



Habitat selection and foraging preference of the endangered addax (*Addax nasomaculatus*) in a fenced wildlife reserve within its historic range: insights for supporting effective reintroduction

Mohsen Chammem, Hicham Seri, Rita Bastos, Mário Santos, Joana Vicente, Touhami Khorchani & João Alexandre Cabral

To cite this article: Mohsen Chammem, Hicham Seri, Rita Bastos, Mário Santos, Joana Vicente, Touhami Khorchani & João Alexandre Cabral (2022) Habitat selection and foraging preference of the endangered addax (*Addax nasomaculatus*) in a fenced wildlife reserve within its historic range: insights for supporting effective reintroduction, *African Zoology*, 57:3, 133-144, DOI: [10.1080/15627020.2022.2115859](https://doi.org/10.1080/15627020.2022.2115859)

To link to this article: <https://doi.org/10.1080/15627020.2022.2115859>



Published online: 05 Nov 2022.



Submit your article to this journal



Article views: 10



View related articles



View Crossmark data

Habitat selection and foraging preference of the endangered addax (*Addax nasomaculatus*) in a fenced wildlife reserve within its historic range: insights for supporting effective reintroduction

Mohsen Chammem^{1*}, Hicham Serí¹, Rita Bastos², Mário Santos^{2,3,4}, Joana Vicente^{5,6}, Touhami Khorchani¹ and João Alexandre Cabral^{2,3}

¹ Laboratoire d'Élevage et de la Faune Sauvage, IRA-Médenine, Médenine, Tunisia

² CITAB - Centre for the Research and Technology of Agro-Environment and Biological Sciences, Institute for Innovation, Capacity Building and Sustainability of Agri-food Production (Inov4Agro) and Department of Biology and Environment, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal

³ Laboratory of Fluvial and Terrestrial Ecology, Innovation and Development Centre, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal

⁴ Laboratory of Ecology and Conservation, Federal Institute of Education, Science and Technology of Maranhão, Buriticupu, Brazil

⁵ Research Network in Biodiversity and Evolutionary Biology, Research Centre in Biodiversity and Genetic Resources (InBIO-CIBIO), Universidade do Porto, Vairão, Portugal

⁶ Departamento de Biologia, Faculdade de Ciências, Universidade do Porto, Porto, Portugal

* Correspondence: mohsen.chammem@ira.rnrt.tn

Reintroduction of species should be based on ecological knowledge, which is fundamental to enhancing the probability of success, but also in predicting the response to future changing landscapes. The addax (*Addax nasomaculatus*), an endangered antelope whose ecology is mostly unknown, was released in a fenced area of the Jbil National Park, Tunisia. Considering the extreme desert conditions of the area, seasonal changes should affect both habitat and diet selection. Addax occurrence, habitat selection and diet were assessed using an integrative approach, and analysed with multivariate statistics. During the wet season, preferred and avoided plant species abundance were highly correlated with addax occurrence; while in the dry season, preferred plant species abundance were positively correlated with addax presence. Micro-histological analysis of faecal samples indicated differences in diet between seasons. The integrative approach proposed represents a useful contribution for decision-making in the scope of reintroduction programmes and habitat restoration measures, by facilitating the assessment of habitat suitability for endangered antelopes in arid environments.

Keywords: antelope conservation, feeding electivity index, Generalized Linear Models (GLZM), GLM, habitat requirements, Jbil National Park, micro-histological analysis

Introduction

Habitat suitability, which is the link between a species' distribution patterns within space, time and ecological factors, has long been a central issue in ecology (Ehrlén and Morris 2015). In recent decades, several modelling techniques have been developed and applied to explain ecological factors constraining habitat selection for multiple species and/or to predict species distribution under climate change scenarios (Avgar et al. 2016). These modelling techniques can also be applied to assess ecological relationships between habitat conditions (e.g. food and water availability) and biological requirements of endangered species reintroduced into an area that was once part of their historical range (Guisan and Thuiller 2005; McCullough et al. 2016). Model simulations can be used to assess short-term success and update expectations for long-term management decisions (Hunter-Ayad et al. 2020).

Addax (*Addax nasomaculatus*) is a medium-sized ungulate belonging to the family Bovidae. Highly adapted to hyper-arid conditions, addax were once widespread over much of the desert and semi-desert areas throughout the Sahara Desert, including the southern half of Tunisia (Rabeil et al. 2016). This large Sahara Desert antelope tends to move long distances between inter-dunal depressions to feed on sparse vegetation (Dragesco-Joffé 1993). Addax are nocturnal and are adapted to low quality forage, feeding mainly on coarse and bulky roughage (Eltringham 1979; Beudels-Jamar et al. 2006; Serí et al. 2018). This desert antelope has extremely efficient water-conserving strategies (Hummel et al. 2008): it rarely needs to drink and has an ability to get all the water to survive from the grasses and scrub it feeds on (Estes 1991; Durant et al. 2014). Like almost all ungulates of the Sahelo-Saharan biome, addax have undergone a significant reduction in