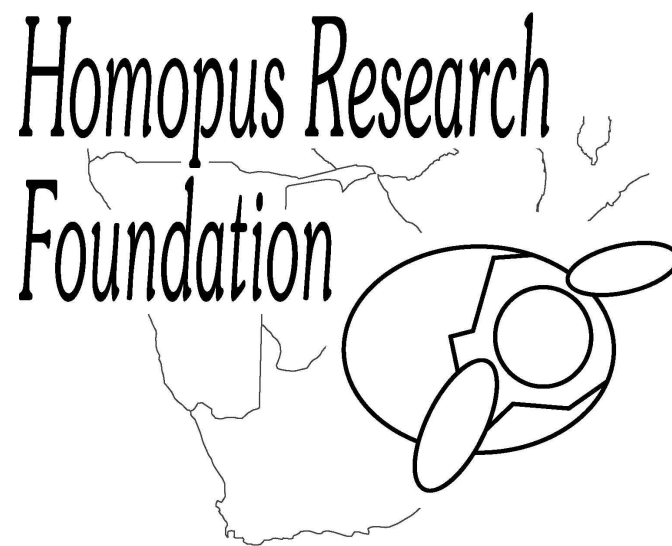


# **Homopus Research Foundation**



## **Annual Report 2004**

*Victor Loehr  
January 2005*



# CONTENTS

<b>1. INTRODUCTION AND ACTIVITIES IN 2004 .....</b>	<b>4</b>
1.1. PUBLICATIONS AND PRESENTATIONS HOMOPUS RESEARCH FOUNDATION (SEE ALSO CHAPTER 12) .....	4
1.2. HOMOPUS PHOTOGRAPHS.....	5
1.3. INTERNET SITE.....	5
1.4. JOURNEYS .....	5
1.5. RESEARCH.....	5
1.6. CONTACTS.....	6
1.7. FINANCES.....	6
<b>2. PLANS FOR ACTIVITIES IN 2005 .....</b>	<b>7</b>
2.1. PUBLICATIONS AND PRESENTATIONS HOMOPUS RESEARCH FOUNDATION .....	7
2.2. INTERNET SITE .....	7
2.3. JOURNEYS .....	7
2.4. RESEARCH.....	7
<b>PART 1: STUDBOOK <i>HOMOPUS SIGNATUS SIGNATUS</i></b>	
<b>3. CURRENT LIVING STUDBOOK POPULATION AND TRANSFERS.....</b>	<b>9</b>
<b>4. IMPORTS, BIRTHS, AND DEATHS.....</b>	<b>15</b>
<b>5. TOTAL STUDBOOK POPULATION AND FUTURE PERSPECTIVES .....</b>	<b>17</b>
<b>PART 2: STUDBOOK <i>HOMOPUS AREOLATUS</i></b>	
<b>6. CURRENT LIVING STUDBOOK POPULATION AND TRANSFERS.....</b>	<b>22</b>
<b>7. IMPORTS, BIRTHS, AND DEATHS.....</b>	<b>25</b>
<b>8. TOTAL STUDBOOK POPULATION AND FUTURE PERSPECTIVES .....</b>	<b>26</b>
<b>PART 3: STUDBOOK <i>HOMOPUS FEMORALIS</i></b>	
<b>9. CURRENT LIVING STUDBOOK POPULATION AND TRANSFERS.....</b>	<b>30</b>
<b>10. IMPORTS, BIRTHS, AND DEATHS.....</b>	<b>30</b>
<b>11. TOTAL STUDBOOK POPULATION AND FUTURE PERSPECTIVES .....</b>	<b>30</b>
<b>12. LITERATURE ABOUT <i>HOMOPUS</i> .....</b>	<b>31</b>
 <b>APPENDIX 1 HUSBANDRY CONDITIONS AND ADDITIONAL INFORMATION PER LOCATION <i>HOMOPUS S. SIGNATUS</i></b>	
<b>APPENDIX 2 HUSBANDRY CONDITIONS AND ADDITIONAL INFORMATION PER LOCATION <i>HOMOPUS AREOLATUS</i></b>	
<b>APPENDIX 3 HUSBANDRY CONDITIONS AND ADDITIONAL INFORMATION PER LOCATION <i>HOMOPUS FEMORALIS</i></b>	
<b>APPENDIX 4 FINANCIAL REPORT HOMOPUS RESEARCH FOUNDATION</b>	
<b>APPENDIX 5 EXAMPLE AGREEMENT HOMOPUS RESEARCH FOUNDATION AND STUDBOOK PARTICIPANTS</b>	

Victor Loehr  
loehr@homopus.org  
Http://www.homopus.org

The Homopus Research Foundation was founded in January 2001, aiming to gather and distribute information on *Homopus* in the benefit (directly or indirectly) of the species in the wild. This aim is realised by carrying out activities such as setting up captive studbook populations, studying captive populations and conducting research in the field. Unofficially, these efforts started as early as 1995 when the foundation's precursor, the Studbook Breeding Programme Homopus started.

The current report will focus in detail on the studbooks coordinated within the foundation. The aims of the studbooks are:

- To inform the herpetological community with data and publications generated from captive situations
- Procuring, maintaining, and reproducing genetically healthy captive individuals for future loans to recognised individuals and institutions

These conservation goals are particularly relevant today as wild populations of many reptiles and amphibians experience increasing survival pressures. Establishing working programs that emphasise captive husbandry in conjunction with fieldwork is crucial in developing sound wildlife management. A significant contribution that captive animals may perform is through the concept of re-introduction of their potential offspring. Although re-introduction of species is at a very early stage and occasionally controversial, there may come a time when the offspring of captive animals are the sole source for re-introducing species into previously suitable habitat where the natural population has become extinct. More importantly re-introduction has the potential of insuring genetic diversity to populations that have become unnaturally isolated due to human interference.



# 1. INTRODUCTION AND ACTIVITIES IN 2004

This report updates the 2003 annual report of the Homopus Research Foundation, drawn up in January 2004. The Homopus Research Foundation aims to form captive populations and to study these, to carry out research in the field, and to gather and distribute as much information as possible about species of the genus *Homopus*. The current report summarises the activities of the foundation in 2004, its plans for 2005, and it gives an overview of the actual composition and changes in the captive populations: *H. signatus signatus*, *H. areolatus*, and *H. femoralis*.

Additional information may be obtained from the internet site of the Homopus Research Foundation, <http://www.homopus.org>, or from the author of this report. Previous annual reports can be downloaded from the literature section of the website.

In the next paragraphs an overview of the main activities in 2004 is presented.

## 1.1. Publications and presentations Homopus Research Foundation (see also chapter 12)

The following table summarises all manuscripts and articles that were submitted, accepted, or published in 2004.

Subject	Submitted	Accepted	Published	Journal
New thread-trailing technique	2002	2003	2004	Turtle and Tortoise Newsletter (English)
Reproduction in <i>H. s. signatus</i>	2002	2004	2004	Herpetologica (English)
Natural growth of <i>H. s. signatus</i>	2003	2003	2004	African Zoology (English)
Second generation breeding <i>H. s. signatus</i>	2003	2003	2004	Radiata (English and German)
Paradox between CO <sub>2</sub> emission captive husbandry, and climate change in natural habitat	2004	2004	2004	Trionyx (Dutch)
Update caresheet <i>H. areolatus</i>	-	-	2004	Internet (English and Dutch)
Field reports fieldwork periods 2004	-	-	2004	Internet (English)
Natural diet of <i>H. s. signatus</i>	2002	2004		Chelonian Cons. and Biology (English)
Husbandry and breeding account <i>Homopus</i> spp.	2003	2003		Mertensiella (English)
Feeding <i>H. s. signatus</i> in relation to humidity	2004	2004		Minor (English and German)
Ultrastructure eggshells <i>H. s. signatus</i>	2004			
Aggressive courtship behaviour <i>H. s. signatus</i>	2004			

The planned German translation of the leaflet with general information on the work of the Homopus Research Foundation (available in English and Dutch) was cancelled.

The Homopus Research Foundation has also informally reviewed an external *Homopus* manuscript, on captive husbandry and breeding of the Nama padloper, *H. species*.

Oral communications were presented at the following locations or meetings:

- Seventh symposium of the Herpetological Association of Africa (South Africa):
  - Natural growth of *H. s. signatus*
  - Oxygen consumption in *Malacochersus tornieri* and *Homopus s. signatus* with special reference to ambient temperature
- Annual Meeting DGHT "Science Day" (Germany), and J.W.Goethe-University Frankfurt, Department of Metabolic Physiology (Germany):
  - Sauerstoffverbrauch bei *Malacochersus tornieri* und *Homopus s. signatus*
- Staff Wuppertal Zoo (Germany), Deutsche Gesellschaft für Herpetologie und Terrarienkunde (DGHT), Landesverband (Germany), DGHT Regionalgruppe Büdingen (Germany), and DGHT Stadtgruppe Frankfurt (Germany):
  - Auf Schildkrötensuche in Afrika
- Annual Meeting AG Schildkröten DGHT (Germany):
  - Vorstellung des *Homopus*-Projekts (English and German)

- Annual Meeting Landesverband Schweiz DGHT (Switzerland):
  - Feldarbeit an *Homopus s. signatus* als Beispiel der Arbeit der Homopus Research Foundation

### 1.2. *Homopus photographs*

Photographs of the natural habitat of *H. s. signatus* were provided for a sign at the enclosure for this species in Prague Zoo, Czech.

### 1.3. *Internet site*

The internet site of the Homopus Research Foundation was upgraded with a photographic impression of the summer and spring 2004 *H. s. signatus* fieldwork episodes. In addition, photographs of the habitat of *H. femoralis* were added, as well as images of *Psammobates oculiferus*, *Geochelone pardalis*, and their habitats. The field reports of the 2000 - 2004 fieldwork on *H. s. signatus* were made available, and the existing caresheet on *H. areolatus* was updated. Recent results have shown that this species should be kept more humid than suggested in the original caresheet.

One page dedicated to the Homopus Research Foundation and the environment was added. This page focuses on the paradox between CO<sub>2</sub> emission by captive husbandry (electricity use) and field studies by Europeans (flights), and threats to *Homopus* spp. in the wild due to climate change through CO<sub>2</sub> emission. It aims to make people aware of this paradox, and provides ways to deal with it. For instance, many European electricity companies provide “green energy” at choice (usually wind or solar energy, generated without CO<sub>2</sub> emission) that could be used for the captive husbandry of *Homopus* spp. CO<sub>2</sub> emission from airplanes may be compensated via programmes such as Trees for Travel (<http://www.treesfortravel.nl>), that invest in the production of sustainable forests as carbon sinks.

Minor changes of the internet site concern updates of the literature listing and research activities.

Over 13,000 page views have been counted since June 1998 (approximately 3,000 in 2004, a third more than in 2003). South Africa has dropped one position to the 8<sup>th</sup> position in terms of number of visitors per country.

### 1.4. *Journeys*

South Africa was visited for three weeks in January, and six weeks in September and October 2004, within the scope of the field research on *H. s. signatus* (see also paragraph 1.5). One delegate of the Homopus Research Foundation participated in the January fieldwork, and two in September - October. Two additional delegates visited the field site in September - October, one of which spent additional time preparing fieldwork on *H. s. cafer*.

In January, other areas in South Africa and Namibia were visited as well, to meet researchers (Peter Cunningham, Namibia; Peter Minting, South Africa) and a Namibian breeder of *Homopus* spp. (Alfred Schleicher). Furthermore, Western and Northern Cape Nature Conservation were visited. Following the October fieldwork, the habitat of *H. femoralis* was visited, and the symposium of the Herpetological Association of Africa was attended.

All fieldwork participants have been invited to compensate CO<sub>2</sub> emission from their flight via the Trees for Travel programme. Some, unfortunately not all, have done this.

### 1.5. *Research*

The 2000 - 2003 ecological study on *H. s. signatus* was completed in 2004, with fieldwork in January (Victor Loehr [Homopus Research Foundation]), and September - October. The latter fieldwork was conducted by a German (Mats Blohm), two Swedish (Patrik Abramsson and Linn Lagerström), and two Dutch (Peter van Putten and Victor Loehr). Two South Africans (Retha Hofmeyr and Brian Henen [University of the Western Cape]) participated to gather reproductive data through ultrasound measurements. Additional fieldwork was conducted throughout 2004 by Retha Hofmeyr and Brian Henen (reproductive study).

The *H. s. signatus* project is registered as a Ph.D. project at the University of the Western Cape (supervisors Retha Hofmeyr and Brian Henen). Details about the set-up of all studies can be found in the project proposals. These may be obtained from the Homopus Research Foundation, or can be

downloaded from its internet site. Information about results can be found in this annual report, in paragraphs 1.1 and 2.1, and in chapter 12.

The 2004 field studies would not have been possible without donations of money (National Research Foundation, Royal Society of London, University of the Western Cape [all supporting Retha Hofmeyr and Brian Henen's efforts], and Chelonian Research Foundation/Linnaeus Fund, Dutch Foundation for the Advancement of Herpetology, various private individuals), and research materials or services (Röbke Agenturen, South African Weather Services, Springbok Hospital). Permits were provided by Northern Cape Nature Conservation.

Apart from the *H. s. signatus* field project and the continuing long term captive study on *H. s. signatus* (as described in the 1999 annual studbook report), the Homopus Research Foundation was involved in one other project:

- *Homopus s. signatus* eggshells  
Electron microscope scans from shells of captive and wild hatched and non-hatched *H. s. signatus* eggs have been performed to study differences in calcium crystal shape, size, and calcium mobilisation. A manuscript has been submitted in 2004, and additional eggshells await examination.

#### 1.6. Contacts

The Homopus Research Foundation was contacted by various persons and organisations in 2004. Among others: National Biodiversity Institute (South Africa), requesting dietary and locality information on *H. signatus*; University of the Western Cape (South Africa), sharing information on raising captive hatchling *H. areolatus*; Nairobi inhabitant (Kenya), requesting veterinary information to treat a cracked carapace in *Geochelone pardalis*; various persons and institutions to request reprints of articles or photographs. The Kenyan request was forwarded to a South African specialist veterinarian, Dr. Angelo Lambiris.

The Homopus Research Foundation contacted the Free State Department of Tourism, Environment and Economic Affairs (South Africa) to apply for a permit to collect and export *H. femoralis*, to be used in a captive study. This permit has been granted. Western Cape Nature Conservation was contacted in order to obtain information on past exports of *H. s. cafer* from South Africa. Specimens were offered for sale in Europe, and considering the conservation status of the species, it seemed important to find out if these were legal.

Pencils with the logo of the foundation were purchased as relation gifts, and for use in the fieldwork. In addition, the screensaver that was mentioned in the 2003 annual report was updated with new pictures. It can be obtained at <http://www.chimaira.de>.

#### 1.7. Finances

The Homopus Research Foundation is a non-profit, tax-exempt organisation. A financial report of the year 2004 can be found in appendix 4. All expenses were covered by external sources of income, some remaining from 2003. A donation from Victor Loehr covered all overhead costs of the foundation and the international travel expenses of the person concerned.

Estimated 2004 private expenses of persons involved in the Homopus Research Foundation was € 4,500. These concern costs made for, but not through the foundation (e.g., international travel expenses fieldwork participants, excluding Victor Loehr). To calculate the actual costs for the 2004 field research project, most of these costs have to be added to the foundation's expenses.

## 2. PLANS FOR ACTIVITIES IN 2005

Below, the planned activities for 2005 are listed. Only a portion of the activities can be planned in advance, and therefore this list is not comprehensive.

### 2.1. Publications and presentations Homopus Research Foundation

The 2000 - 2004 field project on *H. s. signatus* has been finished, and approximately 12 manuscripts will be prepared. Much of this work is scheduled for 2005. In addition, all studbook participants will be stimulated to publish their data if they find any interesting results.

A presentation titled Tortoise poaching: background and prevention is scheduled to be held at Northern Cape Nature Conservation in February. A video presentation on fieldwork on *H. signatus* will be presented at a meeting of the Belgium terrarium society Terra.

### 2.2. Internet site

The internet site of the Homopus Research Foundation will continue to grow. Papers and other information published within the foundation will be posted on the site when copyrights will permit, and changes in studbook composition will be updated frequently. Moreover, it will be attempted to post information about *Homopus* from outside of the foundation, when available.

The page with fieldwork impressions will be updated after the 2005 fieldwork (see below), and several new pictures of southern African tortoises may be added.

### 2.3. Journeys

In February - March, two delegates of the Homopus Research Foundation will visit South Africa to locate a site for a new fieldwork project, on *H. Boulengeri*. If a suitable site can be found, the fieldwork will start in February - March 2006. The 2005 journey will also be used to collect and export *H. femoralis* for a captive study, if time will permit.

### 2.4. Research

Although the natural *H. s. signatus* population that was studied between 2000 - 2004 will also be monitored in the next years, the frequency will be decreased. This will result in available time to initiate another field project, on *H. Boulengeri*. Selection of a suitable research site will take place in February 2005. The rest of 2005 will be used for data processing and writing manuscripts resulting from the *H. s. signatus* study.

If it will be possible to collect and export *H. femoralis* in February 2005 (permits have been granted), data recording for this captive population will be intensified in 2005.

One previous participant in the *H. s. signatus* fieldwork (Fabian Schmidt) will start a field study on *H. s. cafer* in 2005. Although this project is not part of the Homopus Research Foundation, it will be followed closely.

There are no plans for participation (making captive tortoises available for research purposes, or other) in external research projects, but applications will always be considered.



## **Part 1:**

# **Studbook *Homopus s. signatus***

### 3. CURRENT LIVING STUDBOOK POPULATION AND TRANSFERS

The number of locations where live *Homopus s. signatus* specimens were housed in 2004 remained stable at 17. These locations are in the Netherlands (4), Germany (8), USA (1), Sweden (2), Belgium (1), and Czech (1), and include two zoos. One location in the USA was removed and another one added (A43), when all specimens at the original location had to be transferred due to private circumstances. Location A02 was renamed to HRF (Homopus Research Foundation).

The total number of live specimens in the studbook population grew from 44 to 52: Eight specimens were born, at three locations, two specimens died (at two locations), one long-term captive specimen was registered, as well as one offspring from 2003 (born outside of the studbook). With the exception of two specimens (studbook numbers 17 and 47), all founder specimens originate from a single population in South Africa.

Specimens 1 and 3 (wild-caught, location HRF) were exchanged for specimens 37 and 38 (wild-caught, location A25). Specimens 37 and 38 have not yet reproduced, and in an attempt to trigger the onset of reproduction, they were transferred to an enclosure where successful breeding had already taken place. Specimen 44 (captive-bred at location A07) was transferred to location A10, in order to compose an unrelated captive-bred breeding pair. Additional transfers were not realised in 2004. All transfers were in accordance with national and international legislation.

**Table 1:** Current living studbook population *Homopus s. signatus* per location as registered in the studbook. Numbers far right are relative numbers per location, indicating which specimens are housed together. MULT1 are specimens 18 and 19, MULT2 specimens 20 and 21. UNK1 and UNK2 are unknown specimens outside of the studbook.

=====

**Location: A07**

=====

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
=====									
35	M	????	WILD	WILD	SPRINGBOK	4 Oct 2001	NONE	Capture	
					HRF	6 Oct 2001	_____	Transfer	
					A07	16 Dec 2001	_____	Loan to	1
36	F	????	WILD	WILD	SPRINGBOK	3 Oct 2001	NONE	Capture	
					HRF	6 Oct 2001	_____	Transfer	
					A07	16 Dec 2001	_____	Loan to	1
63	?	6 Jul 2004	35	36	A07	6 Jul 2004	_____	Hatch	
					HRF	6 Jul 2004	_____	Ownership	2
65	?	31 Jul 2004	35	36	A07	31 Jul 2004	_____	Hatch	
					HRF	31 Jul 2004	_____	Ownership	2
68	?	15 Aug 2004	35	36	A07	15 Aug 2004	_____	Hatch	
					HRF	15 Aug 2004	_____	Ownership	2

Totals: 1.1.3 (5)

**Location: A08**

=====

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
=====									
41	M	25 Jul 2002	1	3	HRF	25 Jul 2002	III-14	Hatch	
					A08	19 Apr 2003	_____	Loan to	1
42	F	20 Aug 2002	1	2	HRF	20 Aug 2002	II-11	Hatch	
					A08	19 Apr 2003	_____	Loan to	1

Totals: 1.1.0 (2)

**Location: A10**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
6	M	8 Nov 1996	1	3	HRF	8 Nov 1996	III-2	Hatch	
					A10	4 Aug 2001	_____	Loan to	
					A31	7 May 2002	_____	Loan to	
					A10	8 Dec 2002	_____	Loan to	1
7	F	24 Dec 1996	1	3	HRF	24 Dec 1996	III-3	Hatch	
					A06	22 Nov 1998	_____	Loan to	
					A07	5 Jul 2000	_____	Loan to	
					A18	14 Dec 2001	_____	Loan to	
					A31	6 May 2002	_____	Loan to	
					A10	8 Dec 2002	_____	Loan to	2
44	M	31 Oct 2002	35	36	A07	31 Oct 2002	_____	Hatch	
					HRF	31 Oct 2002	_____	Ownership	
					A10	24 Jul 2004	_____	Loan to	2

Totals: 2.1.0 (3)

**Location: A16**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
11	M	10 Nov 1997	1	3	HRF	10 Nov 1997	III-4	Hatch	
					A06	22 Nov 1998	_____	Loan to	
					A07	5 Jul 2000	_____	Loan to	
					A16	16 Sep 2000	_____	Loan to	1
14	M	22 Oct 1998	1	3	HRF	22 Oct 1998	III-5	Hatch	
					A07	22 Nov 1998	_____	Loan to	
					A16	16 Sep 2000	_____	Loan to	2

Totals: 2.0.0 (2)

**Location: A18**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
15	F	20 Sep 1999	1	2	HRF	20 Sep 1999	II-6	Hatch	
					A31	6 May 2002	_____	Loan to	
					A18	8 Dec 2002	_____	Loan to	1

Totals: 0.1.0 (1)

**Location: A25**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
1	M	????	WILD	WILD	SPRINGBOK	27 Sep 1995	NONE	Capture	
					HRF	30 Sep 1995	I	Transfer	
					A25	12 Jun 2004	_____	Loan to	1
3	F	????	WILD	WILD	SPRINGBOK	26 Sep 1995	NONE	Capture	
					HRF	30 Sep 1995	III	Transfer	
					A25	12 Jun 2004	_____	Loan to	1

Totals: 1.1.0 (2)

**Location: A33**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
10	M	22 Oct 1997	1	2	HRF	22 Oct 1997	II-3	Hatch	
					A10	4 Aug 2001	_____	Loan to	
					A31	7 May 2002	_____	Loan to	
					A33	8 Nov 2002	UHURU	Loan to	1

Totals: 1.0.0 (1)

**Location: A35**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
31	M	3 Aug 2001	1	2	HRF	3 Aug 2001	II-10	Hatch	
					A31	6 May 2002	_____	Loan to	
					A35	30 Nov 2002	_____	Loan to	1
34	M	30 Sep 2001	1	3	HRF	30 Sep 2001	III-11	Hatch	
					A31	6 May 2002	_____	Loan to	
					A35	30 Nov 2002	_____	Loan to	2

Totals: 2.0.0 (2)

**Location: A37**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
25	M	12 Sep 2000	1	3	HRF	12 Sep 2000	III-8	Hatch	
					A31	6 May 2002	_____	Loan to	
					A37	11 Dec 2002	_____	Loan to	1
60	F	????	WILD	WILD	A37	~15 Mar 2003	_____	Transfer	2
61	M	7 Oct 2003	WILD	60	A37	7 Oct 2003	_____	Hatch	3
62	F	5 Jun 2004	WILD	60	A37	5 Jun 2004	_____	Hatch	3
67	?	5 Aug 2004	WILD	60	A37	5 Aug 2004	_____	Hatch	3

Totals: 2.2.1 (6)

**Location: A39**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
40	M	2 Jul 2002	1	3	HRF	2 Jul 2002	III-13	Hatch	
					A39	12 Apr 2003	_____	Loan to	1

Totals: 1.0.0 (1)

**Location: A40**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
43	?	29 Sep 2002	1	2	HRF	29 Sep 2002	II-12	Hatch	
					A40	6 Jun 2003	_____	Loan to	1

Totals: 0.0.1 (1)

**Location: A41**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
51	?	1 Jul 2003	1	2	HRF A41	1 Jul 2003 2 Nov 2003	II-13 _____	Hatch Loan to	1

Totals: 0.0.1 (1)

**Location: A42**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
54	?	5 Sep 2003	1	3	HRF A42	5 Sep 2003 7 Nov 2003	III-17 THEODO	Hatch Loan to	1

Totals: 0.0.1 (1)

**Location: A43**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
17	M	????	WILD	WILD	A12 A43	8 Sep 1999 ~ May 2004	_____ _____	Transfer Loan to	1
18	M	????	WILD	WILD	SPRINGBOK A12 A43	~16 Sep 1999 ~16 Sep 1999 ~ May 2004	NONE VIEJO _____	Capture Transfer Loan to	2
19	M	????	WILD	WILD	SPRINGBOK A12 A43	~16 Sep 1999 ~16 Sep 1999 ~ May 2004	NONE STUMPY _____	Capture Transfer Loan to	3
20	F	????	WILD	WILD	SPRINGBOK A12 A43	~16 Sep 1999 ~16 Sep 1999 ~ May 2004	NONE MIDGE _____	Capture Transfer Loan to	3
21	F	????	WILD	WILD	SPRINGBOK A12 A43	~16 Sep 1999 ~16 Sep 1999 ~ May 2004	NONE BERTHA _____	Capture Transfer Loan to	2
27	?	17 Oct 2000	MULT1	MULT2	A12 A43	17 Oct 2000 ~ May 2004	SASHI _____	Hatch Loan to	?
28	?	15 Nov 2000	MULT1	MULT2	A12 A43	15 Nov 2000 ~ May 2004	PEANUT _____	Hatch Loan to	?
30	?	26 Jul 2001	MULT1	20	A12 A43	26 Jul 2001 ~ May 2004	_____ _____	Hatch Loan to	?
32	?	10 Aug 2001	MULT1	20	A12 A43	10 Aug 2001 ~ May 2004	_____ _____	Hatch Loan to	?
47	M	????	UNK1	UNK2	A12 A43	~ Jan 2002 ~ May 2004	ERNST _____	Transfer Loan to	?
56	?	22 Aug 2003	MULT1	20	A12 A43	22 Aug 2003 ~ May 2004	_____ _____	Hatch Loan to	?
57	?	17 Sep 2003	MULT1	20	A12 A43	17 Sep 2003 ~ May 2004	_____ _____	Hatch Loan to	?
58	?	20 Sep 2003	MULT1	20	A12 A43	20 Sep 2003 ~ May 2004	_____ _____	Hatch Loan to	?

Totals: 4.2.7 (13)

**Location: HRF**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
5	F	27 Feb 1996	WILD	3	HRF	27 Feb 1996	III-1	Hatch	1
9	F	30 Nov 1996	1	2	HRF	30 Nov 1996	II-1	Hatch	2
13	M	26 Sep 1998	1	2	HRF	26 Sep 1998	II-5	Hatch	
					A07	22 Nov 1998	_____	Loan to	
					A18	14 Dec 2001	_____	Loan to	
					A31	6 May 2002	_____	Loan to	
					HRF	8 Dec 2002	II-5	Transfer	1
37	M	????	WILD	WILD	SPRINGBOK	3 Oct 2001	NONE	Capture	
					HRF	6 Oct 2001	_____	Transfer	
					A25	6 Oct 2001	_____	Loan to	
					HRF	12 Jun 2004	0612-I	Transfer	2
38	F	????	WILD	WILD	SPRINGBOK	3 Oct 2001	NONE	Capture	
					HRF	6 Oct 2001	_____	Transfer	
					A25	6 Oct 2001	_____	Loan to	
					HRF	12 Jun 2004	612-II	Transfer	2
53	F	20 Jul 2003	13	5	HRF	20 Jul 2003	030720	Hatch	3
59	?	10 Jun 2004	1	3	HRF	10 Jun 2004	III-18	Hatch	4
64	?	29 Jul 2004	1	3	HRF	29 Jul 2004	III-19	Hatch	4
66	?	6 Aug 2004	13	5	HRF	6 Aug 2004	040806	Hatch	4

Totals: 2.4.3 (9)

**Location: PRAHA**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
50	M	17 Jun 2003	1	3	HRF	17 Jun 2003	III-15	Hatch	
					PRAHA	20 Dec 2003	_____	Loan to	1
52	F	9 Jul 2003	1	3	HRF	9 Jul 2003	III-16	Hatch	
					PRAHA	20 Dec 2003	_____	Loan to	1

Totals: 1.1.0 (2)

**Location: WUPPERTAL**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
26	F	7 Oct 2000	1	2	HRF	7 Oct 2000	II-9	Hatch	
					A31	6 May 2002	_____	Loan to	
					WUPPERTAL	18 Dec 2002	_____	Loan to	1

Totals: 0.1.0 (1)

Together, all specimens make the total living studbook population 20 males, 15 females, and 17 unknown, housed at 17 locations. Five (potential) bloodlines are present, with founders at locations HRF (1 bloodline), A07 (1), A43 (2), and A25 (1). A solitary wild-caught female is present at location A37. Location A43 has not responded to repeated requests to provide feedback to the studbook coordinator, and it is not certain if all animals are still alive. This location is urgently requested to adopt a more active attitude, required for the studbook to function properly.

Three single captive-bred females (15, 26, and 60) and 8 single males (6, 10, 11, 14, 25, 31, 34, and 41) fit for breeding purposes are present, at locations A08 (41), A10 (6), A16 (11 and 14), A18 (15), A33 (10), A35 (31 and 34), A37 (25 and 60), and WUPPERTAL (26). Most of these originate from the same 1.2 founder population and thus are genetically related (same sire). Female 9 has been kept

together with related male 13 until 2004, and is currently housed with a wild-caught couple that should not yet mix with the bloodline represented by female 9. Therefore, all eggs produced by female 9 are being destroyed, and the female will only be bred with another male after it will have been separated from unwanted breeding mates for a period of 3 years. This way, unwanted genetic composition of the offspring due to sperm storage will likely be avoided. The unrelated captive-bred (F1) males that will become available from other bloodlines in the next years will be combined with the other solitary females (locations A10, A18, A35, and WUPPERTAL).

Specimen 60 is producing viable eggs from fertilisation by a male that has died before the female was registered in the studbook. Thus, this offspring is not related to most of the studbook population, and the female provides an excellent opportunity to determine how long female *H. s. signatus* can store sperm. After one season without fertile eggs, this female will be combined with male 25.

Wild-caught specimens 18, 19, 20, and 21 were originally housed as a 2.2 group at location A12 (now A43). They were separated to form different bloodlines in 2001. Until 2005, all hatchlings will be considered related to both males (due to possible sperm storage), unless it is possible to prove otherwise by DNA analysis.

Males 17 and 47, fit for breeding, are available at location A43. These males originate from unknown wild locations and founders (47) and therefore will only be paired with females that are from unknown original location or otherwise surplus.

## 4. IMPORTS, BIRTHS, AND DEATHS

In 2004, no imports of *H. s. signatus* have taken place. A strategy for future imports has been drawn up in the previous annual reports. At this point there are no reasons to change this strategy, meaning that additional imports of wild-caught specimens will only be required in about 10 years from now.

The studbook population *H. s. signatus* produced eggs and hatchlings at three locations in 2004, one more than in 2003. At location HRF, females 2, 3, 5, and 9 produced respectively 3, 3, 2, and 2 eggs. One of the eggs of female 2 was soft-shelled, another was produced under a basking spot (not buried), and the third was recovered from the female during autopsy (see below). All other eggs were buried at protected sites. One egg of female 3 was broken during egg-production. The eggs from female 9 were destroyed because they would result in inbred specimens (see chapter 3). The others were incubated in Seramis (weight ratio Seramis:water = either 4.4:1 or 2.2:1; buried completely). The eggs produced by female 2 failed to develop, similar to one of the eggs of female 5. The remaining eggs hatched successfully. As a result of evidence of thin eggshells at location HRF, relatively to shells in the wild, supplementation of the food with Gistocal (Beaphar) was exchanged for Calcicare (Witte Molen) and calcium lactate (ratio 1:1).

Additional husbandry information is present in the appendices.

**Table II:** Births of *Homopus s. signatus* in 2004.

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
63	?	6 Jul 2004	35	36	A07 HRF	6 Jul 2004 6 Jul 2004	_____ _____	Hatch Ownership
65	?	31 Jul 2004	35	36	A07 HRF	31 Jul 2004 31 Jul 2004	_____ _____	Hatch Ownership
62	F	5 Jun 2004	WILD	60	A37	5 Jun 2004	_____	Hatch
67	?	5 Aug 2004	WILD	60	A37	5 Aug 2004	_____	Hatch
59	?	10 Jun 2004	1	3	HRF	10 Jun 2004	III-18	Hatch
64	?	29 Jul 2004	1	3	HRF	29 Jul 2004	III-19	Hatch
66	?	6 Aug 2004	13	5	HRF	6 Aug 2004	040806	Hatch
68	?	15 Aug 2004	35	36	A07 HRF	15 Aug 2004 15 Aug 2004	_____ _____	Hatch Ownership

Totals: 0.0.8 (8)

One specimen that was born in 2003 at location HRF died as a result of a cloacal prolaps, on 13 March at location A42. No causes for the prolaps could be found. A wild-caught tortoise (gravid female) died on 14 May at location HRF, as a result of a oviducal prolaps. Autopsy was conducted on the latter specimen. It appeared that it was not in optimal nutritional condition (small liver), but no obvious disorders were discovered. It can be speculated that the oviduct had been damaged by the earlier production of a soft-shelled egg, that broke during oviposition. Also a lack of calcium or vitamin D may have played a role (directly or indirectly), hence the supplementation of these substances was intensified.



**Table III:** Deaths of *Homopus s. signatus* in 2004.

=====									
Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
=====									
2	F	????	WILD	WILD	SPRINGBOK	26 Sep 1995	NONE	Capture	
					HRF	30 Sep 1995	II	Transfer	
						14 May 2004		Death	
[Death by: Euthanasia    Rendered    Reproductive    Mechanical Abnormality]									
55	?	3 Sep 2003	1	2	HRF	3 Sep 2003	II-14	Hatch	
					A42	7 Nov 2003	_____	Loan to	
						13 Mar 2004		Death	
[Death by: Euthanasia    Mounted or Preserved: A42    Digestive    Trauma]									
Totals: 0.1.1 (2)									

## 5. TOTAL STUDBOOK POPULATION AND FUTURE PERSPECTIVES

The current total *H. s. signatus* studbook population consists of 68 specimens. From these, 14 are wild-caught specimens (12 collected and imported by the Homopus Research Foundation), and 54 are captive-bred (45 within the studbook). Fifty-six tortoises (12 wild-caught, and 40 captive-bred) are currently alive, housed at 17 locations, in Europe and the USA.

Reproduction is continuing in the studbook population, and all founders appear healthy and stable. At this point, the main challenge is to increase reproductive success in the founders at locations A43 (specimens 18 and 21) and HRF. Details on the current situation at location A43 are not known, due to lack of response on requests. Location HRF has received its current breeding couple in 2004, and it may start reproducing in 2005. Furthermore, location A37 is producing unrelated offspring from female 60, that is of importance for the studbook population. The sex ratio of the captive population is male-biased, but this is mainly a result of the males maturing more quickly than females. The overall perspectives of this studbook are very good.

The studbook participants generally form a group of active and involved enthusiasts. Their assertive attitude will remain important for the functioning of the studbook, and is much appreciated by the studbook coordinator.

**Table IV:** Total studbook population *Homopus s. signatus*. MULT1 are specimens 18 and 19, MULT2 specimens 20 and 21. UNK1 and UNK2 are unknown specimens outside of the studbook.

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
1	M	????	WILD	WILD	SPRINGBOK HRF A25	27 Sep 1995 30 Sep 1995 12 Jun 2004	NONE I _____	Capture Transfer Loan to
2	F	????	WILD	WILD	SPRINGBOK HRF	26 Sep 1995 30 Sep 1995 14 May 2004	NONE II _____	Capture Transfer Death
3	F	????	WILD	WILD	SPRINGBOK HRF A25	26 Sep 1995 30 Sep 1995 12 Jun 2004	NONE III _____	Capture Transfer Loan to
4	M	????	WILD	WILD	SPRINGBOK HRF	28 Sep 1995 30 Sep 1995 24 Dec 1995	NONE IV _____	Capture Transfer Death
5	F	27 Feb 1996	WILD	3	HRF	27 Feb 1996	III-1	Hatch
6	M	8 Nov 1996	1	3	HRF A10 A31 A10	8 Nov 1996 4 Aug 2001 7 May 2002 8 Dec 2002	III-2 _____ _____ _____	Hatch Loan to Loan to Loan to
7	F	24 Dec 1996	1	3	HRF A06 A07 A18 A31 A10	24 Dec 1996 22 Nov 1998 5 Jul 2000 14 Dec 2001 6 May 2002 8 Dec 2002	III-3 _____ _____ _____ _____ _____	Hatch Loan to Loan to Loan to Loan to Loan to
8	?	26 Jan 1997	1	2	HRF	26 Jan 1997 2 Feb 1997	II-2	Hatch Death
9	F	30 Nov 1996	1	2	HRF	30 Nov 1996	II-1	Hatch
10	M	22 Oct 1997	1	2	HRF A10 A31 A33	22 Oct 1997 4 Aug 2001 7 May 2002 8 Nov 2002	II-3 _____ _____ UHURU	Hatch Loan to Loan to Loan to

11	M	10 Nov 1997	1	3	HRF A06 A07 A16	10 Nov 1997 22 Nov 1998 5 Jul 2000 16 Sep 2000	III-4 _____ _____ _____	Hatch Loan to Loan to Loan to
12	M	21 Nov 1997	1	2	HRF A07 A18 A31 A36	21 Nov 1997 22 Nov 1998 14 Dec 2001 6 May 2002 8 Dec 2002 20 Oct 2003	II-4 _____ _____ _____ _____ _____	Hatch Loan to Loan to Loan to Loan to Death
13	M	26 Sep 1998	1	2	HRF A07 A18 A31 HRF	26 Sep 1998 22 Nov 1998 14 Dec 2001 6 May 2002 8 Dec 2002	II-5 _____ _____ _____ II-5	Hatch Loan to Loan to Loan to Transfer
14	M	22 Oct 1998	1	3	HRF A07 A16	22 Oct 1998 22 Nov 1998 16 Sep 2000	III-5 _____ _____	Hatch Loan to Loan to
15	F	20 Sep 1999	1	2	HRF A31 A18	20 Sep 1999 6 May 2002 8 Dec 2002	II-6 _____ _____	Hatch Loan to Loan to
16	?	4 Oct 1999	1	3	HRF	4 Oct 1999 4 Oct 1999	III-6 _____	Hatch Death
17	M	????	WILD	WILD	A12 A43	8 Sep 1999 ~ May 2004	_____ _____	Transfer Loan to
18	M	????	WILD	WILD	SPRINGBOK A12 A43	~16 Sep 1999 ~16 Sep 1999 ~ May 2004	NONE VIEJO _____	Capture Transfer Loan to
19	M	????	WILD	WILD	SPRINGBOK A12 A43	~16 Sep 1999 ~16 Sep 1999 ~ May 2004	NONE STUMPY _____	Capture Transfer Loan to
20	F	????	WILD	WILD	SPRINGBOK A12 A43	~16 Sep 1999 ~16 Sep 1999 ~ May 2004	NONE MIDGE _____	Capture Transfer Loan to
21	F	????	WILD	WILD	SPRINGBOK A12 A43	~16 Sep 1999 ~16 Sep 1999 ~ May 2004	NONE BERTHA _____	Capture Transfer Loan to
22	M	19 Jun 2000	1	2	HRF A31	19 Jun 2000 6 May 2002 14 Sep 2002	II-7 _____ _____	Hatch Loan to Death
23	?	19 Jul 2000	1	2	HRF	19 Jul 2000 29 Jun 2001	II-8 _____	Hatch Death
24	?	2 Aug 2000	1	3	HRF	2 Aug 2000 2 Aug 2000	III-7 _____	Hatch Death
25	M	12 Sep 2000	1	3	HRF A31 A37	12 Sep 2000 6 May 2002 11 Dec 2002	III-8 _____ _____	Hatch Loan to Loan to
26	F	7 Oct 2000	1	2	HRF A31 WUPPERTAL	7 Oct 2000 6 May 2002 18 Dec 2002	II-9 _____ _____	Hatch Loan to Loan to
27	?	17 Oct 2000	MULT1	MULT2	A12 A43	17 Oct 2000 ~ May 2004	SASHI _____	Hatch Loan to
28	?	15 Nov 2000	MULT1	MULT2	A12 A43	15 Nov 2000 ~ May 2004	PEANUT _____	Hatch Loan to

29	?	15 Jul 2001	1	3	HRF A31	15 Jul 2001 6 May 2002 14 Aug 2002	III-9 _____ _____	Hatch Loan to Death
30	?	26 Jul 2001	MULT1	20	A12 A43	26 Jul 2001 ~ May 2004	_____ _____	Hatch Loan to
31	M	3 Aug 2001	1	2	HRF A31 A35	3 Aug 2001 6 May 2002 30 Nov 2002	II-10 _____ _____	Hatch Loan to Loan to
32	?	10 Aug 2001	MULT1	20	A12 A43	10 Aug 2001 ~ May 2004	_____ _____	Hatch Loan to
33	M	19 Aug 2001	1	3	HRF A31 A37	19 Aug 2001 6 May 2002 11 Dec 2002 26 Dec 2003	III-10 _____ _____ _____	Hatch Loan to Loan to Death
34	M	30 Sep 2001	1	3	HRF A31 A35	30 Sep 2001 6 May 2002 30 Nov 2002	III-11 _____ _____	Hatch Loan to Loan to
35	M	????	WILD	WILD	SPRINGBOK HRF A07	4 Oct 2001 6 Oct 2001 16 Dec 2001	NONE _____ _____	Capture Transfer Loan to
36	F	????	WILD	WILD	SPRINGBOK HRF A07	3 Oct 2001 6 Oct 2001 16 Dec 2001	NONE _____ _____	Capture Transfer Loan to
37	M	????	WILD	WILD	SPRINGBOK HRF A25 HRF	3 Oct 2001 6 Oct 2001 6 Oct 2001 12 Jun 2004	NONE _____ _____ 0612-I	Capture Transfer Loan to Transfer
38	F	????	WILD	WILD	SPRINGBOK HRF A25 HRF	3 Oct 2001 6 Oct 2001 6 Oct 2001 12 Jun 2004	NONE _____ _____ 612-II	Capture Transfer Loan to Transfer
39	?	11 Jun 2002	1	3	HRF	11 Jun 2002 20 Jun 2002	III-12 _____	Hatch Death
40	M	2 Jul 2002	1	3	HRF A39	2 Jul 2002 12 Apr 2003	III-13 _____	Hatch Loan to
41	M	25 Jul 2002	1	3	HRF A08	25 Jul 2002 19 Apr 2003	III-14 _____	Hatch Loan to
42	F	20 Aug 2002	1	2	HRF A08	20 Aug 2002 19 Apr 2003	II-11 _____	Hatch Loan to
43	?	29 Sep 2002	1	2	HRF A40	29 Sep 2002 6 Jun 2003	II-12 _____	Hatch Loan to
44	M	31 Oct 2002	35	36	A07 HRF A10	31 Oct 2002 31 Oct 2002 24 Jul 2004	_____ _____ _____	Hatch Ownership Loan to
45	?	~ Jun 2002	MULT1	20	A12	~ Jun 2002 ~ Jun 2002	_____ _____	Hatch Death
46	?	~ Jun 2002	MULT1	20	A12	~ Jun 2002 ~ Jun 2002	_____ _____	Hatch Death
47	M	????	UNK1	UNK2	A12 A43	~ Jan 2002 ~ May 2004	ERNST _____	Transfer Loan to
48	?	~ Jul 2002	MULT1	20	A12	~ Jul 2002 ~ Jul 2002	_____ _____	Hatch Death

49	?	~ Jul 2002	MULT1	20	A12	~ Jul 2002 _____ ~ Jul 2002 _____	Hatch Death
50	M	17 Jun 2003	1	3	HRF PRAHA	17 Jun 2003 III-15 20 Dec 2003 _____	Hatch Loan to
51	?	1 Jul 2003	1	2	HRF A41	1 Jul 2003 II-13 2 Nov 2003 _____	Hatch Loan to
52	F	9 Jul 2003	1	3	HRF PRAHA	9 Jul 2003 III-16 20 Dec 2003 _____	Hatch Loan to
53	F	20 Jul 2003	13	5	HRF	20 Jul 2003 030720	Hatch
54	?	5 Sep 2003	1	3	HRF A42	5 Sep 2003 III-17 7 Nov 2003 THEODO	Hatch Loan to
55	?	3 Sep 2003	1	2	HRF A42	3 Sep 2003 II-14 7 Nov 2003 _____ 13 Mar 2004 _____	Hatch Loan to Death
56	?	22 Aug 2003	MULT1	20	A12 A43	22 Aug 2003 _____ ~ May 2004 _____	Hatch Loan to
57	?	17 Sep 2003	MULT1	20	A12 A43	17 Sep 2003 _____ ~ May 2004 _____	Hatch Loan to
58	?	20 Sep 2003	MULT1	20	A12 A43	20 Sep 2003 _____ ~ May 2004 _____	Hatch Loan to
59	?	10 Jun 2004	1	3	HRF	10 Jun 2004 III-18	Hatch
60	F	????	WILD	WILD	A37	~15 Mar 2003 _____	Transfer
61	M	7 Oct 2003	WILD	60	A37	7 Oct 2003 _____	Hatch
62	F	5 Jun 2004	WILD	60	A37	5 Jun 2004 _____	Hatch
63	?	6 Jul 2004	35	36	A07 HRF	6 Jul 2004 _____ 6 Jul 2004 _____	Hatch Ownership
64	?	29 Jul 2004	1	3	HRF	29 Jul 2004 III-19	Hatch
65	?	31 Jul 2004	35	36	A07 HRF	31 Jul 2004 _____ 31 Jul 2004 _____	Hatch Ownership
66	?	6 Aug 2004	13	5	HRF	6 Aug 2004 040806	Hatch
67	?	5 Aug 2004	WILD	60	A37	5 Aug 2004 _____	Hatch
68	?	15 Aug 2004	35	36	A07 HRF	15 Aug 2004 _____ 15 Aug 2004 _____	Hatch Ownership

Totals: 24.16.28 (68)

## **Part 2:**

# **Studbook *Homopus areolatus***

## 6. CURRENT LIVING STUDBOOK POPULATION AND TRANSFERS

Live *Homopus areolatus* are located at six studbook locations, one less than last year: Netherlands (1), Belgium (1), USA (1), Sweden (1), and Germany (2). Location A02 was renamed to HRF (Homopus Research Foundation). Location A26 in Switzerland had to be removed from the studbook, as no response whatsoever has been received in the past years. Unfortunately this means that specimen numbers 27 and 28 are lost to follow-up. The permit sections of South African Western and Northern Cape Nature Conservation have been provided with the full name and address of location A26, with the recommendation not to issue further permits to this keeper. One location in the USA was removed and another one added (A43), when all specimens at the original location had to be transferred due to private circumstances.

Specimens 4 and 5 were transferred from location HRF to location A10. Breeding results with this couple have remained marginal at location HRF, and location A10 might be able to provide better conditions (especially humidity). Specimen 25 was transferred to location A16, awaiting transfer to a new location in Sweden, where this specimen will be combined with specimen 34 to form a European captive-bred breeding couple. Specimen 37 was transferred to a new location in Germany (A44), which has also acquired a captive-bred male (47) from outside of the studbook. Specimens 42, 43, 44, and 45 were captive-bred in Namibia, and donated by the keeper. They are now housed at locations A03 and WUPPERTAL. All transfers were in accordance with national and international legislation.

The total number of live specimens grew from 20 to 31 in 2004. Six specimens were born, and no specimens died. Seven specimens were added from outside of the studbook. Two studbook specimens were lost to follow-up due to a total lack of response by the keeper.

Husbandry conditions and additional information is available in appendix 2.

**Table I:** Current living studbook population *Homopus areolatus* as registered in the studbook. Numbers far right are relative numbers per location, indicating which specimens are housed together. MULTX are groups of unregistered specimens at locations outside of the studbook. UNKX are specimens at locations outside of the studbook.

=====

### Location: A03

=====

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
=====									
6	M	????	MULT1	MULT2	KRAAIFONT	????	_____	Hatch	
					HRF	21 Nov 1997	VI	Transfer	
					A03	14 Apr 2001	HZ0738	Loan to	1
=====									
45	F	14 Dec 1999	UNK5	UNK6	A46	14 Dec 1999	_____	Hatch	
					HRF	4 Nov 2004	V3	Transfer	
					A03	5 Nov 2004	HZ0989	Loan to	2
=====									

Totals: 1.1.0 (2)

### Location: A10

=====

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
=====									
4	F	????	MULT1	MULT2	KRAAIFONT	????	_____	Hatch	
					HRF	21 Nov 1997	IV	Transfer	
					A10	27 Oct 2004	_____	Loan to	1
=====									
5	M	????	MULT1	MULT2	KRAAIFONT	????	_____	Hatch	
					HRF	21 Nov 1997	V	Transfer	
					A10	27 Oct 2004	_____	Loan to	1
=====									

Totals: 1.1.0 (2)

**Location: A16**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
16	M	????	WILD	WILD	A16	30 Aug 1994	_____	Transfer	1
17	F	????	WILD	WILD	A16	30 Aug 1994	_____	Transfer	1
25	F	15 Sep 2001	5	4	HRF A10 A16	15 Sep 2001 24 May 2003 4 Dec 2004	IV-1 _____ _____	Hatch Loan to Loan to	2
34	?	30 Jun 2002	16	17	A16	30 Jun 2002	_____	Hatch	?
35	?	9 Jul 2002	16	17	A16	9 Jul 2002	_____	Hatch	?
38	?	5 Apr 2003	16	17	A16	5 Apr 2003	_____	Hatch	?
39	?	9 Apr 2003	16	17	A16	9 Apr 2003	_____	Hatch	?
48	?	23 Mar 2004	16	17	A16	23 Mar 2004	_____	Hatch	?
49	?	25 Mar 2004	16	17	A16	25 Mar 2004	_____	Hatch	?
50	?	8 Aug 2004	16	17	A16	8 Aug 2004	_____	Hatch	?
51	?	19 Aug 2004	16	17	A16	19 Aug 2004	_____	Hatch	?
52	?	25 Aug 2004	16	17	A16	25 Aug 2004	_____	Hatch	?

Totals: 1.2.9 (12)

**Location: A37**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
22	M	????	WILD	WILD	A20 A21 A37	???? 17 Oct 2000 15 Sep 2002	_____ _____ 1	Transfer Transfer Transfer	1
23	F	????	WILD	WILD	A20 A21 A37	???? 17 Oct 2000 15 Sep 2002	_____ _____ 2	Transfer Transfer Transfer	1
24	F	~ 1993	UNK1	UNK2	A20 A21 A37	~ 1993 17 Oct 2000 15 Sep 2002	_____ _____ 3	Hatch Transfer Transfer	1
46	?	30 Sep 2004	22	24	A37	30 Sep 2004	_____	Hatch	2

Totals: 1.2.1 (4)

**Location: A43**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
10	M	????	WILD	WILD	A13 A12 A43	???? ~16 Sep 1999 ~ May 2004	_____ ERNST _____	Transfer Transfer Loan to	?
11	F	????	WILD	WILD	KRAAIFONT A12 A43	???? ~16 Sep 1999 ~ May 2004	_____ A5 _____	Transfer Transfer Loan to	?
12	F	????	WILD	WILD	KRAAIFONT A12 A43	???? ~16 Sep 1999 ~ May 2004	_____ A6 _____	Transfer Transfer Loan to	?



14	F	????	WILD	WILD	KRAAIFONT	????		Transfer
					A12	16 Sep 1999	BABY	Transfer
					A43	~ May 2004		Loan to ?

Totals: 1.3.0 (4)

**Location: A44**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
37	F	7 Aug 2003	5	4	HRF	7 Aug 2003	IV-3	Hatch
					A10	21 Aug 2004		Loan to
					HRF	27 Oct 2004	IV-3	Transfer
					A44	31 Oct 2004	ESMERA	Loan to 1
47	M	~ Jun 1993	UNK3	UNK4	A47	~ Jun 1993		Hatch
					A48	~ 2000		Transfer
					A44	21 Nov 2004	HUGO	Transfer 2

Totals: 1.1.0 (2)

**Location: WUPPERTAL**

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
40	M	????	WILD	WILD	WUPPERTAL	28 Mar 1991	91586A	Transfer 1
41	M	????	WILD	WILD	WUPPERTAL	28 Mar 1991	91586B	Transfer 2
42	F	25 Feb 1999	UNK5	UNK6	A46	25 Feb 1999		Hatch
					HRF	4 Nov 2004	NOMARK	Transfer
					WUPPERTAL	9 Nov 2004	91586C	Loan to 3
43	F	21 Dec 1999	UNK5	UNK6	A46	21 Dec 1999		Hatch
					HRF	4 Nov 2004	CR1	Transfer
					WUPPERTAL	9 Nov 2004	91586D	Loan to 3
44	F	21 Dec 2001	UNK5	UNK7	A46	21 Dec 2001		Hatch
					HRF	4 Nov 2004	CL2	Transfer
					WUPPERTAL	9 Nov 2004	91586E	Loan to 3

Totals: 2.3.0 (5)

Together, all specimens make the total living studbook population 31 specimens, forming five (potential) bloodlines. There could be six bloodlines if specimen 47 (A44) would be combined with specimen 23 or 24 (A37). One solitary specimen fit for breeding is currently present at location A44 (47). WUPPERTAL will combine specimen 40 with 42 and 43, and 41 with 44, when the female specimens are sexually mature. Similarly, locations A03 and A44 will combine their specimens when the females will be mature. Location A43 has not responded to repeated requests to provide feedback to the studbook coordinator, and it is not certain if all animals are still alive. This location is urgently requested to adopt a more active attitude, required for the studbook to function properly.

## 7. IMPORTS, BIRTHS, AND DEATHS

In 2004 no imports of *H. areolatus* from the wild have taken place. However, four captive-bred surplus females have been donated to the Homopus Research Foundation by a Namibian tortoise breeder, and these were transferred in 2004. The Namibian and Dutch authorities are thanked for their cooperation. Since the breeding results are still relatively meagre, and several bloodlines are already present, there are no plans to import additional *H. areolatus*.

Breeding at location A16 was continued in 2004, and as many as five hatchlings were born at this location. Two eggs (both 8 g) were laid on 19 December 2003 and both hatched, on 23 and 25 March 2004 (mass hatchlings 4 and 5 g). Two eggs (8 and 9 g) were produced on 25 April, and hatched on 8 and 19 August (each 6 g). Two last eggs were produced on 21 May, and one of these hatched on 25 August (5 g). The other egg did not show any development.

Female 4 at location HRF produced one clutch in 2004, containing four eggs (24 April). The eggs were incubated buried completely in Seramis (weight ratio Seramis:water = 4.4:1) in an open container. The substrate was remoistened to the initial weight weekly. On 13 August the eggs were opened, but no development was visible. The eggshells were still intact, indicating that the incubation humidity may have been alright.

**Table II:** Births of *Homopus areolatus* in 2004.

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
48	?	23 Mar 2004	16	17	A16	23 Mar 2004	_____	Hatch
49	?	25 Mar 2004	16	17	A16	25 Mar 2004	_____	Hatch
50	?	8 Aug 2004	16	17	A16	8 Aug 2004	_____	Hatch
51	?	19 Aug 2004	16	17	A16	19 Aug 2004	_____	Hatch
52	?	25 Aug 2004	16	17	A16	25 Aug 2004	_____	Hatch
46	?	30 Sep 2004	22	24	A37	30 Sep 2004	_____	Hatch

Totals: 0.0.6 (6)

No specimens died in 2004.



10	M	????	WILD	WILD	A13 A12 A43	???? ~16 Sep 1999 ~ May 2004	ERNST	Transfer Transfer Loan to
11	F	????	WILD	WILD	KRAAIFONT A12 A43	???? ~16 Sep 1999 ~ May 2004	A5	Transfer Transfer Loan to
12	F	????	WILD	WILD	KRAAIFONT A12 A43	???? ~16 Sep 1999 ~ May 2004	A6	Transfer Transfer Loan to
13	M	????	WILD	WILD	KRAAIFONT A12	???? ~16 Sep 1999 15 Feb 2000	A7	Transfer Transfer Death
14	F	????	WILD	WILD	KRAAIFONT A12 A43	???? 16 Sep 1999 ~ May 2004	BABY	Transfer Transfer Loan to
15	F	????	WILD	WILD	A13 A12	???? ~16 Sep 1999 15 Feb 2000	A4	Transfer Transfer Death
16	M	????	WILD	WILD	A16	30 Aug 1994		Transfer
17	F	????	WILD	WILD	A16	30 Aug 1994		Transfer
18	M	23 May 2000	16	17	A16	23 May 2000 30 Mar 2003		Hatch Death
19	?	5 Feb 2000	MULT3	11	A12	5 Feb 2000 5 Feb 2000		Hatch Death
20	?	16 Mar 2000	MULT3	11	A12	16 Mar 2000 16 Mar 2000		Hatch Death
21	?	16 Mar 2000	MULT3	11	A12	16 Mar 2000 16 Mar 2000		Hatch Death
22	M	????	WILD	WILD	A20 A21 A37	???? 17 Oct 2000 15 Sep 2002	1	Transfer Transfer Transfer
23	F	????	WILD	WILD	A20 A21 A37	???? 17 Oct 2000 15 Sep 2002	2	Transfer Transfer Transfer
24	F	~ 1993	UNK1	UNK2	A20 A21 A37	~ 1993 17 Oct 2000 15 Sep 2002	3	Hatch Transfer Transfer
25	F	15 Sep 2001	5	4	HRF A10 A16	15 Sep 2001 24 May 2003 4 Dec 2004	IV-1	Hatch Loan to Loan to
26	?	15 Oct 2001	5	4	HRF	15 Oct 2001 26 Apr 2002	IV-2	Hatch Death
27	M	????	WILD	WILD	KRAAIFONT A26	???? 9 Jul 2001	ltf	Transfer Transfer
28	F	????	WILD	WILD	KRAAIFONT A26	???? 9 Jul 2001	ltf	Transfer Transfer
29	M	????	WILD	WILD	KRAAIFONT A27	???? 9 Jul 2001 9 Nov 2001		Transfer Transfer Death
30	F	????	WILD	WILD	KRAAIFONT A27	???? 9 Jul 2001 11 Nov 2001		Transfer Transfer Death

31	?	11 Nov 2001	5	4	HRF	11 Nov 2001	_____	Hatch
						11 Nov 2001		Death
32	F	????	WILD	WILD	A29 A03	~ Jun 2000 15 Jun 2001 16 May 2002	_____	Transfer
							HZ0752	Transfer
								Death
33	F	????	WILD	WILD	LONDON RP A03	???? 23 Dec 2001 28 Jul 2003	_____	Transfer
							HZ0793	Transfer
								Death
34	?	30 Jun 2002	16	17	A16	30 Jun 2002	_____	Hatch
35	?	9 Jul 2002	16	17	A16	9 Jul 2002	_____	Hatch
36	?	12 Oct 2002	5	4	HRF	12 Oct 2002	_____	Hatch
						12 Oct 2002		Death
37	F	7 Aug 2003	5	4	HRF A10 HRF A44	7 Aug 2003 21 Aug 2004 27 Oct 2004 31 Oct 2004	IV-3 _____	Hatch
							IV-3	Loan to
							ESMERA	Transfer
								Loan to
38	?	5 Apr 2003	16	17	A16	5 Apr 2003	_____	Hatch
39	?	9 Apr 2003	16	17	A16	9 Apr 2003	_____	Hatch
40	M	????	WILD	WILD	WUPPERTAL	28 Mar 1991	91586A	Transfer
41	M	????	WILD	WILD	WUPPERTAL	28 Mar 1991	91586B	Transfer
42	F	25 Feb 1999	UNK5	UNK6	A46 HRF WUPPERTAL	25 Feb 1999 4 Nov 2004 9 Nov 2004	_____	Hatch
							NOMARK	Transfer
							91586C	Loan to
43	F	21 Dec 1999	UNK5	UNK6	A46 HRF WUPPERTAL	21 Dec 1999 4 Nov 2004 9 Nov 2004	_____	Hatch
							CR1	Transfer
							91586D	Loan to
44	F	21 Dec 2001	UNK5	UNK7	A46 HRF WUPPERTAL	21 Dec 2001 4 Nov 2004 9 Nov 2004	_____	Hatch
							CL2	Transfer
							91586E	Loan to
45	F	14 Dec 1999	UNK5	UNK6	A46 HRF A03	14 Dec 1999 4 Nov 2004 5 Nov 2004	_____	Hatch
							V3	Transfer
							HZ0989	Loan to
46	?	30 Sep 2004	22	24	A37	30 Sep 2004	_____	Hatch
47	M	~ Jun 1993	UNK3	UNK4	A47 A48 A44	~ Jun 1993 ~ 2000 21 Nov 2004	_____	Hatch
							HUGO	Transfer
								Transfer
48	?	23 Mar 2004	16	17	A16	23 Mar 2004	_____	Hatch
49	?	25 Mar 2004	16	17	A16	25 Mar 2004	_____	Hatch
50	?	8 Aug 2004	16	17	A16	8 Aug 2004	_____	Hatch
51	?	19 Aug 2004	16	17	A16	19 Aug 2004	_____	Hatch
52	?	25 Aug 2004	16	17	A16	25 Aug 2004	_____	Hatch

Totals: 13.22.17 (52)

## **Part 3:**

# **Studbook *Homopus femoralis***

## 9. CURRENT LIVING STUDBOOK POPULATION AND TRANSFERS

Live *Homopus femoralis* are located at two studbook locations in the Netherlands, the same as in 2003. Location A02 was renamed HRF in 2004. The total number of live specimens has remained three. All have been obtained from the British Tortoise Trust, that had rescued the specimens from a private keeper in the UK.

**Table I:** Current living studbook population *Homopus femoralis* as registered in the studbook. Cage numbers are relative numbers per location, indicating which specimens are housed together.

Location: HRF									
Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
3	M	????	WILD	WILD	A28	~ Jan 2001		Transfer	
					HRF	23 Dec 2001	III	Loan to	1
Totals: 1.0.0 (1)									
Location: A08									
Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	
1	M	????	WILD	WILD	A28	~ Jan 2001		Transfer	
					HRF	23 Dec 2001	I	Loan to	
					A08	17 Apr 2002		Loan to	1
2	M	????	WILD	WILD	A28	~ Jan 2001		Transfer	
					A08	23 Dec 2001		Loan to	2
Totals: 2.0.0 (2)									

All specimens together make the total living studbook population three single male specimens, all fit for breeding purposes.

## 10. IMPORTS, BIRTHS, AND DEATHS

In 2004, no imports, births or deaths have occurred.

## 11. TOTAL STUDBOOK POPULATION AND FUTURE PERSPECTIVES

The current studbook population of the studbook *H. femoralis* consists of three specimens, all wild-caught (rescued long-term captive animals). All three are still alive, housed at two locations.

Since the current three specimens appear to do very well, it is planned to obtain partners for these specimens to try to breed them in captivity, and to gather and publish information about this poorly known species. In 2002 and 2003 many zoos and similar organisations have been asked if they had surplus specimens available. Not only were no surplus specimens present, no specimens were present at all. Based on this result, an application for a collecting permit was submitted to the South African authorities in 2004. This application has been granted, and an attempt will be made to locate three females in the field in 2005. The Dutch authorities have been asked if they will grant permission to import three *H. femoralis* females into the European Union, since the Union has a ban on imports of wild-caught *Homopus*.

## 12. LITERATURE ABOUT *HOMOPUS*

### *Publications resulting from activities Homopus Research Foundation*

- Klerks, M. (2002). Adapting the Namaqualand speckled padloper, *Homopus signatus signatus*, to captive conditions. Turtle and Tortoise Newsletter 6: 30-32.
- Licitra, J.T. (2001). *Homopus s. signatus*, Speckled Padloper. Observations on natural diet. African Herp News 32: 12-13.
- Licitra, J.T. (2001). *Homopus s. signatus*, Speckled padloper. Maximum size. African Herp News 32: 14-15.
- Loehr, V.J.T. (1997). *Homopus s. signatus*, Namaqualand speckled padloper, captive breeding. African Herp News 26: 23-24.  
Published as a French translation in Tortuga 1999(2): 8-9.
- Loehr, V.J.T. (1998). The Namaqualand speckled padloper (*Homopus s. signatus*): captive reproduction. Poster presented at the symposium of the Herpetological Association of Africa at the University of Stellenbosch.
- Loehr, V.J.T. (1999). Dietary requirements of captive hatchling Namaqualand speckled padlopers (*Homopus s. signatus*). African Herp News 28: 23-26.
- Loehr, V.J.T. (1999). Photoperiod, temperatures and breeding in captive Namaqualand speckled padlopers, *Homopus s. signatus*. African Herp News 28: 27-28.
- Loehr, V.J.T. (1999). Husbandry, behavior and captive breeding of the Namaqualand speckled padloper (*Homopus s. signatus*). Chelonian Conservation and Biology 3(3): 468-473.
- Loehr, V.J.T. (2000). Met het oog op bescherming: Onderzoek aan de Namaqualand gespikkelde padloper. De Schildpad 26(2): 75-80.
- Loehr, V.J.T. (2000). Stamboeken: Studbook Breeding Programme Homopus. In: Loehr, V., Torenstra, P. en Bruekers, J., Special, ter gelegenheid van het 25-jarig bestaan van de Nederlandse Schildpadden Vereniging. Nederlandse Schildpadden Vereniging, Helmond.
- Loehr, V.J.T. (2001). *Homopus s. signatus*, Namaqualand speckled padloper. Female mating activity. African Herp News 32: 17-18.
- Loehr, V.J.T. (2001). Field report research on the Namaqualand speckled padloper (*Homopus s. signatus*) in South Africa. Tortoise Trust Newsletter Autumn 2000/Winter 2001: 3-4.  
Published as a Dutch translation in Lacerta 59: 182-187.
- Loehr, V.J.T. (2002). Male aggression in captive Namaqualand speckled padlopers (*Homopus s. signatus*). Bulletin of the Chicago Herpetological Society 37: 1.
- Loehr, V.J.T. (2002). Diet of the Namaqualand speckled padloper, *Homopus signatus signatus*, in early spring. African Journal of Herpetology 51: 47-55.
- Loehr, V.J.T. (2002). Population characteristics and activity patterns of the Namaqualand speckled padloper (*Homopus signatus signatus*) in the early spring. Journal of Herpetology 36: 378-389.
- Loehr, V.J.T. (2003). Annual temperature fluctuation in the natural habitat of the Namaqualand speckled padloper, *Homopus signatus signatus*. Radiata 12(1): 25-27.  
Published simultaneously in German in Radiata.
- Loehr, V.J.T. (2003). Egg and hatchling characteristics in *Homopus signatus signatus*: Preliminary data from a captive population. Poster presented at the Second International Congress on Chelonian Conservation in Saly, Senegal.
- Loehr, V. (2003). Onderzoek aan de kleinste landschildpadsoort ter wereld - met uw steun. Trionyx 1: 127-130.
- Loehr, V. (2004). Is beschermen ook bedreigen? Trionyx 2(4): 98-102.
- Loehr, V.J.T. (2004). First recorded second generation breeding with the Namaqualand speckled padloper, *Homopus signatus signatus*. Radiata 13(1): 11-12.
- Loehr, V.J.T. (2004). A new thread-trailing method for small tortoises in densely structured habitats. Turtle and Tortoise Newsletter 2004(7): 13-14.
- Loehr, V.J.T. (2004). Growth of the Namaqualand speckled padloper, *Homopus signatus signatus* (Reptilia: Testudinidae). African Zoology 39(2): 309-313.
- Loehr, V.J.T. (in press). Field report 2001 research project on the Namaqualand speckled padloper (*Homopus s. signatus*). Tortoise Trust Newsletter.
- Loehr, V.J.T. (in press). Natural diet of the Namaqualand speckled padloper (*Homopus signatus signatus*).
- Loehr, V.J.T. (in preparation). *Homopus signatus signatus*, Namaqualand Speckled Padloper. Aggressive Courtship Behaviour.
- Loehr, V.J.T. and Harris-Smith, T.J. (1999). *Homopus signatus*, Speckled padloper, natural diet. African Herp News 28: 33-34.
- Loehr, V.J.T., Henen, B.T., and Hofmeyr, M.D. (2004). Reproduction of the smallest tortoise, the Namaqualand speckled padloper, *Homopus signatus signatus*. Herpetologica 60(4): 444-454.
- Loehr, V.J.T., and Nolan, D. (in preparation). Studies on the eggshell structure of the Namaqualand speckled padloper *Homopus signatus signatus* using scanning electron microscopy.
- Loehr, V.J.T. and Schmalz, M. (2001). *Homopus signatus cafer*, Southern speckled padloper, autumn activity. African Herp News 32: 16.
- Loehr, V. and Van Dijk, D. (1996). De Namaqualand gespikkelde padloper (*Homopus s. signatus*), waarnemingen in de natuur en verzorging in gevangenschap. De Schildpad 22(2): 42-51.
- Saus, A. (in press). Beobachtungen zur Nahrungsaufnahme in Relation zur Luftfeuchtigkeit einer Nachzucht von *Homopus signatus signatus*. Minor.
- Schleicher, A. and Loehr, V.J.T. (2001). Husbandry, behaviour and captive breeding of the Nama padloper (*Homopus* sp.) from southwestern Namibia. Chelonian Conservation and Biology 4: 165-170.
- Schmidt, F.A.C. (2003). Untersuchungen zur Stoffwechselphysiologie der beiden afrikanischen Landschildkröten *Malacochersus tornieri* und *Homopus s. signatus* in Abhängigkeit der Temperatur. Unpublished M.Sc. thesis. Frankfurt University, Germany.

### *Annual reports and information sheets*

Annual report 1995-1997



Annual report 1998  
Annual report 1999  
Annual report 2000  
Annual report 2001  
Annual report 2002  
Annual report 2003

Onderzoek aan landschildpadden: Waarom sponsoren?  
Research on tortoises: Why should you sponsor it?  
General information leaflet Homopus Research Foundation in Dutch  
General information sheet Homopus Research Foundation  
Studbook information sheet Homopus Research Foundation  
Caresheet *Homopus areolatus* in Dutch  
Caresheet *Homopus areolatus* in English  
Caresheet *Homopus s. signatus* in Dutch  
Caresheet *Homopus s. signatus* in English

#### Research proposals

Population dynamics, behaviour and natural diet of the Namaqualand speckled padloper (*Homopus s. signatus*) - 2000  
Population dynamics, behaviour and reproduction of the Namaqualand speckled padloper (*Homopus s. signatus*): Enhancing our knowledge - 2001  
Population dynamics, diet, activity and reproduction of the Southern speckled padloper (*Homopus signatus cafer*). - 2002/2003  
The ecology of the world's smallest tortoise, *Homopus signatus signatus* - 2003-2005

#### Other publications

Alderton, D. (1988). Turtles and tortoises of the world. Blandford Press, London.  
Anonymous (undated). Land tortoises of southern Africa; Cape Padloper (*Homopus areolatus*). African Wildlife.  
Anonymous (undated). Land tortoises of southern Africa; Karoo Padloper (*Homopus boulengeri*). African Wildlife 40(2): 72.  
Anonymous (undated). Land tortoises of southern Africa; Speckled Padloper (*Homopus signatus*). African Wildlife 40(6): 222.  
Archer, W.H. (1968). The padlopers. African Wild Life 22(1): 29-35.  
Baard, E.H.W. (1994). Cape tortoises, their identification and care. Cape Nature Conservation (South Africa).  
Barzyk, J.E. (1994). Husbandry and captive breeding of the parrot-beaked tortoise, *Homopus areolatus*. Chelonian Conservation and Biology 1(2): 138-141.  
Basile, I.A. (1989). Faszinierende Schildkröten - Landschildkröten. Verlag Stephanie Naglschmid, Stuttgart.  
Bayoff, N. (1995). Observations and morphometric data on the Namaqualand speckled tortoise, *Homopus s. signatus* (Gmelin, 1789), in South Africa. Chelonian Conservation and Biology 1: 215-220.  
Bonin, F., Deveaux, B. and Dupré, A. (1996). Toutes les tortues du monde. Delachaux et Niestlé, Lausanne (Switzerland).  
Boycott, R. (1986). A review of *Homopus signatus* with notes on related species. Journal of the Herpetological Association of Africa 32: 10-16.  
Boycott, R.C. and Bourquin, O. (1988). The South African tortoise book, a guide to South African tortoises, terrapins and turtles. Southern Book Publishers, Johannesburg (South Africa).  
Boulenger, G.A. (1888). Description of a new land-tortoise from South Africa, from a specimen living in the society's gardens. Proc. Zool. Soc. Lond.: 251 (1 plate).  
Boulenger, G.A. (1890(3)). Note on the secondary sexual characters in the South-African tortoises of the genus *Homopus*. Proc. Zool. Soc. Lond.: 521.  
Bour, R.H. (1988). Taxonomic and nomenclatural status of *Homopus signatus*. Journal of the Herpetological Association of Africa 35: 1-6.  
Branch, W.R. and Braack, H.H. (1987). Reptiles and amphibians of the Karoo National Park: a surprising diversity. Journal of the Herpetological Association of Africa 36: 26-35.  
Branch, W.R. (1988a-1998). Field Guide to the Snakes and Other Reptiles of Southern Africa. Three editions. Cape Town: Struik Publishers.  
Branch, W.R. (1988b). Bill Branch se Veldgids tot die slange en ander reptiele van Suider-Afrika. Cape Town: Struik Publishers.  
Branch, W.R. (1989). *Homopus bergeri*, Species Status reports. In: Swingland, I.R. and Klemens, M.W.. The conservation biology of tortoises. Occasional Papers of the IUCN Species Survival Commission No. 5:: 75-77.  
Branch, W.R. (1991). *Homopus femoralis*, greater padloper, size. Journal of the Herpetological Association of Africa: 39: 27.  
Branch, B.R. (1992). *Homopus 'bergeri'* - a wrong name for a new tortoise from southern Namibia. Journal of the Herpetological Association of Africa 40: 11.  
Branch, W.R. (1993). South African Snakes and Other Reptiles, a photographic guide. London: New Holland Publishers.  
Branch, W.R. (1999). *Homopus femoralis*, greater padloper, egg and clutch size. African Herp News 30: 28-29.  
Broschell, S. (2000). Leben und Fortpflanzung der Areolen-Flachschildkröte *Homopus areolatus* (Thunberg, 1787) in menschlicher Obhut. Sauria 22(3): 3-9.  
Burger, M. (1993). The herpetofauna of Anyberg Nature Reserve, Cape Province, South Africa. Journal of the Herpetological Association of Africa 42: 1-12.  
Cairncross, B.L. (1946). Notes on South African Tortoises. Annals of the Transvaal Museum 1946: 395-397.  
Dampier, L. (1997). Cape Tortoises: The little guys of turtledom. Reptile Hobbyist October:36-43.  
Deveaux, B. (1997). L'Afrique du Sud. La Tortue 16: 27.  
De Waal, S.W.P. (1980). The Testudines (Reptilia) of the Orange Free State, South Africa. Navorsing van die Nasionale Museum 4: 85-91.  
Duerden, J.E. (1907). Genetics of the colour pattern in tortoises of the genus *Homopus* and its allies. Records of the Albany Museum 2 (1907): 65-92.  
Ernst, C. H. and Barbour, R.W. (1989). Turtles of the World. Washington D.C., London: Smithsonian Institution Press.

- Fleck, J. and Fleck, S. (2001). Erfolgreiche Nachzucht von *Chersina angulata* und *Homopus areolatus* über mehrere Jahre. *Elaphe* 9(3): 5-14.
- Goosen, H. (1983). Dopdiere uit die oertyd. Suid-Afrikaanse Panorama April 1983: 48-50.
- Gorseman, P. (1980). Opmerkingen over biotoop en voortplanting van *Homopus areolatus*. *Lacerta* 38: 107-111.
- Greig, J.C. (1987). Land tortoises of Southern Africa: Greater Padloper, *Homopus femoralis*. *African Wildlife* 41: 138.
- Greig, J.C. and Burdett, P.D. (1976). Patterns in the distribution of southern African terrestrial tortoises (Cryptodira: Testudinidae). *Zoologica Africana* 11: 249-273.
- Greig, J. and Boycott, R. (1978). Our land tortoises. *African Wildlife* 32: 39-42.
- Haagner, G.V. (1990). *Homopus boulengeri*, Karoo padloper, egg size. *Journal of the Herpetological Association of Africa* 37: 51.
- Hewitt, J. (1931). Descriptions of some African tortoises. *Annals of the Natal Museum* 6: 461-506.
- Hewitt, J. (1937). A note on the relationships of the Cape genera of land-tortoises. *South African Journal of Science* 33: 788-796.
- Hughes, B. (1986). Longevity records of african captive amphibians and reptiles: Part 1. Introduction and species list 1 - amphibians and chelonians. *Journal of the Herpetological Association of Africa* 32: 1-9.
- Iverson, J.B. (1992). A Revised Checklist with Distribution Maps of the Turtles of the World. Privately printed.
- IUCN/SSC Tortoise and Freshwater Turtle Specialist Group (1989). *Tortoises and Freshwater Turtles; An Action Plan for their Conservation*. IUCN, Gland, Switzerland.
- King, F.W. and Burke, R.L. (1989). *Crocodylian, Tuatara, and Turtle species of the world. A taxonomic and geographic reference*. Association of Systematics Collections, Washington, DC.
- Loveridge, A., Willams, E.E. (1957). Genus *Homopus* Duméril and Bibron. In: *Revision of the African tortoises and turtles of the suborder Cryptodira*. *Bulletin of the Museum of Comparative Zoology* 115: 352-374.
- Mertens, R. (1955). *Die Amphibien und Reptilien Südwestafrikas: aus den Ergebnissen einer im Jahre 1952 ausgeführten Reise*. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft* 490: 33-39.
- Morgan, D.R. (1993). *Homopus signatus*, speckled padloper, reproduction. *J. Herpetol. Assoc. Afr.* 42: 34.
- Müller, G. (1987). *Schildkröten: Land-, Sumpf- und Wasserschildkröten im Terrarium*. Unknown publisher.
- Müller, V. and Schmidt, W. (1995). *Landschildkröten*. *Natur und Tier - Verlag, Münster (Germany)*.
- Noel-Hume, I. and Noel-Hulme, A. (1954). *Tortoises, terrapins and turtles*. W. & G. Foyle, Ltd. London.
- Obst, F.J. (1980). *Schildkröten*. Urania Verlag, Leipzig - Jena - Berlin.
- Obst, F.J. (1988). *Die Welt der Schildkröten*. Leipzig (Edition Leipzig).
- Palmer, M. (1994). The speckled tortoise, *Homopus signatus*, in captivity. *Tortuga Gazette* 30: 1-5.
- Patterson, R. (1991). *Snakes and other reptiles of southern Africa*. Cape Town: Struik Publishers.
- Perrin, M.R. and Campbell, B.S. (1981). Some aspects of thermoregulation in three species of southern African tortoises. *South African Journal of Zoology* 16: 35-43.
- Pritchard, P.C.H. (1967). *Living turtles of the world*. T.F.H. Publications, Jersey City NJ.
- Pritchard, P.C.H. (1979). *Encyclopedia of turtles*. T.F.H. Publications, Neptune NJ.
- Rogner, M. (1996). *Schildkröten 2*. Heidi-Rogner-Verlag, Hürtgenwald.
- Rose, W. (1950). *The reptiles and amphibians of southern Africa*. Maskew Miller, Ltd., Cape Town.
- Rust, H.T. (1937). Interessante Schildkröten IV Die Gattung *Homopus*. *Wochenschrift für Aquararium und Terrariumkunde* 34: 699-700.
- Schleicher, A. (2000). Ein Leben in Afrika für die Schildkröten; Alfred Schleicher - Windhoek, Namibia. *Schildkröte* 2 (2): 60-65.
- Siebenrock, K.F. (1909). *Homopus bergeri* Ldh., eine Testudo-Art aus der Geometrica-Gruppe. *Zoologischer Anzeiger* (34): 623-625.
- Swingland, I.R., Klemens, M.W., IUCN/SSC Tortoise and Freshwater Turtle Specialist Group, The Durrell Institute of Conservation and Ecology (1989). *The Conservation Biology of Tortoises; Occasional Papers of the IUCN Species Survival Commission no. 5*. IUCN, Gland, Switzerland.
- Van Wijk, J.C.P. and Bates, M.F. (1999). *Homopus boulengeri* Duerden, 1906, Karoo padloper. *African Herp News* 28: 42-43.
- Vetter, H. (2002). *Terralog Turtles of the World. Vol. 1./Schilkröten der Welt. Band 1*. Edition Chimaira, Frankfurt.
- Windolf, R. (1984). Schildkröten stellen sich vor: No.21: Die Gattung *Homopus* (Flachschildkröten). *Die Schildkröte* 6: 52-60.

## Appendix 1

### Husbandry conditions and additional information per location

#### *Homopus s. signatus*

The information below is an update on the information presented in appendix 1 of the previous annual report.

##### Location HRF

*H. s. signatus* are still housed as previously. An automatic spraying system has been installed, consisting of a high pressure (15 bar) pump, and several nozzles in each enclosure. This system provides a fine spray, switched on three times weekly, for 6 minutes. It allows the tortoises to drink water drops from the terrarium decoration, which some seem to prefer over drinking from a water bowl.

Since the spraying system was installed, the hatchlings were no longer soaked, and dehydration does not seem to be a problem any longer.

As for the diet of the tortoises, calcium/vitamin supplement Gistocal (Beaphar) was replaced by CalciCare (Witte Molen) and calcium lactate (ratio 1:1). This mixture provides much higher vitamin D and calcium. Eggshell analysis at location HRF indicates that the tortoises may produce abnormally thin eggshells, if compared to shells in the wild. Although many eggs have hatched successfully, and second-generation breeding is taking place, it seemed important to make this change.

##### Location A07

###### Terrarium

Terrarium 1 measures 120 x 60 cm. It has a sandy soil and is decorated with a pile of rocks. Illumination occurs by means of a 36 W tube light, and three 50 W halogen spots. The temperature in the enclosure is 30°C, and under the spot lights > 45°C. The photoperiod is automatically reduced to 9 hours in autumn by means of an Astrotimer time control unit. It increases the photoperiod to 13 hours in summer. Specimens 35 and 36 are housed in this enclosure.

Terrarium 2 measures 60 x 27 cm, with a soil layer consisting of sand. In this enclosure there is also a pile of stones available. The enclosure is illuminated and heated using a 50 W halogen spot, providing the same temperatures as in the first enclosure. Photoperiod is also controlled in the same way. This enclosure is used for keeping offspring.

###### Feeding

The specimens are fed daily with fresh green leaves collected outside (*Taraxacum*, *Trifolium*, grasses, et cetera), but in the dry season they are fed every three days. Once weekly they receive salad or endive, vegetables (cucumber, zucchini, paprika), and small pieces of fruits (apple, berries, melon), enriched with a calcium and vitamin additive, Vitakalk.

###### Water

Once weekly a water bowl is offered to the tortoises (with no additives). In the dry season (summer) the water bowl is offered only once every two weeks, and fewer and drier food types are fed.

###### Climatic cycle

- May - June: Introduction to dry season, with reduction of food and water
- July - October: High temperatures and dry conditions; the specimens appear from their hiding places only once every few days
- November - May: Gradually decreasing (until approximately 30°C) temperatures. Night temperatures 15-20°C. Spraying of the enclosure, twice weekly. Water and food available. The specimens are very active from December.

## Growth

Date	35 Mass (g)	SCL (mm)	36 Mass (g)	SCL (mm)	44 Mass (g)	SCL (mm)
18-01-04	96	85	138	95	33	62
12-02-04	93	85	135	95	35	63
15-03-04	89	85	137	95	38	64
16-04-04	92	85	138	95		
20-05-04	95	85	135	95		
15-06-04	94	85	135	95		
15-07-04	95	85	137	95		
14-08-04	90	85	138	95		
15-10-04	90	85	138	95		
13-11-04	93	85	138	95		
15-12-04	93	85	140	95		

Date	63 Mass (g)	SCL (mm)	65 Mass (g)	SCL (mm)	68 Mass (g)	SCL (mm)
28-6-04	8	34				
15-07-04	10	35				
31-07-04			8	33		
14-08-04	16	41	9	35	7	32
15-10-04	19	45	12	39	9	35
13-11-04	20	47	14	40	12	39
15-12-04	23	50	18	44	15	43

## Oviposition

On 08-02-2004, 30-03-2004, and 22-04-2004 a single egg clutch (34, 32, and 30 mm long) was buried circa 5 cm of sand. The eggs were incubated in an incubator at 21 (night) - 34 (day)°C in slightly humid lava gravel.

## Hatching

The first egg hatched on 28-06-2004 (8 g, 34 mm). After hatching the specimen remained in the egg for seven days. After this, the yolk sac was completely absorbed. Nine days after pipping of the egg the tortoise was housed in terrarium 2.

The second egg hatched on 31-07-2004 (8 g, 33 mm). After hatching the specimen left the egg immediately. The yolk sac was completely absorbed. Two days after hatching the tortoise was housed in terrarium 2.

The first egg hatched on 14-08-2004 (7 g, 32 mm). After hatching the specimen remained in the egg for one day. After this, the yolk sac was completely absorbed. Four days after pipping of the egg the tortoise was housed in terrarium 2.

## Remarks

The 2004 results appear to conform that the vitamin and mineral supplementation has caused the problems described for 2003 (see 2003 annual report). After changing to another mixture in August 2003, six healthy *Trachydosaurus* were born in addition to the *Homopus*. Two out of nine *Pyxis arachnoides* eggs produced in September 2003 hatched. Seven eggs did not develop, or the fully-grown embryos died in their eggs.

## Correction

The 2003 annual report mentioned that nine out of ten *P. arachnoides* eggs hatched. However, this should be one out of ten eggs. Nine fully grown embryos died prior to hatching.

## Location A25

This year the two imported specimens (1.1) which were housed at my location were exchanged since breeding/mating did not occur. The animals were exchanged on 12-06-2004 with long-term captives of location HRF, imported 30-09-1995. The set-up and layout of the enclosure was not changed for this

exchange. After a few weeks mating was observed. After this observation, the bulb was exchanged for a 160 W ZooMed Reptisun. This type of light increased the light intensity, and added UV-B radiation.

## Housing

### Size enclosure

150 x 80 cm

### Decoration

Flagstones, mopani wood, rocks. Substrate consists of gravel (split) mixed with sand ("brekerzand").



### Inhabitants

01-01-2004 to 12-06-2004: One couple *Homopus s. signatus*, imported 06-10-2001 from South Africa

12-06-2004 to 31-12-2004: Ine couple *Homopus s. signatus*, imported 30-09-1995 from South Africa

### Heating

1 x 160 W ZooMed Reptisun UV-B

1 x 60 W halogen

At night no additional heat source is provided

### Illumination

1 x 32 W daylight TL (Lumilux plus eco)

1 x 160 W ZooMed Reptisun UV-B

1 x 60 W halogen

## Climate

### Photoperiod

Outdoor influences in the room where the enclosure is positioned still remain: In the summer the ambient temperature is quite high, and light duration fluctuated.

### Temperature

25-35°C at daytime, 12-20°C at night

### Humidity

The crevices and the enclosure are sprayed 2-3 times a week. More water is added during wintertime.

### Feeding

A standard captive diet is offered including dandelion, clover, endive, chicory, banana, grape, pear, *Plantago*, and tomato. Also Heucobs (a horse diet), dried dandelion flowers, and *Sedum* is offered. There are plans to exchange the dried dandelion flowers with dried dandelion leaves or plants to improve the diet. The amount of fruits in the diet is not very high. The tortoise prefer green leaves.

As supplement, CalciCare 40+ from Witte Molen is used. This is mixed with calcium lactate (ratio 1:1). Also a combination of Carmix (Hopefarms) and Sporavit is used. Because of the sweet smell I have the idea that CalciCare has a much higher level of acceptance.

### Behaviour

The two new specimens are very active and not as shy as the former couple. Also mating has been observed multiple times. Even as early as 08:00 hrs. Food intake is good and the animals are not shy when fed. The male shows much interest in the female.



Also drinking from rocks/leaves has been observed. Animals have shown no signs of stress behaviour, not even after the transfer to my location. It can be concluded that the transfer went smooth without any problems.

### Growth

The tortoises have not grown. They are full-grown adult. Male: 71 g; female 186 g.

### Location A33

As a result of flooding of the basement in which Uhuru and other tortoises were housed, all had to be transferred. Uhuru was placed in a 90 x 50 cm (l x b) enclosure in the living room as temporary solution. It has a 70 W HQI lamp. The decoration is the same as in the previous enclosure, with loamy sand as soil substrate, and a hiding place under a rock slab. The current location of the terrarium is lighter, with sun penetrating a large south orientated window.





After the transfer, Uhuru was hyperactive, changing back to its normal behaviour within one week. It appears that the tortoise is more active than in its previous enclosure. Uhuru has dug a pit in its hiding place, which it uses as sleeping place. This newly recorded behaviour may be a result of a lower amount of loam in the soil substrate, making it easier to dig. The increased movements around the enclosure do not seem to bother the tortoise.

As an experiment, I have offered *Kalanchoe daigremontiana* as food item. This was greedily accepted, and there I have continued to feed these from time to time. Another preferred food item are flowers of *Hibiscus* (fresh or dried).

The original, larger basement enclosure has been repaired. However, since the tortoise appears to do well in its new enclosure, I have not yet decided whether to expose Uhuru to another transfer or not.

### **Location A35**

Specimens 31 and 34 have turned out to be two males rather than a couple. Both specimens are well, but one of them does not grow. It eats and moves, but it keeps its weight at 41 g. The other one is over 90 g. But I can wait, and I believe that it is better if they grow slowly.

### **Location A39**

No changes in husbandry has been made (see photo).



The specimen (40) is doing well. Shell dimensions (mm) and mass (g):

Date	SCL	CW	SH	PL
21-12-03	60.1	20.2	46.0	50.1
09-12-04	70.5	50.4	20.6	60.5

18 April 2004: 57.5

4 July 2004: 59.2

13 August 2004: 59.6

17 October 2004: 60.5

## Location A41

### Husbandry conditions

#### Enclosure

- Halogen light without protection glass
- Temperature: 30°C, under the halogen light > 40°C
- Relative humidity: 60% during the day, and 85% during the night

#### Soil substrate

- Loamy garden soil, humid cocopeat

#### Decoration

- Water bowl for soaking
- Various hiding places
- Various succulents



### Food

- Romain salad, Radiccio, flowers and leaves from *Kalanchoe* sp., flowers from *Hibiscus* sp., greens collected outside when possible, from time to time cucumber, grated carrots, and continuous availability of hay with herbs and flowers, and cuttlebone



### Growth

Date	Mass (g)	Carapace length (cm)	Plastron length (cm)
03-11-03	27		
02-12-03	30		
01-01-04	32		
02-02-04	34	5.5	4.5
01-03-04	35		
01-04-04	36		
01-05-04	37	5.8	4.9
01-06-04	37		
02-07-04	37		
05-08-04	37.5	6.2	5.1
03-09-04	38		
02-10-04	39		
12-11-04	39		
01-12-04	40	6.5	5.4

### Location PRAGUE

Thanks to Homopus Research Foundation Prague Zoo have obtained two specimens of *Homopus* s. *signatus* on 21 December 2003. Tortoises came in perfect condition. They were placed in an open terrarium measuring 80 x 44 cm. Source of light and heat was a 160 W Power Sun bulb, providing temperatures between 25-35°C. As substrate we used a mix of red sand and cocopeat (ratio 2:1). One quarter of the surface was kept permanently wet, and had a large flat water bowl. Four small caves in the size of the tortoises were present, and differed in their temperatures.

In winter, food consisted of a mixture of vegetables (China cabbage, endive, romaine, lettuce, carrot, parsley, etc.) and the cut hay. Food was enriched with a mixture of minerals and vitamins, and pieces of cuttlefish bone were always available. From the early April, the diet consists only of wild plants (*Taraxacum* sp., *Trifolium* sp., *Plantago* sp., Brassicaceae species, and so on). Initially, food was provided daily, later on we change the regime to five feeding days a week because of the (too) good physical condition of animals.

From the beginning, the tortoises showed perfect adaptation to the new conditions, using warm as well as shady and wet places, and showing up for feeding several times a day (about 10:00 hrs for the first time). We did not observe any attempts of the tortoises to escape from the terrarium.

On 25 June, the tortoises moved to a new terrarium measuring 130 x 90 x 90 cm (l x w x h). Light and heat are provided by two lamps (Osram Ultra Vitalux 300 W, and PowerSun 160 W), and if necessary heating wires in the soil. The temperatures is regulated via inflow of fresh air from outside, and the heating wires. At the moment day temperatures are 28-33°C, and night temperatures 23-25°C. This exhibit is placed in the house of giant tortoises. It should educate the public not only about tortoises, but also their natural habitat, Succulent Karoo of Namaqualand. That is why we planted the enclosure with the plants listed bellow, originating from South Africa (hopefully mostly from Namaqualand). We have obtained the plants from cultures of the Botanical Garden of Pilsen:

*Portulacaria afra*  
*Aloe dichotoma* v. *ramosissima*  
*Trichodiadema intonsum*  
*Mesembrianthemum nodiflorum*  
*Schlechteranthus* sp.  
*Stapelia namaquensis*  
*Euphorbia monteiri*  
*Aloe striata*  
*Euphorbia horrida*  
*Gasteria armstrongii*  
*Gasteria pilansii* v. *ernesti ruschii*  
*Haworthia tessellata*  
*Pelargonium ceratophyllum*  
*Ficus* cf. *natalensis*

Many plants are placed in upper parts of terrarium, out of tortoises' reach, but surprisingly the tortoises prefer their normal (especially different flowers of plants) food, and only occasionally they bite off some *Portulacaria* leave or *Mesembrianthemum* flower. The tortoises live together with a pair of *Cordylus cataphractus* and a male *Pachydactylus bibronii*, without any obvious impact on tortoises. The tortoises immediately found the right places for resting, feeding, soaking and they behave in the same manner as in their former terrarium.

Weight and size of the tortoises:

*Specimen 50*

21-12-2003: 27.8 g; 53.9 x 42.7 mm

24-05-2004: 47.1 g; 64.7 x 48.2 mm

25-06-2004: 51.5g

*Specimen 52*

21-12-2003: 29.9 g; 54.6 x 44.7 mm

24-05- 2004: 57.3 g; 69.6 x 53.0 mm

25-06- 2004: 61.5g



During November, specimen number 50 started to show some courtship behaviour, circling around the larger specimen with straight neck. This behaviour did not appear to disturb the larger tortoise and so far we did not observe any mounting behaviour. Tail lengths of the tortoises appear to indicate that they are male and female. The specimens will be separated in 2005, to prevent mating and inbreeding.

### **Location WUPPERTAL**

#### *Animals*

0.1, studbook number 26, local ID: 20252A

#### *Growth (date: 9 February 2004)*

Mass: 148 g

Straight carapace length: 90.1 mm

Straight plastron length: 73.8 mm

Maximum shell width: 69.7 mm

Maximum shell height: 36.3 mm

#### *Enclosure*

A wooden box with glass on the front side, situated in the keepers area of the aquarium/terrarium building, off-display. Size: 93 x 59 x 40 cm (l x w x h).





#### *Substrate/decoration*

Sand is used as substrate. Some rocks form two crevices, and additionally a longitudinally halved tube (material: clay) is provided for shelter.

#### *Heating, illumination, and humidity*

The terrarium is illuminated by two tube lights (50 W, 1.50 m total length, covering also the neighbouring terrarium), and a basking spot is provided by a spotlight (80 W in winter, 120 W in summer). The photoperiod lasts 12 hrs. As the room is generally relatively warm, additional heating cables are not necessary. The terrarium is sprayed once daily, during summertime more intensively.

Temperatures (measured on 9 February) were between 25 and 29°C, in the crevices between 24 and 26°C and reached up to 47°C under the spotlight. The temperature in the room drops down to about 23°C at night.

#### *Feeding*

Food is provided six times weekly. Mainly herbs, different kind of salads and vegetables is fed, e.g. parsley, chive, sage, fennel, savoy, chicory, dandelion, carrots, germinating wheat etc. From time to time, Aleckwa-Delicat (containing dried insects, larvae etc.) is added. The food is supplemented daily either by Korvimin or Vitakalk. Additionally once a week Bio-Weyxin is added.

#### *Water*

Water is provided at all times in a bowl.

## Appendix 2

### Husbandry conditions and additional information per location

#### *Homopus areolatus*

The information below is an update on the information presented in appendix 2 of the previous annual report.

##### **Location A03**

The male has been moved to a new enclosure, with the same size as the previous terrarium. Also the decoration is similar, with wood stumps and dry bamboo, and two large polyester slabs measuring 50 x 30 cm, and 80 x 30 cm. The slabs provide hiding places under them, and walking space on the top. Three egg-laying sites are present, and three spot lights. The terrarium is illuminated by means of two 36 W tube lights. An UV-lamp will be installed in the future.

##### **Location A44**

A captive born female (2003) and male (1993) are kept separately. The female tortoise has a weight of 100 g and has a length of 8 cm (01-12-2004). It is kept in standard glass terrarium 80 x 50 x 40 cm (l x w x h). The enclosure is illuminated by a 20 W tube light with UV emission (UVB 2%), and an Osram 60 W spot light on the left side of the enclosure. The temperature beneath the spot light is 35-40°C and 26°C in the rest of the terrarium. Night temperature will drop to 20°C. The soil consists of peat. Two hiding places are present. One near the spot light consisting of bark, and the other one on the far right side made of stones.

The male tortoise has a weight of 160 g and has a length of 9.3 cm. Possibly due to wrong husbandry conditions the scutes on the carapax are conical ( I do believe that this causes the relatively high weight for this male *H. areolatus*) The size of the enclosure for the male is 120 x 60 x 60 cm (l x w x h). Two 30 W tube lights with 2% UVB are installed. The rest is the same as in the smaller terrarium. The terrariums are placed in a room that faces south with much natural light. All lights are switched on and off automatically. At the moment the tortoise have a 11 hour day. I will probably go down to 10 hours this winter and go up to 13 hours in the summer. Natural light will do the rest. Light intensity in winter is much lower due to short days.

The tortoises are feed with endive, chicory and field salad. Radiccio, other salads, tomatos, bananas, cucumbers are seldom feed. In the summer herbs will form most of their diet. Calcium lacticum and Complexamin (vitamins except Vitamin D) are added occasionally. The tortoises have access to water at least twice a week. Relative humidity is over 65% at daytime (probably not under the spot light) and over 80% at night. I try to keep the tortoises rather humid in the European winter, and rather arid in the European summer.

Droppings are checked regularly on endoparasites and the tortoises are treated if needed.

##### **Location WUPPERTAL**

##### *Animals*

This text only deals with the two males housed at this location.

**Studbook number: 40**

**Local ID: 91586A**

*Growth (date: 9 February 2004)*

Mass: 188 g

Straight carapace length: 99.2 mm

Straight plastron length: 77.9 mm

Maximum shell width: 74.2 mm

Maximum shell height: 45.9 mm

### Enclosure

This enclosure is situated in the carnivore house of the zoo. It measures 860 x 132 x 180 cm (l x w x h). The public can watch the animals through three large windows. In the same enclosure live short-eared elephant shrews (*Macroscelides proboscideus*) and armadillo girdled lizards (*Cordylus cataphractus*).



### Substrate/decoration

The substrate is loamy sand which is up to 20 cm deep. In the enclosure there are numerous rock formations providing many crevices for shelter. Furthermore the enclosure is planted according to the natural habitat.

### Heating, illumination, and humidity

The ceiling of the terrarium consists of glass-bricks. Additionally five tube light are installed (50 W, 1.50 m). At various places throughout the enclosure in total twelve spotlights (120 W) are installed in different heights, providing basking opportunities. A heating cable in the floor is present. Measurements on 9 February under the spotlights showed a range in temperatures from 28 to 37°C. Temperatures in the open areas of the terrarium were between 20 and 25°C, inside the crevices between 14 and 18°C. In summertime the temperatures are distinctly higher. The enclosure is sprayed once daily.

### Feeding

Food is provided six times weekly. Mainly herbs, different kind of salads and vegetables is fed, e.g. parsley, chive, sage, fennel, savoy, chicory, dandelion, carrots, germinating wheat etc. From time to time, Aleckwa-Delicat (containing dried insects, larvae etc.) is added. The food is supplemented daily either by Korvimin or Vitakalk.

### Water

Water is available in two bowls at all times. Additionally the animal is soaked once weekly. The water is then supplemented by Basica.

**Studbooknumber: 41**

**Local ID: 91586B**

*Growth (date: 9 February 2004)*

Mass: 204 g

Straight carapace length: 104.3 mm

Straight plastron length: 79.1 mm

Maximum shell width: 75.9 mm

Maximum shell height: 45.0 mm

*Enclosure*

The enclosure is in a separated room in the service area (not accessible for the public). It is wooden box of the size 75 x 75 x 18 cm (l x w x h).

*Substrate/Decoration*

Sand is used as substrate and some rocks form a crevice to provide shelter.

*Heating, illumination, and humidity*

The terrarium is illuminated by a spotlight (80 W in winter, 120 W in summer), and during summertime a tube light (30 W, 1,2 m). The photoperiod lasts 12 hours and is reduced to 9 hours in wintertime. The terrarium is sprayed once daily, more intensive in summertime. On 9 February the temperatures were between 20 and 23°C and reached up to 37°C under the spotlight. Crevice temperature were between 17 and 20°C. Room temperature at night is around 18 to 20°C.

*Feeding*

Food is provided six times weekly. Mainly herbs, different kind of salads and vegetables is fed, e.g. parsley, chive, sage, fennel, savoy, chicory, dandelion, carrots, germinating wheat etc. From time to time, Aleckwa-Delicat (containing dried insects, larvae etc.) is added. The food is supplemented daily either by Korvimin or Vitakalk. Additionally once a week Bio-Weyxin is added. A trial to keep this specimen cooler and without food was interrupted after four weeks as the specimen stayed active.

*Water*

Water is provided at all times in a bowl.



## Appendix 3

### Husbandry conditions and additional information per location *Homopus femoralis*

#### Location HRF

The solitary male at this location has been transferred to a larger enclosure, previously used for *H. areolatus*. It turned out to be too difficult to maintain a sufficiently high humidity for the latter species.

The enclosure has been provided with an automatic spraying system, similar to that described in appendix 1, location HRF. Also the calcium/vitamin supplementation has been changed as in *H. s. signatus*.



#### Location A08

No changes in husbandry have been made. In order to establish if specimen 2, which has a fairly short tail, is not a female, specimens 1 and 2 were placed together in April. Initially, sniffing and head-bobbing took place for several minutes. This behaviour appeared more intense than in other tortoise species. After this phase, the two males started touching at the marginals of the other tortoise, with the head in opposite direction, turning around a point in the middle between them. Next, one tried to bite the hind limb of the other. This behaviour appeared very similar to that in lizards such as *Pogona* and *Uromastix*, but I had not seen this in tortoises previously. Because of the vigorous fighting, the specimens were separated the same day.



## **Appendix 4**

### **Financial report Homopus Research Foundation**

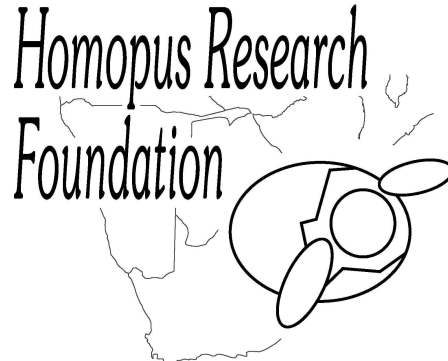
*The financial report has been removed from the internet version of the annual report.*

## Appendix 5

### Example agreement HRF and studbook participants

#### Agreement studbook participant

Version 3, 14 January 2003



#### Introduction

The studbooks under auspices of the Homopus Research Foundation have entirely or partially (depending on the species) been set up with tortoises obtained from southern African organisations or collected in the wild, permitted by the local governments. The exporting permits provided contain a number of conditions and in the case of permits issued by Northern Cape Nature Conservation (South Africa), an agreement between the latter organisation and the Homopus Research Foundation has been drawn up. In all cases, the main conditions are that specimens and their offspring may not be used for commercial purposes, should remain registered in the studbook and the permit issuing organisation should be informed on developments with regard to the specimens. Since the very beginning, the *Homopus* studbooks have been set up as strictly non-commercial activities and annually studbook reports are drawn up to inform others.

The studbooks are growing and becoming increasingly difficult to manage with so many locations in different countries. At the same time, the Homopus Research Foundation wishes to meet all permit conditions and agreements. This makes it important to translate these into an internal agreement. If the foundation fails to meet the conditions and agreements, this might result in denial of any future permits. All studbook participants are supposed to take their responsibility not to carry out any activities that might harm the interests of the Homopus Research Foundation.

The following summarises the most important do's and don'ts. Adding your name, signature and date indicates that you agree with the conditions to participate in the studbooks supervised by the Homopus Research Foundation.

#### Agreement

I agree with the following:

##### All specimens:

- Tortoises in the studbook may not be used for any commercial purposes
- All genetically related offspring should be registered in the studbook
- Changes in the studbook data (births, deaths, transfers) should be send to the board of the foundation immediately
- Some brief information on husbandry and breeding should be send to the board annually on request

##### Specimens property of the Homopus Research Foundation (currently all *Homopus s. signatus*, except the US population):

- Tortoises and all genetically related offspring remain property of the foundation, the board will act as a formal owner
- Keepers must register all other specimens of the same species (if they keep those) if they also keep studbook animals
- Directions from the board of the foundation regarding (re)combinations of specimens, transfers and whether or not to breed with specific specimens, must be followed

Note: In all cases it will be attempted to reach a decision in good harmony by discussing the issue

- In case a participant wishes to stop keeping tortoises, the foundation should be given a reasonable period of time to find alternative locations for the tortoises
- Deviations from these conditions are only possible with explicit consent of the board of the Homopus Research Foundation

Name:

Signature:

Date:

Homopus Research Foundation  
Nipkowplein 24  
3402 EC IJsselstein  
Netherlands  
Phone +31-30-6888616  
E-mail loehr@homopus.org