# The ecology of the world's smallest tortoise, *Homopus signatus signatus* Field report spring 2003

### What?

This report gives a brief update of the ongoing research project "The ecology of the world's smallest tortoise, *Homopus signatus signatus*". The project has been initiated by the Homopus Research Foundation in 2000, and is now registered as a Ph.D. project at the University of the Western Cape (South Africa), as part of the Chelonian Biodiversity and Conservation Research Programme (see http://www.science.uwc.ac.za/zoology/Staff/retha/chelonian.htm).

### When?

The fourth successive field study was conducted in (southern hemisphere) spring, between 1 September and 10 October 2003.

### Where?

In this study, I am following one tortoise population during several years. As a result, the 2003 fieldwork was conducted at the same research site that had been used in the previous years, located in the direct vicinity of Springbok, South Africa. See Loehr (2002, Journal of Herpetology 36:378-389) for a description of the site.

### With whom?

The first three weeks, the following research assistants accompanied me: Frank van Loon (Belgium), Jacobo Reyes (Mexico), Marsha van Tilborghs (Belgium), and Tamara Harris-Smith (South Africa, Western Cape Nature Conservation). Tamara Harris-Smith has focused on the diet of the tortoises, whereas the others were involved in the general fieldwork.

The last three weeks the field assistants were replaced by the following group: Fabian Schmidt (Germany), Jacobo Reyes (Mexico), and Cindy Woodhead (USA). All of them were involved in the general fieldwork.

The last three days, Retha Hofmeyr, Brian Henen (both South Africa, University of the Western Cape), and Ernst Baard (South Africa, Western Cape Nature Conservation) joined. Retha Hofmeyr and Brian Henen have conducted ultrasound measurements on the female tortoises.

## Results

The winter of 2003 (May - August) had been extremely dry, with higher rainfall in August. As a result, vegetation growth and flowering was delayed by approximately two months. The tortoises responded accordingly, mainly in terms of reproduction.

We were able to locate as many as 120 tortoises, and we made 494 observations, a new record. All tortoises were marked permanently by means of notching of the marginal scutes, replacing the nail polish markings placed in the previous years. Notching is a more secure method to follow the population over a long period of time.

With the exception of a few details (cloacal temperatures, permanent carapace temperature measurements, adjustments in the microhabitat description), all recordings were made as in the previous years. This will facilitate analysing the total dataset. Instead of thread-trailing, radio-telemetry was initiated, and proved to be very successful despite the rocky and steep terrain. A vegetation analysis was also made, but due to the non-flowering state of many plants as a result of the dry winter this has not yielded the desired results. It will be repeated next spring.

During the study period, many forms were distributed among a small number of local inhabitants. These forms contain tables to fill out *H. s. signatus* observations, as well as a colour photograph of the species. The receivers were asked to distribute the forms among friends and relatives who spend time in the veld, to obtain information on the annual activity cycle of the tortoises. The forms are supposed to be returned to the initial receivers, and will be collected by me in September 2004.

#### Future

The next fieldwork is scheduled for January 2004, in order to gather information on summer activity of the tortoises. The radiotransmitters will ensure that at least some tortoises can be recaptured (even when the tortoises would be aestivating in deep rock crevices).

After January, a second 2004 research period will take place in September - October. Upon completion of this fieldwork, I will process all data for presentation in a Ph.D. thesis, as well as in a number of publications in international peer-reviewed journals. Two articles (on population characteristics, activity, and diet) have been published until now, and a third (on growth of *H. s. signatus*) has been accepted for publication in African Zoology.

#### Acknowledgements

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