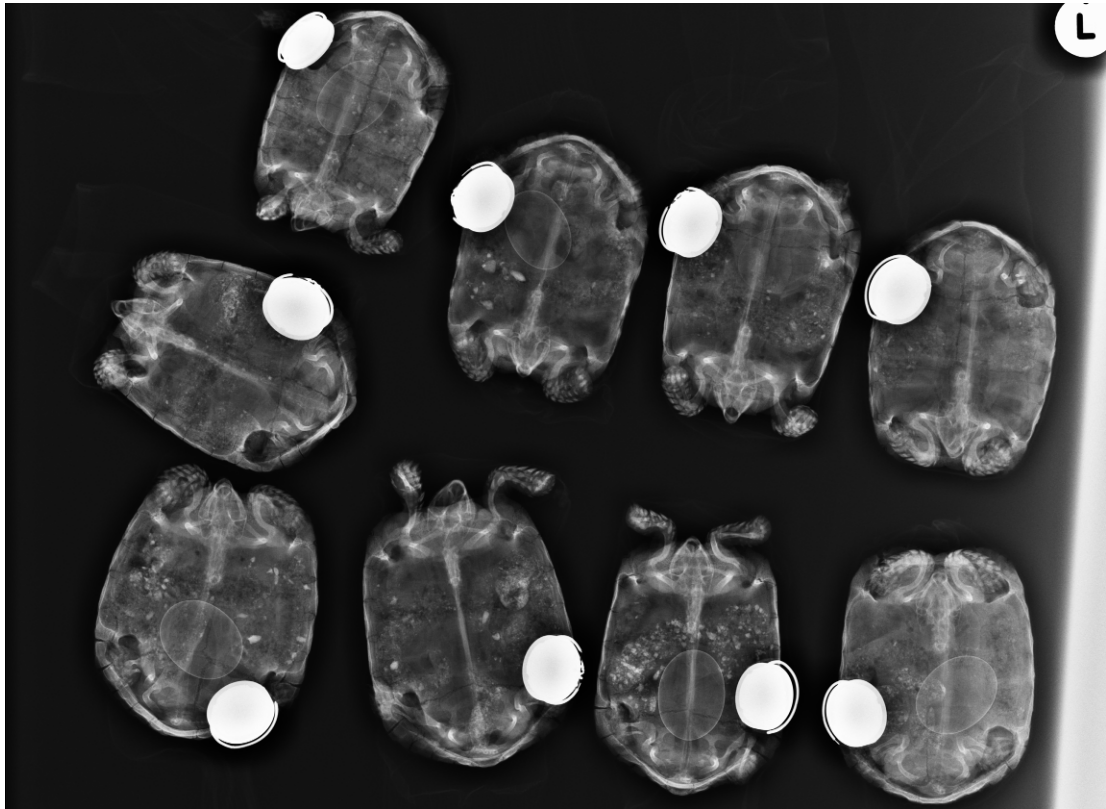
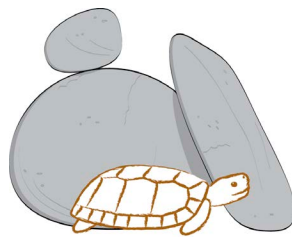


Ecology of the Karoo dwarf tortoise, *Chersobius boulengeri*



**Augmenting previous field-studies
with one radiograph**



Dwarf Tortoise Conservation

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Dwarf Tortoise Conservation (previously Homopus Research Foundation) is a non-commercial organisation entirely run by volunteers. The aim of the foundation is to gather and distribute information on dwarf tortoises, to facilitate their survival in the wild. This aim is achieved through scientific field studies, and through the development and study of captive studbook populations. Our results are published in scientific and popular outlets.

Introduction

In 2017, the Northern Cape Department of Environment and Nature Conservation (DENC) has granted Dwarf Tortoise Conservation (previously Homopus Research Foundation) permits (FAUNA 0950/2017, FLORA 0066/2017 and FLORA 0067/2017) for a field study on the Karoo dwarf tortoise (*Chersobius* [previously *Homopus*] *boulengeri*) in 2018–2020. To augment field-collected data with reproductive and growth data from captivity, permits (FAUNA 0952/2018 and CITES 217387) were also granted to collect and export four Karoo dwarf tortoises in 2019. Karoo dwarf tortoises occur in the Great Karoo, from Montagu in the south-west eastwards to Somerset East, and northwards to Vanwyksvlei in the north-west and Britstown in the north-east (Boycott & Bourquin, 2000). The species is listed Endangered in the IUCN Red List of Threatened Species (Hofmeyr et al. 2018). Thus, it is of paramount importance that the ecology of this elusive species is revealed to determine if specific conservation actions are required and which ones. This document proposes the preparation of one additional radiograph of wild females at the original study site to determine if egg-production takes place in autumn.

Reports on the previous studies

Progress of the previous studies has been reported in various ways:

- [Progress report April 2018](#)
- [Progress report November 2018](#)
- [Annual report Dwarf Tortoise Conservation 2018](#)
- [Progress report March 2019](#)
- [Progress report October 2019](#)
- [Annual report Dwarf Tortoise Conservation 2019](#)
- [Progress report March 2020](#)
- [Annual report Dwarf Tortoise Conservation 2020](#)

In addition, the first three scientific papers have been published:

- [Loehr, V.J.T. and Keswick, T. 2022. Structure and projected decline of a Karoo dwarf tortoise population. Journal of Wildlife Management 1-13. <https://doi.org/10.1002/jwmg.22159>.](#)
- [Loehr, V.J.T., Keswick, T., Reijnders, M. and Zweers, I. 2021. High-level inactivity despite favorable environmental conditions in the rock-dwelling dwarf tortoise *Chersobius boulengeri*. *Herpetologica* 77: 232-238.](#)
- [Loehr, V.J.T. 2021. The Karoo dwarf tortoise \(*Chersobius boulengeri*\): field report on a vanishing species. *Testudo* 9: 20-36.](#)

The need for an additional radiograph

The field study that ran in spring and summer 2018–2020 has demonstrated that Karoo dwarf tortoise females produce eggs in spring, but not in summer. In captivity, however, females have egg-laying seasons in spring and autumn. I have not conducted fieldwork in autumn, so it remains unknown if wild females also produce eggs in autumn. Harsh conditions in the wild, compared to captivity, may disable egg-production in autumn but if it occurs, considerable population-dynamic and population resilience effects are implicated. Consequently, it is important to augment the current dataset with a radiograph of females in autumn.

Approach

The 2018–2020 study site will be visited daily during 10 days in autumn. Each day, I will inspect holes under and among rocks for hiding Karoo dwarf tortoise females, and record the GPS position of occupied holes. Based on the results of the previous fieldwork (Loehr et al. 2021), many females will remain inactive for multiple days. After a sufficient number of females will have been located, I will select one day to collect 8–10 females for radiography in Calvinia (veterinary hospital, i.e., tortoises will not leave the Northern Cape Province). Females will be released the next morning (<36 hours after capture) in the holes where they had been captured.

Planning, permits and ethical clearance

Fieldwork will be conducted between 15 March and 30 April 2022 (exact dates to be determined based on COVID-19 development). The Northern Cape Department of Agriculture, Environmental Affairs, Rural

Development and Land Reform will be requested to grant a research permit to collect, transport, radiograph and release the females. The procedures that I will use are the same as have been used in the 2018–2020 fieldwork and have been approved by the Senate Research Committee of the University of the Western Cape (registration no: 04/4/11).

Budget

Expenses for the preparation of the radiograph will be covered by existing funds at Dwarf Tortoise Conservation. All other expenses (travelling, housing) will be privately covered by the investigator.

Literature cited

- Boycott, R. and Bourquin, O., 2000. The southern African tortoise book: a guide to southern African tortoises, terrapins and turtles. Privately printed, Hilton, South Africa.
- Hofmeyr, M.D., Loehr, V.J.T, Baard, E.H.W. and Juvik, J.O. 2018. *Chersobius boulengeri*. The IUCN Red List of Threatened Species 2018: e.T170521A115656360. <<https://doi.org/10.2305/IUCN.UK.2018-2.RLTS.T170521A115656360.en>>.
- Loehr, V.J.T., Keswick, T., Reijnders, M. and Zweers, I. 2021. High-level inactivity despite favorable environmental conditions in the rock-dwelling dwarf tortoise *Chersobius boulengeri*. *Herpetologica* 77: 232-238.