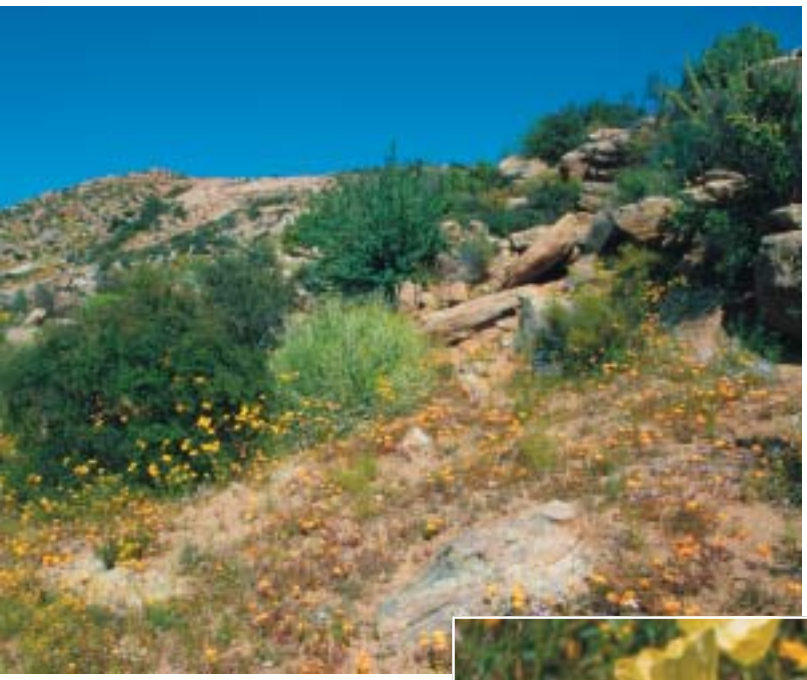
Victor Loehr

Annual temperature fluctuation in the natural habitat of the Namaqualand speckled padloper, *Homopus signatus signatus*



Ill. 1. Habitat of *H. s. signatus* in North-Western South Africa.

Introduction

In recent years, the worldwide captive population of the Namaqualand speckled padloper (*Homopus signatus signatus*) has grown considerably, mainly courtesy of the participants in the studbook for this subspecies run by the Homopus Research Foundation in cooperation with the European Studbook Foundation (ESF) (LOEHR 2000, LOEHR 2001). The Namaqualand speckled padloper is the world's smallest tortoise species, and originates from North-Western South Africa. Here it inhabits rocky areas in arid Succulent Karoo habitat (BRANCH 1998, BOYCOTT & BOURQUIN 2000). The species has only recently been

Ill. 2. Namaqualand speckled padloper, *H. s. signatus*.

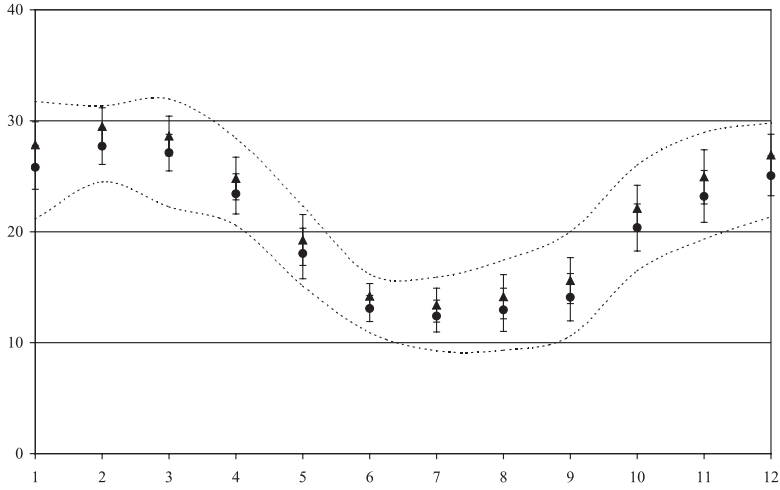


Fig. 1a (left) & 1b (right). Average monthly maximum (triangles) and minimum (circles) temperatures recorded in a rock crevice (1a) and at an open area (1b) in a *H. s. signatus* population. Dotted

shown to survive and thrive in captivity, in contrast to earlier beliefs (LOEHR 1999a,b,c).

Since the biology of this species was virtually unknown, and several potential threats are present, a long-term *in situ* project was initiated in 2000. This ongoing project has elucidated aspects of the diet, population characteristics, activity patterns (LOEHR 2002a,b), and information on the species' reproduction and growth is in preparation for publication. Ideally such *in situ* studies should make a contribution to improve captive husbandry as well.

Habitat temperature measurements

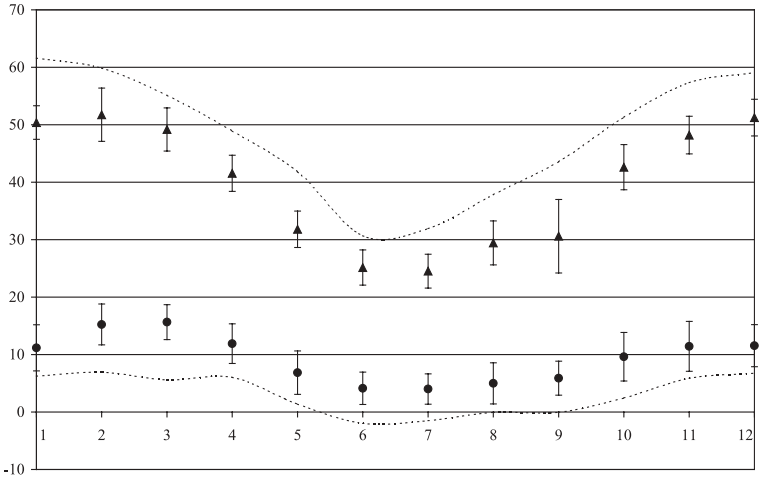
Homopus s. signatus hides in various types of rock crevices in spring (LOEHR 2002b). Tortoises also hide in rock crevices for aestivation in summer (BAYOFF 1995), although it is unsure if these crevices are of the same type. As part of the long-term study on *H. s. signatus* mentioned above, I installed temperature data loggers (HOBO Pro Temp, Onset Computer Corporation, USA) in a deep concealed crevice (see LOEHR 2002b), and in an open area just before the crevice. These loggers measured the temperature every 15 minutes between 1st September 2001 and 1st September 2002.

Results

Figures 1a and 1b show the temperatures that were measured by the two data loggers. Annual temperature variation was much higher in the open area than in the rock crevice. In the rock crevice, the average monthly temperature remained between 13 °C and 30 °C, with extremes of 9 °C and 32 °C (for winter and summer, respectively), whereas average temperatures in the open area were 3 °C and 52 °C (extremes –2 °C and 62 °C). Also, the average maximum and minimum temperatures were much closer to each other in the rock crevice than in the open area.

Discussion

The temperature measurements described in this article provide valuable information for captive situations. However, it should be kept in mind that they only represent data from one year that was measured at one site. A detailed paper addressing spatial variation among microhabitats and rock crevice types is currently in preparation. Measurements in successive years will eventually provide information on temporal variation. From the data presented here, a preliminary conclusion is that captive *H. s. signatus* could be



lines represent the absolute maximum and minimum values, and error bars indicate the standard deviation. Number 1 represents January. Measurements were taken between 1st September 2001 and 1st September 2002.

provided with hiding place temperatures that roughly vary between 10 °C and 32 °C. I did not find any exceptional mortality among the tortoises in the study population that could be attributed to the temperatures encountered and reported here. It should be emphasised that my data do not provide information on the necessity of the temperature ranges described. It is not known if *H. s. signatus* need these for (long-term) survival, or whether they are just capable of surviving them.

Literature

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