is a nonprofit, online aggregation of core research in the biological, ecological, and environmental sciences. BioOne provides a sustainable online platform for over 170 journals and books published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Web site, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/page/terms_of_use.

Usage of BioOne content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

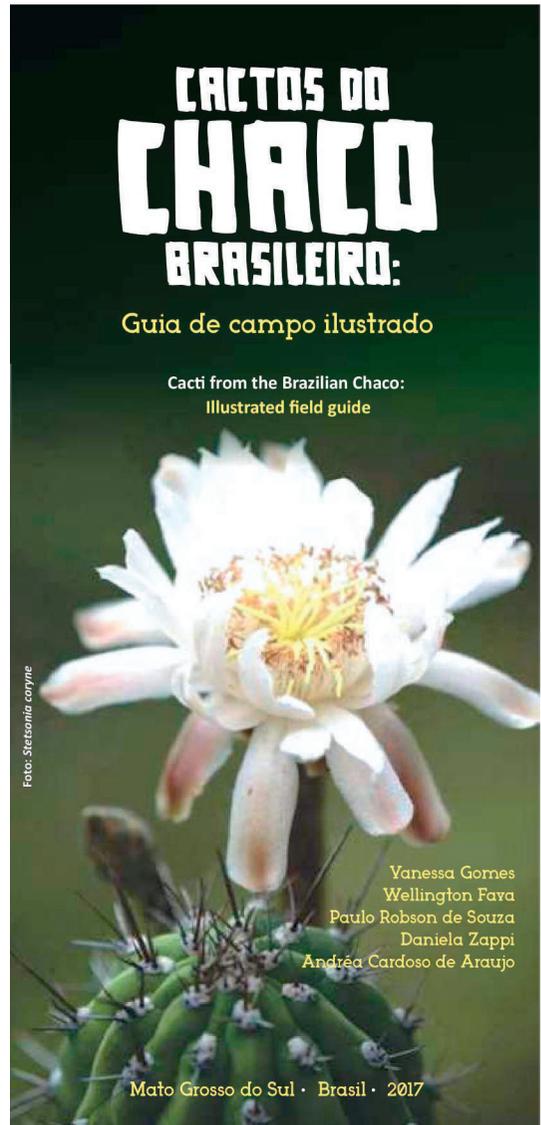
An illustrated field guide as a tool for conservation of cacti species in the Brazilian Chaco

Cactaceae 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



I. Cover of “Cacti of the Brazilian Chaco: Illustrated field guide”, organized by V. Gomes, W. Fava, P.R. Souza, D. Zappi and A.C. Araujo.

¹Instituto de Biociências, Universidade Federal de Mato Grosso do Sul, Campo Grande, Mato Grosso do Sul, Brazil. ²Instituto Tecnológico Vale/ Museu Paraense Emílio Goeldi, Departamento de Botânica, Belém, Pará, Brazil. * corresponding author: email vnobrega.gomes@gmail.com

Cereus bicolor

Nome popular/ Common name: Mandacaru

MP/LC

Cacto colunar que produz flores brancas de antese noturna. Seus frutos são vermelhos e consumidos por diferentes espécies de aves. Floresce de outubro a abril e frutifica de novembro a junho. *Cereus bicolor* is a columnar cactus, which produces white nocturnal flowers. Its fruits are red and consumed by different species of birds. Flowering: from October to April; fruiting: from November to June.



Frailea cataphracta

Nome popular/ Common name: Tuna

QA/NT

Pequeno cacto globoso de até 6 cm de altura e 4 cm de diâmetro. Suas flores são amarelas e abrem durante o dia. Frutos são dispersos por formigas. *Frailea cataphracta* is a small globose cactus with 6 cm in high and 4 cm in diameter. This species produces yellow flowers with diurnal anthesis and its fruits are dispersed by ants.



2. Example of information (geographic distributions, conservation status, ecological aspects, as well as illustrations of life-form, flowers and fruits) presented for each cactus species in the guide.

information for the conservation of Cactaceae.

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

- BFG – The Brazil Flora Group. 2015. Growing knowledge: an overview of seed plant diversity in Brazil. *Rodriguésia* 66: 1085–1113. doi: 10.1590/2175-7860201566411.
- Cavalcante A, Teles M, Machado M. 2013. *Cactos do semiárido do Brasil: guia ilustrado*. Instituto Nacional do Semiárido, Campina Grande, 102 pp.
- Goettsch B, Hilton-Taylor C, Cruz-Piñón G, Duffy JP, Frances A, Hernández HM, Inger R, Pollock C, Schipper J, Superina M, Taylor NP. 2015. High proportion of cactus species threatened with extinction. *Nature Plants* 1: 1–7. doi: 10.1038/nplants.2015.142
- Gomes VGN. 2017. *Reproductive ecology of cacti species in the Brazilian Chaco*. Universidade Federal de Mato Grosso do Sul, Campo Grande, 120 pp. PhD Dissertation.
- IUCN (International Union for the Conservation of Nature). 2018. *The IUCN Red List of threatened species*. <www.iucnredlist.org> (accessed April 2018).
- Pennington RT, Prado DE, Pendry CA. 2000. Neotropical seasonally dry forests and quaternary vegetation changes. *Journal of Biogeography* 27: 261–273.
- Silva MP, Mauro RA, Abdon MM, Silva EJSV. 2008. Estado de conservação do Chaco (Savana Estépica) brasileiro. In: IX Simpósio Nacional Cerrado e II Simpósio Internacional Savanas Tropicais, Brasília, Distrito Federal, Brasil.
- Silva JSV, Pott A, Abdon MM, Pott VJ, Santos EKR. 2011. Projeto GeoMS: cobertura vegetal e uso da terra do Estado de Mato Grosso do Sul. 1a ed. Embrapa Informação Agropecuária, Campinas, 64 pp.
- Taylor NP, Zappi DC. 2004. *Cacti of Eastern Brazil*. Kew: Royal Botanic Gardens, London, 512 pp.
- Zappi DC, Taylor NP, Damasceno GA, Pott VJ, Machado M. 2018. Checklist das Cactaceae do Estado do Mato Grosso do Sul, Brasil. *Iheringia: Série Botânica* 73: 169–173.