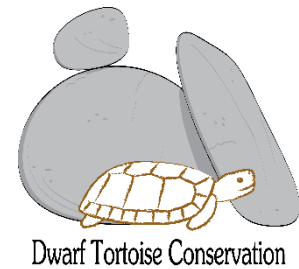


# Collecting founder speckled and Karoo dwarf tortoises (*Chersobius signatus* and *C. boulengeri*, respectively) for conservation breeding: a field report



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## Introduction

Conservation breeding programmes (studbooks) for speckled (*Chersobius signatus*) and Karoo dwarf tortoises (*C. boulengeri*) have been in place since 1995 and 2019, respectively. Captive populations are being developed based on studbook management plans, with the ultimate aim to have access to genetically diverse, self-sustaining assurance colonies. In the current, initial phases of development, occasional additions of founders are required to broaden the genetic basis of the captive populations. Therefore, six speckled and four Karoo dwarf tortoises were collected and transported to Dutch breeding facilities in October 2024. This report summarises results, and presents some implications for *in situ* conservation.

## Timeline and communication

The collection and transport of the tortoises was the final step in a much longer process. Tortoises are nationally and internationally protected species, and collecting wild individuals should follow ample, careful considerations that may be time-consuming.

Activity	2022				2023												2024											
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Planning studbook meeting	█	█																										
Evaluating studbook																												
Drawing up discussion paper																												
Studbook meeting																												
Updating studbook management plan																												
Obtaining recommendation letter CapeNature																												
Obtaining collecting permit																												
Recruiting volunteers																												
Booking agent Cape Town and flight tortoises																												
Booking agent Amsterdam																												
Obtaining CITES export permit																												
Obtaining CITES importing permit																												
Obtaining permissions land owners collecting sites																												
Collecting tortoises																												
Obtaining veterinary certificate																												
Transport tortoises																												

Timeline leading to the collection and transport of six speckled and four Karoo dwarf tortoises in October 2024.

Due to the large number of parties involved in the collection and transport, intensive communication occurred throughout the timeline. In total, roughly 1,750 e-mail messages were sent, and a similar number was received. Some 200 WhatsApp messages were also exchanged.

## Field-hours and tortoises found

Collecting took place at two locations: (1) in the vicinity of Springbok, and (2) in the vicinity of Williston. Detailed GPS localities have been provided to the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform, and to the Endangered Wildlife Trust.

### Springbok

From 9 until 14 October, we intensively surveyed three sites (141 field-hours), including a site that had been used for scientific population studies in 2000–2015. The other two sites were littered with waste material (e.g., glass, metal, asbestos, plastics, fabrics). All three sites contained considerable, yet declining, numbers of tortoises previously (~1995–2015), but are unlikely to sustain tortoise populations in the future due to land use changes, disturbance, and increased predation by corvids. At two sites (including the former study site), we did not find tortoises, with the exception of one

male. At the third site, we found seven males, five females and one juvenile. With exception of two males and two females, all tortoises were out of their retreats when found. Although we were able to collect three male and three female tortoises, two males were subadults, and one female was relatively old (i.e., large size, worn scutes). Population density appeared too low to select only adult individuals that were not old. Several individuals were found underneath waste material.



Example of a speckled dwarf tortoise (red circle) found under metal sheets.

### *Williston*

On 16 and 17 October, we intensively surveyed (51 field-hours) a site that had been used for scientific population studies in 2018–2020. The core of the site yielded but one tortoise. In total, we found four males, three females and one juvenile. Although previous studies have shown that juveniles were almost absent in the population, we found a relatively large proportion of young individuals. Only one male and one female were large with worn shells. In addition, we found two recently hatched eggshells, but hatchlings could not be discovered. The last individual fit for captivity was found in the final hour of our survey.



Karoo dwarf tortoise female, which was not collected.

### **Specific challenges**

When preparing and executing the collection and transport of the tortoises, there were three decisive moments at which it appeared that efforts had to be aborted.

### *Veterinary certificate*

The Netherlands Food and Consumer Product Safety Authority (NVWA) has developed a mandatory template of a veterinary certificate for the import of reptiles into the Netherlands. The template requires tortoises to quarantine during 30 days in the country of origin, whereas dwarf tortoises require a period as brief as possible between capture in the wild and release in their final enclosure, to maximise survival. The issue was elaborately presented to the NVWA, after which an adjusted template was gratefully received specifically for the current import.



South African state veterinarian Dr. Matekwe (left) handing over a signed copy of the veterinary certificate to Victor Loehr (right).

### *Permission landowner*

The Springbok landowner where we intended to collect was unable to timeously renew previously granted permission. Therefore, collecting depended on a neighbouring landowner, who last-minute permitted us to capture speckled dwarf tortoises there.

### *Transport crate*

One working day prior to export, after all tortoises had already been collected, the airliner rejected the transport box that had been prepared. The agent in Cape Town instantly ordered a transport crate that met the airliner's requirements and delivered it on Sunday. We spent the night fitting the inside of the crate with adequate insulation and structure for the tortoise containers, for export the following morning.



Volunteers Olda Mudra and Sérgio Silva preparing the inside of the transport crate.



Transport crate, shortly before acceptance by the airliner.

### **Conditions during transport**

Upon capture, each tortoise was weighed and provided with drinking water. Most tortoises drank. Subsequently, tortoises were kept in individual containers in darkness at relatively low temperatures (e.g., in a cooler box with a bottle of cold water) until release in their final enclosures. Also, disturbances were kept to a minimum. Prior to export, ticks were removed, containers were cleaned, and drinking water was provided.

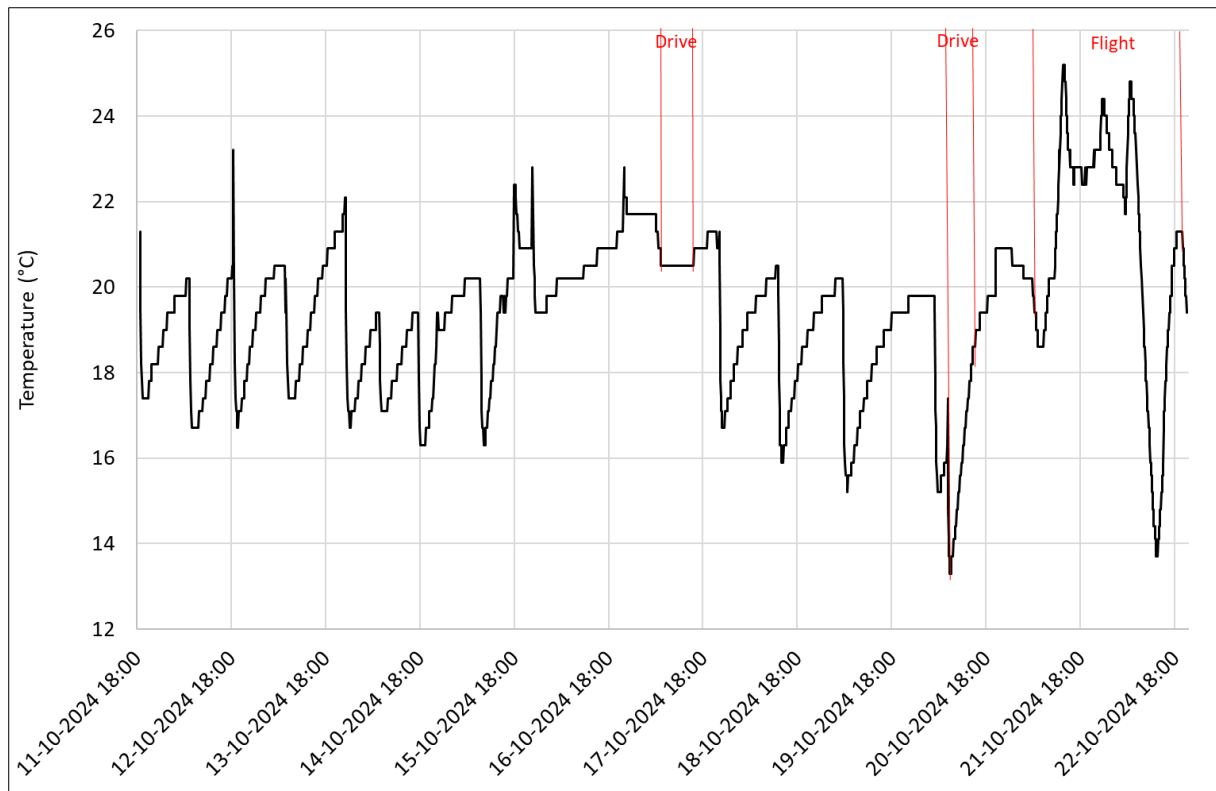


Cooler box with individual boxes in which captured tortoises were kept until export.



Speckled dwarf tortoise drinking after capture.

The loss of body mass of the tortoises between capture in the wild and release in their final enclosures was 6–18%.



Temperatures in the cooler box between capture in the wild and release in the captive enclosures. Repeating sharp temperature declines before 21 October 06:00 hrs were caused by placing bottles with cold water in the cooler box.

### Meetings

The Endangered Wildlife Trust (EWT) and Turtle Conservancy (TC) are planning *in situ* conservation work on dwarf tortoises. Three brief meetings took place to exchange information and ideas:

- Vanrhynsdorp, 8 October  
(Zanné Brink and Lizel Tolken from EWT, and Ernst Baard retired from CapeNature)
- Springbok, 11 October  
(Jim Juvik, Nathanael Stanek, and Alwyn Naude from TC)
- Williston, 15 October  
(Zanné Brink and Lizel Tolken from EWT, and Bonnie Schumann retired from EWT)

### Implications from this trip for *in situ* conservation

The following implications follow from the results in October 2024:

- Collecting speckled dwarf tortoises required significantly more time and a larger area than previously, in 1995, 1999, 2001 and 2015. In addition, “ideal” couples (adults, similar ages, not too old) could not be found. It is unlikely that this was the result of previous collections, because we found most tortoises at a site where tortoises had been collected in the past. It appears that populations in the Springbok area are generally declining.
- During 27 field-hours at the study site where speckled dwarf tortoises had been studied in 2000–2015, no live or dead tortoises were found. This is in sharp contrast to previous visits, suggesting that the population decline that was recorded in 2015 has continued.
- Despite the severe decline of the Karoo dwarf tortoise population recorded in 2022, a population is still present, and still includes reproducing females, hatching eggs and juveniles. Therefore, conservation work on this population appears warranted.

- Field-hours reported here exclude ~18 and ~15 field hours at the speckled and Karoo dwarf tortoise sites, respectively, by guests from EWT and TC. These hours did not yield any tortoises. For effective surveys, it might be beneficial to organise a training session first.
- Current results corroborate earlier notions that time-efficient methods to survey speckled dwarf tortoises in (August-)October(-November) should focus on active individuals out of retreats, whereas time-efficient methods to survey Karoo dwarf tortoises should focus on hiding individuals.

### Acknowledgements

I am grateful to the Northern Cape Department of Agriculture, Environmental Affairs, Land Reform and Rural Development for providing collecting permit FAUNA 0540/2024, CITES export permit ZA-CITES-P-000018024, and veterinary certificate 26631. The Netherlands Enterprise Agency is thanked for providing CITES import permit 24NL327910/11, and the Netherlands Food and Consumer Product Safety Authority for altering the veterinary certificate template specifically for this import. I am indebted to the land owners who gave permission to collect tortoises on their land. Major thanks are extended to CTC Worldwide Logistics (Ian Adams in particular), SACO (Ardeel Davids), and Malenstein Global Logistics for enabling the transport, overcoming endless challenges. I would also like to thank two volunteers, Olda Mudra and Sérgio Silva, who attended the search for tortoises, but unfortunately ended up deeply immersed in the stress related to the transport. Finally, I would like to thank the participants in the studbooks on speckled and Karoo dwarf tortoises for their enthusiastic involvement.



Ian Adams (left), Ardeel Davids (right) and Victor Loehr (middle), at drop-off of the tortoises for export from Cape Town.