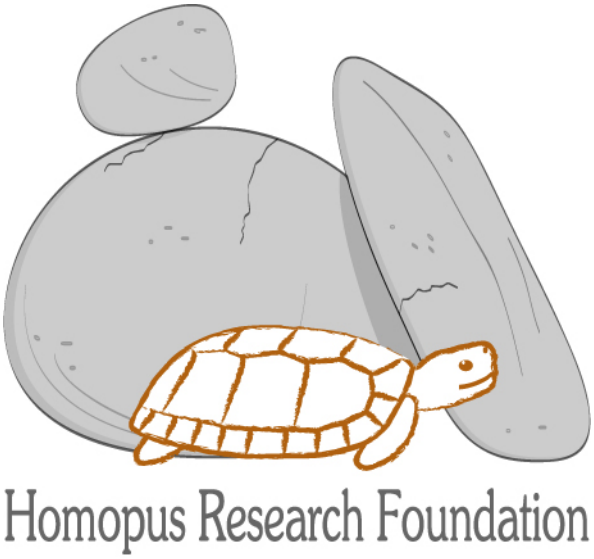
Homopus Research Foundation



Annual Report

2015

Victor Loehr
January 2016

CONTENTS

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1. INTRODUCTION AND ACHIEVEMENTS IN 2015

The Homopus Research Foundation aims to facilitate the long-term survival of *Homopus* spp. in the wild, by gathering and distributing information about their biologies and by the formation of genetically healthy *ex situ* populations. In 2015, several activities contributed to this aim. The current report presents an overview of achievements in 2015, as well as activities planned for 2016 and thereafter. Moreover, the actual studbook populations for *Homopus areolatus*, *Homopus femoralis* and *Homopus signatus* are described, focussing on changes that occurred in 2015. All previous annual reports can be found on the website of the Homopus Research Foundation.

The 2014 annual report anticipated on several results for 2015. The following table summarises these plans, with results obtained in 2015.

Result	**Due**
Manuscript submitted on: • Scute abnormalities in wild *H. signatus* '00-'04	31-12-2015
2015: A manuscript was submitted, reviewed and revised in 2015. Additionally, a popular paper on the history of the studbook on *H. signatus* was published. See Chapter 6.	
Memorandum of understanding with Northern Cape Department of Environment and Nature Conservation reviewed and signed	31-12-2015
2015: The department decided not to proceed with the memorandum. This means that the Homopus Research Foundation will continue to work based on the 2001 memorandum.	
Fieldwork conducted on *H. signatus* thermoregulation	Sep-2015
2015: Fieldwork was conducted in September. See Paragraph 1.3.	
5.5 *H. signatus* collected in the wild and added to the captive population	31-10-2015
2015: Tortoises were collected and added to the studbook in September. See Paragraph 1.1.	
Evaluation of breeding and non-breeding *H. signatus* husbandry conditions in studbook completed	01-07-2015
2015: The evaluation was completed in May and yielded concrete recommendations for several studbook locations. See Chapter 5.	
Studbook management plan *H. areolatus* drafted	31-12-2015
2015: A studbook management plan was drafted, reviewed and finalised. See Paragraph 1.2.	
Presentation and discussion held on in situ and *ex situ* conservation of *Homopus* (workshop Dutch-Belgium zoo foundation Harpij)	13-05-2015
2015: The Harpij workshop was cancelled. Instead, a presentation on the same topic was held at a meeting of Tortoise Welfare UK at Colchester Zoo in November.	
Habitat of *Homopus* spp. visited by four European studbook participants	Jan-2015
2015: This trip took place in January. Unfortunately, no *Homopus* spp. were encountered. In addition, a second trip brought staff from location TCBCC to South Africa, and the September fieldwork on *H. signatus* was attended by two studbook participants (see Paragraph 1.3).	

Further achievements that are worth listing:

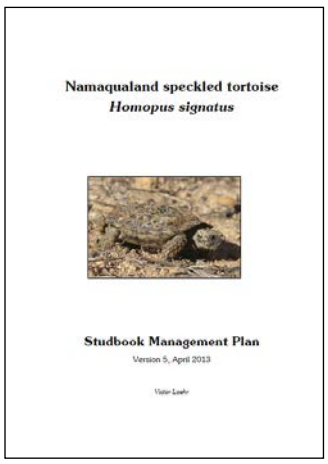
- The Homopus Research Foundation and its projects were updated in the Dutch National Academic Research and Collaborations Information System.
- Magazine The Tortoise published a paper that used field data on *H. boulengeri* collected by the Homopus Research Foundation in 2005-2008 ("Vanishing with little fanfare: Boulenger's tortoise on the South African Karoo").
- Reprint requests for papers produced by the Homopus Research Foundation were received from:
    - Marine Conservation Society Seychelles;
    - Wildlife Institute of India;
    - University of KwaZulu-Natal (South Africa);
    - Zoologisches Forschungsmuseum Alexander Koenig (Germany);
    - private individual (France).

  Most scientific papers from the Homopus Research Foundation are available for download at Researchgate.
- Review requests were received from:
    - Pakistan Journal of Zoology;

    - Journal of Biology and Nature;
    - book editor Reptile Ecology and Conservation: a Handbook of Techniques (Oxford University Press).
- Presentations were held:
    - Tortoises of the genus *Homopus*: husbandry and genetic management (invited lecture). Colchester Zoo, UK.
    - The new modern herpetoculture challenges. Natural Museum, Italy.
    - Relationships between conservation issues and captive *ex situ* breeding. Capranica Prenestina and Frosinone (both Italy).
- Invitations were received:
    - Leading a discussion group at the annual studbook keepers meeting of the European Studbook Foundation.
    - Presenting on keeping and breeding *Homopus* at a meeting of the Turtle and Tortoise Preservation Group, USA.
    - Contributing to a paper "European Studbook Foundation: a new era".
- Information requests were received regarding:
    - establishing an organisation for salamander research similar to the Homopus Research Foundation (Netherlands);
    - using agreements similar to those used in the studbooks on *H. femoralis* and *H. signatus* for transfers of captive-bred, critically endangered salamanders (Austria);
    - setting up a research schedule for fieldwork on *Testudo graeca* (UK);
    - identification of tortoise artefacts from South Africa (USA);
    - developing a pamphlet on Namibian tortoises for use in schools (Namibia);
    - ranges and ecologies of *H. areolatus* and *H. signatus* (South Africa);
    - applying for permits for the husbandry of *H. areolatus* (South Africa).
- The National Museum (South Africa) requested (complete) *Homopus* skeletons for use by archaeologists to identify tortoise remains found at their sites. Unfortunately, no skeletons were available because most dead studbook tortoises are discarded (after dissection) or donated to local museums.
- A long-term captive, misidentified, male *H. signatus* in Germany was identified as *H. boulengeri*. The Austrian owner of the tortoise has informed the CITES authorities, and the Homopus Research Foundation has enquired in South Africa for the availability of a surplus female for research purposes.
- Photographic material was provided to several book publishers, app producers and webmasters (e.g., World Association of Zoos and Aquariums).
- A new agreement was developed for loans of *Homopus* spp. from the Homopus Research Foundation to studbook participants. This agreement will be used for all new transfers.
- The website of the Homopus Research Foundation was updated with a procedural description how to apply if one wants to receive *H. signatus* and participate in the studbook. In addition, studbook overviews, photos and other content was updated.

1.1. Studbook management plan Homopus signatus

The first version of the studbook management plan for *H. signatus* was finished in 2013. It provides clear directions for the development of the studbook in the next years and decades and will be updated every five years. The plan will also be updated after every supplementation of the studbook with new founders and after each change in the IUCN conservation status of the taxon. The annual reports of the Homopus Research Foundation will report annual progress of the realisation of the studbook management plan.


Namaqualand speckled tortoise
Homopus signatus

Studbook Management Plan
Version 5, April 2013

The year 2015 was a very important year for the realisation of the studbook management plan. The small number of founders in the studbook was jeopardising the development of a genetically healthy captive population. To solve this problem, the Northern Cape Department of Environment and Nature Conservation granted permits to collect and export 5.5 founders from the wild. The non-commercial nature and the conservation aims of the studbook were instrumental in the acquisition of

permits, because Northern Cape legislation does not generally allow taking tortoises from the wild. In September, 5.5 wild *H. signatus* were located in the same wild population where the previous founders originated and transported to the Netherlands.

To avoid detriment to the wild *H. signatus* population, all new founders were collected at sites that were unlikely to sustain *H. signatus* habitat in the future (e.g., housing construction sites). Collecting success depended on tortoise activity and collecting effort. It would not have been possible to collect the founders without the help of three volunteers: Olda Mudra, Sérgio Silva and Sam Beales. A further report on the 2015 collecting of *H. signatus* was posted on the website.

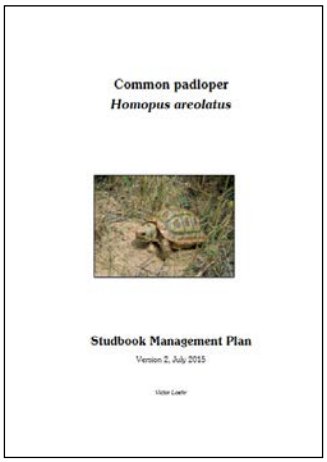
Upon arrival in the Netherlands, all tortoises were extensively swabbed for viral and bacterial examination by the University of Camerino (Italy). Faecal samples and external parasites had already been collected during capture and transport. The swabs and other samples will provide insight in the health of the population from where the tortoises were taken. Results will be published in a scientific paper.

The founders were distributed among five existing studbook locations to spread risks and efforts. Locations had been selected based on experience, past performance and active involvement in the studbook. Each location was provided with a detailed protocol to adjust the tortoises to captivity and to northern hemisphere climatic conditions. The protocol was based on the acclimation of previously collected and imported tortoises and lizards. All tortoises started feeding soon after they had been released in their enclosures and gained body mass. As expected, several females produced eggs. In total, four eggs were produced and are currently incubated.

To ensure that more studbook participants than only the participants receiving new founders would (on the short term) benefit from the import, existing breeding couples at receiving participants' are being transferred to other studbook locations. This way, additional participants will be able to start breeding *H. signatus*.

It appears that the collecting, transport and acclimation of the new founders could not have been more successful. Eggs are expected to hatch from the end of January and may add additional genetic variation to the studbook population. To detect possible genetic relationships between offspring and collected males, DNA samples will be taken and analysed. The studbook management plan will be updated in 2016 (see Chapter 2).

1.2. Studbook management plan Homopus areolatus



After a discussion paper had been distributed among the studbook participants for *H. areolatus* in 2013 and the responses of participants had been summarised in 2014, further developments needed to wait for input from location A56. Location A56 represented additional locations that had received *H. areolatus* owned by location A56. In April 2015, location A56 decided to withdraw its tortoises from the studbook. Although it was sad to see that one participant did not share the other participants' view on the future of the studbook, the decision of location A56 cleared the way to finalise the studbook management plan. Coincidentally, the withdrawal had little effect on the remaining studbook population, because location A56 owned offspring (partly inbred) originating from only one bloodline that remains represented in the studbook. A draft plan was distributed and reviewed by the participants, after which it was finalised in July. The studbook management plan for *H. areolatus* is the second plan drawn up under auspices of the Homopus Research Foundation and the European Studbook Foundation. The annual reports of the Homopus Research Foundation will report annual progress of the realisation of the studbook management plan.

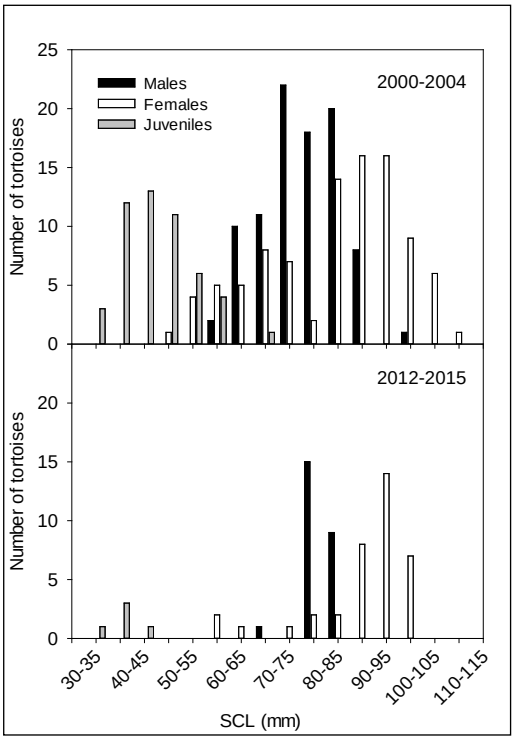
Two concrete recommendations in the studbook management plan were explored in 2015. First, the two studbook participants who were keeping a solitary male and a solitary female were asked if they would be prepared to combine these two potential founders. Unfortunately, location A37 was not prepared to

combine the female with a male due to past reproductive issues. Second, location WUPPERTAL was asked to have two founder tortoises tested that might be genetically related. The company Gendika (Netherlands) has sent sampling materials to location WUPPERTAL, where DNA samples will be taken in 2016.

1.3. Progress thermoregulation field study Homopus signatus

This study was permitted by the Northern Cape Department of Environment and Nature Conservation. The permits that were issued (see Chapter 8) require periodic updates for the department. Because this information may be informative for *Homopus* studbook participants, it is included in the annual reports of the Homopus Research Foundation.

Fieldwork was conducted from 2 till 19 September and was attended by a studbook participant from Portugal (Sérgio Silva) and two other volunteers (Olda Mudra from Czech and Sam Beales from the UK). The weather was relatively warm without rain. Food plant availability was good initially, but plants started to wilt during the fieldwork. Similar to 2014, few live *H. signatus* were encountered. We found 26 individuals (22 recaptured from previous years), most of which (15 individuals) were female and only one was a juvenile. The low capture rate did not appear to be a result of weather conditions, because collecting sites (see Paragraph 1.1) yielded larger numbers of tortoises per time unit searching. Moreover, combined 2012-2015 data indicate that the population composition has drastically changed compared to 2000-2004, with hardly any tortoises left in the smaller size classes. The observed population composition in 2012-2015 may reflect increased predation levels. In 2016, population dynamics will be modelled and analysed (see Chapter 2).



One aim of the 2015 fieldwork was to recover a tortoise with a failing transmitter and eight tortoises with iButtons. The tortoise with the failing transmitter (and iButton) was found, as well as two tortoises with iButtons. All iButton data could be downloaded and will enable analysis of thermoregulation not only for females but also for males. Considering our search effort in 2014-2015 and the fact that missing tortoises with iButtons had relatively small body sizes, it is unlikely that all four missing tortoises would still be in the study population.

A dead female with a transmitter that failed in 2003 was also found. The carcass was estimated to be 1-2 years old, showing that the female survived at least 10 years despite carrying a transmitter. Previously, a (live) female had been recovered that had carried an iButton for a period of 9 years. These results indicate that remaining transmitters and iButtons on tortoises may not impede *H. signatus*.

The fieldwork for the thermoregulation study stopped in 2015. Results will be analysed and published in 2016-2017 (see Chapter 2). Currently, the Homopus Research Foundation is not conducting field studies on *Homopus* spp. However, a field survey of *H. boulengeri* may be conducted early in 2017.

2. PLANS FOR 2016 AND THEREAFTER

The table below lists results anticipated for 2016 and thereafter, with progress indicated:

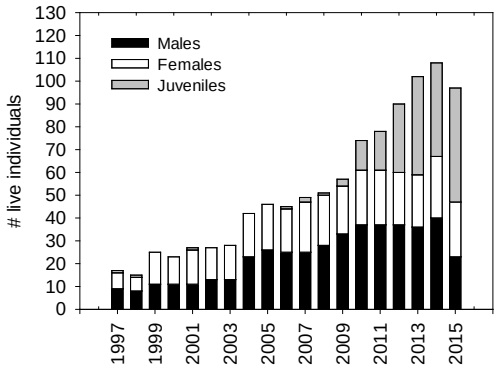
Result	Due	Current status
Manuscripts submitted on:		
• Population dynamics of *H. signatus* '00-'15	31-12-2016	Data available
• Thermoregulation in wild *H. signatus* '12-'15	31-12-2017	Data available
• Parasite infestations in wild *H. signatus* '15	31-12-2017	Samples ready for lab processing
• Long-term captive reproduction in *H. signatus*	31-12-2018	Data available
• Captive reproduction and growth in *H. femoralis*	31-12-2018	Data partly available
Studbook management plan for *H. signatus* updated	30-06-2016	Not yet started
Genetic relationship between *H. areolatus* studbook numbers 4 and 5 tested	30-06-2016	Sampling materials sent to location where the tortoises are kept
Genetic relationships between offspring from new *H. signatus* founders and male founders tested	31-12-2016	Offspring to be born from January
Presentation held on keeping and breeding *Homopus* (Turtle and Tortoise Preservation Group, USA)	Nov-16	Standing invitation
5.5 *H. signatus* collected in the wild and added to the captive population[1]	31-12-2020	Not yet taken any action

[1] Conditional are granted permits, tortoise activity and field personnel.

3. STUDBOOK SUMMARIES

To keep the studbook registrations up to date, it is vital that all studbook participants keep the coordinator informed of any changes. In the studbooks on *H. femoralis* and *H. signatus*, each participant has accepted this obligation in a formal agreement between participant and the Homopus Research Foundation. Regardless of the agreements, most participants are very motivated and inform the coordinator spontaneously when changes occur throughout the year. Others choose to wait until information is requested by the coordinator at the end of each year. However, some participants remain silent for an entire year or longer, despite repeated messages from the studbook coordinator. In order to keep track of where these communication flaws occur, the annual reports include a list of unresponsive locations. This will make it easier for the reader to assess the validity of studbook information per location, and will facilitate the coordinator when approaching a silent participant. In 2015, all locations have responded.

Homopus areolatus



Live specimens on 1 January 2015: 108 (excluding 6 specimens lost to follow-up)
Number of locations on 1 January 2015: 33 (7 countries, including 2 zoos)
New registrations: 0
Births: 12, at 4 locations
Deaths: 7, at 5 locations
Live specimens on 31 December 2015: 97 (excluding 36 specimens lost to follow-up)
Number of locations on 31 December 2015: 12 (7 countries, including 2 zoos)
Interpretation of changes:

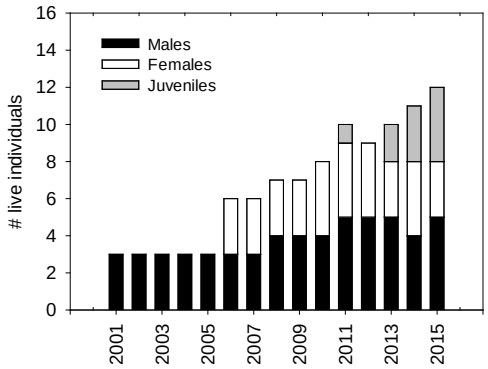
In 2015, one studbook location (A56) that owned a large group of offspring produced at location A46 decided to stop participation in the studbook. Because the tortoises owned by location A56 were housed at various locations, these additional locations had to be removed from the studbook as well. Despite the reduction in studbook locations from 33 to 12, there was

virtually no impact on the quantity and quality of the remaining studbook population. All *H. areolatus* owned by location A56 represented a single bloodline (i.e., had the same parents and were partly inbred) and this bloodline remains represented in the studbook at locations A46, A48, A66 and A77. In addition, the net studbook population size reduced only marginally, from 108 to 97 tortoises.

Reproduction continued at four locations, and several *H. areolatus* that had been born at studbook locations before 2015 were registered in 2015. Six individuals died from various causes. One individual was very old and may have died from old age. Location TCBCC kept struggling to keep juveniles alive and lost two. Representatives from TCBCC visited the natural habitat of *H. areolatus* to improve husbandry methods. Three tortoises died from unknown causes at locations A45, A48 and A70. One carcass was brought to a vet for dissection but this was not possible due to autolysis.

The studbook management plan for *H. areolatus*, which was finished in 2015 (see Paragraph 1.2), allows us to guard the genetic quality of the studbook population as it further increases in size. For example, the plan contains concrete recommendations for combinations of tortoises in the studbook. At this moment, three locations keep and own large numbers of genetically related tortoises. It is essential that offspring from these locations are transferred and combined to enable the production of a genetically healthy next generation. An obvious challenge in the execution of the plan is the fact that most *H. areolatus* are privately owned. However, the plan was drawn up in collaboration with the studbook participants, increasing its support. In light of the current studbook population, regular breeding, moderate mortality and the availability of a studbook management plan, the perspectives for the studbook are good.

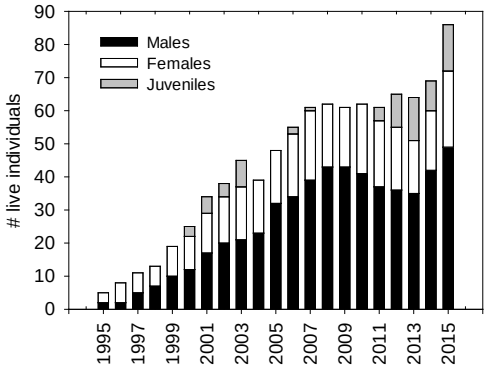
Homopus femoralis



Live specimens on 1 January 2015: 11
Number of locations on 1 January 2015: 3 (2 countries)
New registrations: 0
Births: 1
Deaths: 0
Live specimens on 31 December 2015: 12
Number of locations on 31 December 2015: 4 (3 countries)
Interpretation of changes:

The studbook population *H. femoralis* slightly grew due to the birth of one individual and zero mortality. Location A55 was provided with a captive-bred female to form a genetically related couple. The purpose of the three females that were collected in the wild and imported in 2006 was to gather and publish information on the biology of *H. femoralis*. Therefore, the studbook will focus on breeding and raising offspring to generate data on reproduction, growth and longevity, rather than on sound genetic management.

Homopus signatus



Live specimens on 1 January 2015: 69 (excluding 16 specimens lost to follow-up)
Number of locations on 1 January 2015: 35 (10 countries, including 2 zoos)
New registrations: 10
Births: 9, at 4 locations
Deaths: 2, at 2 locations
Live specimens on 31 December 2015: 86 (excluding 16 specimens lost to follow-up)
Number of locations on 31 December 2015: 39 (11 countries, including 2 zoos)
Interpretation of changes:

After 7 years of a relatively constant population size, 10 new founders were collected in the wild and added to the studbook population (see Paragraph 1.1). In addition, eight offspring were born compared to only two deaths (one drowned after escaping from its enclosure and the other one found lying on its back). The new founders produced a total of four eggs that may hatch early in 2016. Consequently, perspectives to develop the population as described in the

studbook management plan have greatly improved. Several challenges also still exist:

- Bloodline 1 x 2 remains underrepresented in F2 offspring. It is important that locations that keep offspring from 1 x 2 (i.e., A08, A40, A57, A59, A68) start produce offspring. In 2014, a questionnaire was distributed and results analysed to detect factors inhibiting production of F2 offspring in general. Following the analysis (see Chapter 5), location A40 improved its husbandry by adding bright illumination, installing an astrotimer, and provoking mating behaviour by cooling down the enclosure in winter nights. Location A57 addressed the relatively low retreat temperatures in summer. Husbandry recommendations are available for all keepers to optimise husbandry methods.

- The genes from female 60 (lost to follow-up) need to be better represented in the population. To achieve this, offspring from bloodline 25 x 60 will be combined with offspring from bloodline 35 x 36.

- Risks (e.g., changing enclosures, implementing untested husbandry methods, outdoor husbandry) to offspring from founders 2 and 3 should be minimised, because these founders have deceased and offspring cannot be replaced.

- The sex ratio of the population remains skewed towards males. However, progress has been made in the past years to gradually develop an incubation protocol that produce females (see previous annual reports). Currently, virtually all breeders in the studbook are incubating their eggs at a diurnal temperature cycle of 33°C and 28°C, with a constant temperature of 33 °C from incubation day 30 to 50 (all temperatures measured with a calibrated thermometer). In 2016-2017, it will be possible to reliably determine the gender of the first offspring incubated using this protocol.

4. ACTUAL STUDBOOK OVERVIEWS

The tables below give an overview of all live tortoises that are available in the studbooks on *H. areolatus*, *H. femoralis* and *H. signatus*. The tables do not include dead tortoises and tortoises lost to follow-up. Full overviews of all tortoises registered in the studbooks may be downloaded from the website.

Homopus areolatus: live and available studbook population. MULTX are groups of unregistered specimens at locations outside of the studbook, except MULT4 consists of studbook numbers 59 and 60. UNKX are specimens at locations outside of the studbook.

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
A10								
62	F	~25 Nov 2007	5	4	A10	~25 Nov 2007	_____	Hatch
					HRF	~25 Nov 2007	_____	Ownership
					A44	27 Mar 2011	_____	Loan to
					A10	25 Jul 2014	_____	Transfer
94	M	7 Jul 2009	16	17	A16	7 Jul 2009	_____	Hatch
					A44	5 Jun 2010	AUGUST	Transfer
					A10	~25 Jul 2014	_____	Transfer
185	?	12 Sep 2015	94	62	A10	12 Sep 2015	_____	Hatch
					HRF	12 Sep 2015	_____	Ownership
186	?	15 Sep 2015	94	62	A10	15 Sep 2015	_____	Hatch
					HRF	15 Sep 2015	_____	Ownership
187	?	17 Sep 2015	94	62	A10	17 Sep 2015	_____	Hatch
					HRF	17 Sep 2015	_____	Ownership
Totals: 1.1.3 (5)								
A16								
16	M	????	WILD	WILD	A16	30 Aug 1994	_____	Transfer
17	F	????	WILD	WILD	A16	30 Aug 1994	_____	Transfer

39	M	9 Apr 2003	16	17	A16	9 Apr 2003	_____	Hatch
48	M	23 Mar 2004	16	17	A16	23 Mar 2004	_____	Hatch
49	F	25 Mar 2004	16	17	A16	25 Mar 2004	_____	Hatch
50	F	8 Aug 2004	16	17	A16	8 Aug 2004	_____	Hatch
51	M	19 Aug 2004	16	17	A16	19 Aug 2004	_____	Hatch
52	F	25 Aug 2004	16	17	A16	25 Aug 2004	_____	Hatch
54	M	10 Jun 2005	16	17	A16	10 Jun 2005	_____	Hatch
55	M	27 Jun 2005	16	17	A16	27 Jun 2005	_____	Hatch
56	F	6 Oct 2005	16	17	A16	6 Oct 2005	_____	Hatch
57	F	3 Nov 2005	16	17	A16	3 Nov 2005	_____	Hatch
108	M	8 Mar 2010	47	37	A44	8 Mar 2010	_____	Hatch
					A16	4 Jun 2010	_____	Transfer
109	F	8 Mar 2010	47	37	A44	8 Mar 2010	_____	Hatch
					A16	4 Jun 2010	_____	Transfer
115	?	30 May 2010	16	17	A16	30 May 2010	_____	Hatch
116	?	31 May 2010	16	17	A16	31 May 2010	_____	Hatch
122	?	2 Jul 2011	16	17	A16	2 Jul 2011	_____	Hatch
134	?	27 Apr 2012	16	17	A16	27 Apr 2012	_____	Hatch
135	?	25 Aug 2012	16	17	A16	25 Aug 2012	_____	Hatch
146	?	9 Apr 2013	16	17	A16	9 Apr 2013	_____	Hatch
147	?	9 Apr 2013	16	17	A16	9 Apr 2013	_____	Hatch
152	?	11 Jun 2014	16	17	A16	11 Jun 2014	_____	Hatch
153	?	11 Jun 2014	16	17	A16	11 Jun 2014	_____	Hatch
157	?	6 Sep 2014	55	109	A16	6 Sep 2014	_____	Hatch
182	?	26 Jul 2015	108	56	A16	26 Jul 2015	_____	Hatch
184	?	18 Aug 2015	108	56	A16	18 Aug 2015	_____	Hatch

Totals: 7.7.12 (26)

A37

22	M	????	WILD	WILD	UNKNOWN	????	NONE	Capture
					A20	????	_____	Transfer
					A21	17 Oct 2000	_____	Transfer
					A37	15 Sep 2002	1	Transfer
23	F	????	WILD	WILD	UNKNOWN	????	NONE	Capture
					A20	????	_____	Transfer
					A21	17 Oct 2000	_____	Transfer
					A37	15 Sep 2002	2	Transfer
24	F	~ 1993	UNK1	UNK2	A20	~ 1993	_____	Hatch
					A21	17 Oct 2000	_____	Transfer
					A37	15 Sep 2002	3	Transfer
46	M	30 Sep 2004	22	24	A37	30 Sep 2004	_____	Hatch
107	F	8 Mar 2010	47	37	A44	8 Mar 2010	_____	Hatch
					A37	5 May 2010	_____	Transfer
111	F	29 Mar 2010	47	37	A44	29 Mar 2010	_____	Hatch
					A37	7 Jun 2010	_____	Transfer
172	?	5 Jan 2014	22	24	A37	5 Jan 2014	_____	Hatch
173	?	12 Jan 2014	22	24	A37	12 Jan 2014	_____	Hatch
174	?	15 Aug 2014	22	24	A37	15 Aug 2014	_____	Hatch
175	?	15 Jan 2015	22	24	A37	15 Jan 2015	_____	Hatch
176	?	15 Jun 2015	22	24	A37	15 Jun 2015	_____	Hatch
177	?	15 Feb 2012	22	24	A37	15 Feb 2012	_____	Hatch

178	?	15 Feb 2009	22	24	A37	15 Feb 2009	_____		Hatch
179	?	15 Feb 2005	22	24	A37	15 Feb 2005	_____		Hatch
180	?	15 Feb 2004	22	24	A37	15 Feb 2004	_____		Hatch
183	?	11 Aug 2015	22	24	A37	11 Aug 2015	_____		Hatch

Totals: 2.4.10 (16)

A42

35	M	9 Jul 2002	16	17	A16	9 Jul 2002	_____		Hatch
					A42	~30 Sep 2005	_____		Loan to

Totals: 1.0.0 (1)

A44

130	?	16 Mar 2012	94	62	A44	16 Mar 2012	_____		Hatch
132	?	18 Jul 2012	94	62	A44	18 Jul 2012	_____		Hatch
133	?	13 Aug 2012	94	62	A44	13 Aug 2012	_____		Hatch
					HRF	13 Aug 2012	_____		Ownership
149	?	27 Apr 2013	94	62	A44	27 Apr 2013	_____		Hatch
					HRF	27 Apr 2013	_____		Ownership

Totals: 0.0.4 (4)

A45

25	F	15 Sep 2001	5	4	HRF	15 Sep 2001		IV-1	Hatch
					A10	24 May 2003	_____		Loan to
					A16	4 Dec 2004	_____		Loan to
					A45	27 Feb 2005	_____		Loan to
53	M	12 Jun 2005	34	25	A45	12 Jun 2005	_____		Hatch

Totals: 1.1.0 (2)

A46

58	M	????	WILD	WILD	A46	9 Sep 1997		03	Transfer
59	F	????	WILD	WILD	A46	9 Sep 1997		01	Transfer
60	F	????	WILD	WILD	A46	25 Mar 1999		02	Transfer
123	F	23 Jan 2012	58	MULT4	A46	23 Jan 2012	_____		Hatch
124	F	24 Jan 2012	58	MULT4	A46	24 Jan 2012	_____		Hatch
125	M	31 Jan 2012	58	MULT4	A46	31 Jan 2012	_____		Hatch
126	F	1 Feb 2012	58	MULT4	A46	1 Feb 2012	_____		Hatch
127	M	2 Feb 2012	58	MULT4	A46	2 Feb 2012	_____		Hatch
128	F	3 Feb 2012	58	MULT4	A46	3 Feb 2012	_____		Hatch
129	F	4 Feb 2012	58	MULT4	A46	4 Feb 2012	_____		Hatch
136	?	~18 Jan 2013	58	MULT4	A46	~18 Jan 2013	_____		Hatch
137	?	~25 Jan 2013	58	MULT4	A46	~25 Jan 2013	_____		Hatch
138	?	~27 Jan 2013	58	MULT4	A46	~27 Jan 2013	_____		Hatch
139	?	~ 6 Feb 2013	58	MULT4	A46	~ 6 Feb 2013	_____		Hatch
140	?	~17 Feb 2013	58	MULT4	A46	~17 Feb 2013	_____		Hatch
141	?	~17 Feb 2013	58	MULT4	A46	~17 Feb 2013	_____		Hatch
142	?	~ 4 Mar 2013	58	MULT4	A46	~ 4 Mar 2013	_____		Hatch
143	?	~10 Mar 2013	58	MULT4	A46	~10 Mar 2013	_____		Hatch
144	?	~26 Mar 2013	58	MULT4	A46	~26 Mar 2013	_____		Hatch
145	?	~26 Mar 2013	58	MULT4	A46	~26 Mar 2013	_____		Hatch
162	?	29 Jan 2014	58	MULT4	A46	29 Jan 2014	_____		Hatch
163	?	29 Jan 2014	58	MULT4	A46	29 Jan 2014	_____		Hatch
164	?	20 Feb 2014	58	MULT4	A46	20 Feb 2014	_____		Hatch

165	?	20 Feb 2014	58	MULT4	A46	20 Feb 2014	_____	Hatch
166	?	21 Feb 2014	58	MULT4	A46	21 Feb 2014	_____	Hatch
167	?	27 Feb 2014	58	MULT4	A46	27 Feb 2014	_____	Hatch
168	?	10 Mar 2014	58	MULT4	A46	10 Mar 2014	_____	Hatch
169	?	13 Feb 2015	58	MULT4	A46	13 Feb 2015	_____	Hatch
170	?	20 Feb 2015	58	MULT4	A46	20 Feb 2015	_____	Hatch
171	?	20 Mar 2015	58	MULT4	A46	20 Mar 2015	_____	Hatch

Totals: 3.7.20 (30)

A48

82	F	~15 Mar 2007	58	MULT4	A46	~15 Mar 2007	_____	Hatch
					A54	~15 Jun 2008	_____	Loan to
					HRF	15 Jun 2008	_____	Ownership
					A48	14 Jan 2015	_____	Loan to
93	M	7 Jul 2009	16	17	A16	7 Jul 2009	_____	Hatch
					A44	5 Jun 2010	_____	Transfer
					A48	13 Jun 2010	_____	Transfer
131	?	27 May 2012	94	62	A44	27 May 2012	_____	Hatch
					HRF	27 May 2012	_____	Ownership
					A48	19 Jun 2014	_____	Loan to

Totals: 1.1.1 (3)

A66

79	M	~15 Mar 2007	58	MULT4	A46	~15 Mar 2007	_____	Hatch
					A54	~15 Jun 2008	_____	Loan to
					HRF	~15 Jun 2008	_____	Ownership
					A66	11 Apr 2015	_____	Loan to
81	F	~15 Mar 2007	58	MULT4	A46	~15 Mar 2007	_____	Hatch
					A54	~15 Jun 2008	_____	Loan to
					HRF	~15 Jun 2008	_____	Ownership
					A66	~11 Apr 2015	_____	Loan to

Totals: 1.1.0 (2)

A70

110	M	8 Mar 2010	47	37	A44	8 Mar 2010	_____	Hatch
					HRF	8 Mar 2010	_____	Ownership
					A70	5 Sep 2010	_____	Loan to

Totals: 1.0.0 (1)

A77

84	M	~ 7 Feb 2008	58	MULT4	A46	~ 7 Feb 2008	_____	Hatch
					A77	2 Jun 2011	_____	Transfer
85	M	~ 7 Feb 2008	58	MULT4	A46	~ 7 Feb 2008	_____	Hatch
					A77	2 Jun 2011	_____	Transfer

Totals: 2.0.0 (2)

TCBCC - Turtle Conservancy Behler Chelonian Center

10	M	????	WILD	WILD	A13	????	_____	Transfer
					A12	~16 Sep 1999	ERNST	Transfer
					A43	~ May 2004	_____	Loan to
					TCBCC	7 Oct 2005	AREO02	Transfer
11	F	????	WILD	WILD	KRAAIFONT	????	_____	Transfer
					A12	~16 Sep 1999	A5	Transfer
					A43	~ May 2004	_____	Loan to
					TCBCC	7 Oct 2005	AREO01	Transfer

Totals: 1.1.0 (2)

WUPPERTAL - Wuppertal Zoological Garten

4	F	????	MULT1	MULT2	KRAAIFONT	????	_____	Hatch
					HRF	21 Nov 1997	IV	Transfer
					A10	27 Oct 2004	_____	Loan to
					WUPPERTAL	13 Sep 2014	_____	Loan to
5	M	????	MULT1	MULT2	KRAAIFONT	????	_____	Hatch
					HRF	21 Nov 1997	V	Ownership
					A10	27 Oct 2004	_____	Loan to
					WUPPERTAL	13 Sep 2014	_____	Loan to

```
    40    M       ????        WILD    WILD  WUPPERTAL  28 Mar 1991 91586A     Transfer

Totals: 2.1.0 (3)
-------------------------------------------------------------------------------------
=====================================================================================
TOTALS: 23.24.50 (97)
```

Homopus femoralis: live and available studbook population.

```
=====================================================================================
Stud # | Sex | Hatch Date | Sire  | Dam   | Location | Date      | Local ID | Event    |
=====================================================================================

A10
     2    M       ????        WILD    WILD  A28         ~ Jan 2001 ______     Transfer
                                            A08        23 Dec 2001 ______     Loan to
                                            A10        30 Jul 2006 ______     Loan to

     5    F       ????        WILD    WILD  BEAUF W    16 Mar 2006   NONE     Capture
                                            HRF        19 Mar 2006 ______     Transfer
                                            A10        30 Jul 2006 ______     Loan to

     7    M     7 Jun 2008       3       4  HRF         7 Jun 2008 ______     Hatch
                                            A10        22 Oct 2014 ______     Loan to
Totals: 2.1.0 (3)
-------------------------------------------------------------------------------------

A55
     8    M    30 Jun 2010       3       4  HRF        30 Jun 2010 ______     Hatch
                                            A55        26 Jun 2014 ______     Loan to

    10    F    28 May 2011       3       4  HRF        28 May 2011 ______     Hatch
                                            A55        27 Jun 2015 ______     Loan to

Totals: 1.1.0 (2)
-------------------------------------------------------------------------------------

A59
    12    M    12 Jul 2013       3       4  HRF        12 Jul 2013 ______     Hatch
                                            A59         2 Aug 2015 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

HRF - Homopus Research Foundation
     3    M       ????        WILD    WILD  A28         ~ Jan 2001 ______     Transfer
                                            HRF        23 Dec 2001    III     Loan to

     4    F       ????        WILD    WILD  BEAUF W    16 Mar 2006   NONE     Capture
                                            HRF        19 Mar 2006 ______     Transfer

    13    ?    15 Jun 2014       3       4  HRF        15 Jun 2014 ______     Hatch

    14    ?    18 Jun 2014       3       4  HRF        18 Jun 2014 ______     Hatch

    15    ?    19 Jun 2014       3       4  HRF        19 Jun 2014 ______     Hatch

    16    ?    26 Jun 2015       3       4  HRF        26 Jun 2015 ______     Hatch

Totals: 1.1.4 (6)
-------------------------------------------------------------------------------------
=====================================================================================
TOTALS: 5.3.4 (12)
```

Homopus signatus: live and available studbook population. MULT1 are specimens 18 and 19, MULT2 specimens 20 and 21, MULT3 are specimens 13 (with MULT4 = 9) or 37 and MULT4 are specimens 9 or 38. UNK1 and UNK2 are unknown specimens outside of the studbook. Specimen number 95 is inbred and not available for further breeding.

```
=====================================================================================
Stud # | Sex | Hatch Date | Sire  | Dam   | Location | Date      | Local ID | Event    |
=====================================================================================

A08
    42    F    20 Aug 2002       1       2  HRF        20 Aug 2002  II-11     Hatch
                                            A08        19 Apr 2003 ______     Loan to

    73    M     2 Aug 2005      37      38  HRF         2 Aug 2005  HSS73     Hatch
                                            A08        18 Apr 2009 ______     Loan to

    95    M    18 Sep 2007      41      42  A08        18 Sep 2007 ______     Hatch
                                            HRF       ~18 Sep 2007 ______     Ownership
Totals: 2.1.0 (3)
-------------------------------------------------------------------------------------
```

```
A10
    35    M       ????        WILD    WILD  SPRINGBOK   4 Oct 2001   NONE     Capture
                                            HRF         6 Oct 2001 ______     Transfer
                                            A07        16 Dec 2001 ______     Loan to
                                            A10        26 Oct 2012 ______     Loan to

    36    F       ????        WILD    WILD  SPRINGBOK   3 Oct 2001   NONE     Capture
                                            HRF         6 Oct 2001 ______     Transfer
                                            A07        16 Dec 2001 ______     Loan to
                                            A10        26 Oct 2012 ______     Loan to

   137    M    21 Jun 2014      35      36  A10        21 Jun 2014 ______     Hatch
                                            HRF        21 Jun 2014 ______     Ownership

   138    F    22 Aug 2014      35      36  A10        22 Aug 2014 ______     Hatch
                                            HRF        22 Aug 2014 ______     Ownership

   139    F     1 Sep 2014      35      36  A10         1 Sep 2014 ______     Hatch
                                            HRF         1 Sep 2014 ______     Ownership

   145    ?    20 Jun 2015      35      36  A10        20 Jun 2015 ______     Hatch
                                            HRF        20 Jun 2015 ______     Ownership

   146    ?     6 Jul 2015      35      36  A10         6 Jul 2015 ______     Hatch
                                            HRF         6 Jul 2015 ______     Ownership

   147    ?    28 Aug 2015      35      36  A10        28 Aug 2015 ______     Hatch
                                            HRF        28 Aug 2015 ______     Ownership

   148    ?    16 Sep 2015      35      36  A10        16 Sep 2015 ______     Hatch
                                            HRF        16 Sep 2015 ______     Ownership

   149    ?    17 Sep 2015      35      36  A10        17 Sep 2015 ______     Hatch
                                            HRF        17 Sep 2015 ______     Ownership

   153    M       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                            HRF        22 Sep 2015 ______     Ownership
                                            A10        22 Sep 2015 ______     Loan to

   158    F       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                            HRF        22 Sep 2015 ______     Ownership
                                            A10        22 Sep 2015 ______     Loan to
Totals: 3.4.5 (12)
-------------------------------------------------------------------------------------------

A18
    69    M     9 May 2005      37      38  HRF         9 May 2005  HSS69     Hatch
                                            A33        28 May 2006   NURI     Loan to
                                            A18         3 Sep 2007 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

A37
    86    M   ~20 Apr 2006      25      60  A37       ~20 Apr 2006 ______     Hatch

Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

A39
    40    M     2 Jul 2002       1       3  HRF         2 Jul 2002 III-13     Hatch
                                            A39        12 Apr 2003 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

A40
    43    F    29 Sep 2002       1       2  HRF        29 Sep 2002 ______     Hatch
                                            A40         6 Jun 2003 ______     Loan to

    91    M     3 Aug 2007      37      38  HRF         3 Aug 2007 ______     Hatch
                                            A40        14 Nov 2009 ______     Loan to
Totals: 1.1.0 (2)
-------------------------------------------------------------------------------------------

A42
    41    M    25 Jul 2002       1       3  HRF        25 Jul 2002 III-14     Hatch
                                            A08        19 Apr 2003 ______     Loan to
                                            A60        12 Oct 2009 ______     Loan to
                                            A42        22 Jan 2010 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

A50
     1    M       ????        WILD    WILD  SPRINGBOK  27 Sep 1995   NONE     Capture
                                            HRF        30 Sep 1995      I     Transfer
                                            A25        12 Jun 2004 ______     Loan to
                                            A50         8 Mar 2009 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------
```

```
A52
   132    M    23 Oct 2013      35      36  A10       ~23 Oct 2013 ______     Hatch
                                             HRF        23 Oct 2013 ______     Ownership
                                             A52        11 Apr 2015 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

A55
    74    M    31 Jul 2005       1       3  A25        31 Jul 2005 ______     Hatch
                                             HRF        31 Jul 2005 ______     Ownership
                                             A55        24 Mar 2007 ______     Loan to

    96    F    30 Jul 2007      35      36  A07        30 Jul 2007 ______     Hatch
                                             HRF        30 Jul 2007 ______     Ownership
                                             A61        13 Apr 2008 ______     Loan to
                                             A64        10 May 2009 ______     Loan to
                                             A55        12 Sep 2009 ______     Loan to

   125    M     7 Jul 2012      74      96  A55         7 Jul 2012 ______     Hatch
                                             HRF         7 Jul 2012 ______     Ownership
                                             A90         1 Mar 2013 ______     Loan to
                                             A55        25 Aug 2015 ______     Loan to

   143    ?     5 Aug 2015      74      96  A55         5 Aug 2015 ______     Hatch
                                             HRF         5 Aug 2015 ______     Ownership

   144    ?    20 Jun 2015      74      96  A55        20 Jun 2015 ______     Hatch
                                             HRF        20 Jun 2015 ______     Ownership

   151    M       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                             HRF        22 Sep 2015 ______     Ownership
                                             A55        22 Sep 2015 ______     Loan to

   156    F       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                             HRF        22 Sep 2015 ______     Ownership
                                             A55        22 Sep 2015 ______     Loan to
Totals: 3.2.2 (7)
-------------------------------------------------------------------------------------------

A57
    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
                                             A57         6 Apr 2008 ______     Loan to

    79    F     9 Aug 2006      37      38  HRF         9 Aug 2006 ______     Hatch
                                             A57         5 Nov 2009 ______     Loan to

   150    M       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                             HRF        22 Sep 2015 ______     Ownership
                                             A57        22 Sep 2015 ______     Loan to

   155    F       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                             HRF        22 Sep 2015 ______     Ownership
                                             A57        22 Sep 2015 ______     Loan to
Totals: 2.2.0 (4)
-------------------------------------------------------------------------------------------

A59
    51    M     1 Jul 2003       1       2  HRF         1 Jul 2003  II-13     Hatch
                                             A41         2 Nov 2003 ______     Loan to
                                             A59        13 Sep 2008 ______     Loan to

   107    F    21 Jul 2009      35      36  A07        21 Jul 2009 ______     Hatch
                                             HRF        21 Jul 2009 ______     Ownership
                                             A67        13 Mar 2010 ______     Loan to
                                             A59         8 Mar 2014 ______     Loan to

   113    M    16 Jun 2010      37      38  HRF        16 Jun 2010 ______     Hatch
                                             A59         3 Dec 2011 ______     Loan to

   152    M       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                             HRF        22 Sep 2015 ______     Ownership
                                             A59        22 Sep 2015 ______     Loan to

   157    F       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                             HRF        22 Sep 2015 ______     Ownership
                                             A59        22 Sep 2015 ______     Loan to
Totals: 3.2.0 (5)
-------------------------------------------------------------------------------------------
```

```
A63
    88    M   ~15 Nov 2005      25      60  A37       ~15 Nov 2005 ______     Hatch
                                             HRF       ~15 Nov 2005 ______     Ownership
                                             A69        30 Aug 2010 ______     Loan to
                                             A39        24 Nov 2011 ______     Loan to
                                             A63        17 Mar 2014 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A65
    72    M    24 Jul 2005   MULT3   MULT4  HRF        24 Jul 2005    ?-1     Hatch
                                             A65        17 Oct 2009 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A67
    76    F    20 Jun 2006      13       5  HRF        20 Jun 2006    V-4     Hatch
                                             A54        24 Mar 2007 ______     Loan to
                                             A67        25 Jun 2012 ______     Loan to

   106    M    20 May 2009      35      36  A07        20 May 2009 ______     Hatch
                                             HRF        20 May 2009 ______     Ownership
                                             A67        13 Mar 2010 ______     Loan to

   121    M    23 Sep 2011      35      36  A07        23 Sep 2011 ______     Hatch
                                             HRF        23 Sep 2011 ______     Ownership
                                             A67        18 Nov 2011 ______     Loan to
Totals: 2.1.0 (3)
-----------------------------------------------------------------------------------------

A68
     9    F    30 Nov 1996       1       2  HRF        30 Nov 1996   II-1     Hatch
                                             A68        15 May 2014 ______     Loan to

    99    M    21 May 2008      37      38  HRF        21 May 2008 ______     Hatch
                                             A68         5 Jun 2010 ______     Loan to

   100    M    24 Jun 2008      37      38  HRF        24 Jun 2008 ______     Hatch
                                             A68         5 Jun 2010 ______     Loan to
Totals: 2.1.0 (3)
-----------------------------------------------------------------------------------------

A75
    59    M    10 Jun 2004       1       3  HRF        10 Jun 2004 III-18     Hatch
                                             A61       ~17 Apr 2005 ______     Loan to
                                             A64        10 May 2009 ______     Loan to
                                             A75        27 Apr 2011 PANSER     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A76
   114    M     4 Jul 2010      37       9  HRF         4 Jul 2010 ______     Hatch
                                             A76       ~27 Jun 2011 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A78
    71    M    25 Jun 2005      44       7  A10        25 Jun 2005 ______     Hatch
                                             HRF        25 Jun 2005 ______     Ownership
                                             A58         6 May 2008 ______     Loan to
                                             A10        22 Jan 2012 ______     Loan to
                                             A78        10 Mar 2012 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A79
   118    F     1 May 2010      44       7  A10         1 May 2010 ______     Hatch
                                             HRF       ~ 1 May 2010 ______     Ownership
                                             A58        10 Nov 2011 ______     Loan to
                                             A10        22 Jan 2012 ______     Loan to
                                             A79        22 Feb 2012 ______     Loan to
Totals: 0.1.0 (1)
-----------------------------------------------------------------------------------------

A80
   109    F     3 Feb 2010      44       7  A10         3 Feb 2010 ______     Hatch
                                             HRF       ~ 3 Feb 2010 ______     Ownership
                                             A58        10 Nov 2011 ______     Loan to
                                             A10        22 Jan 2012 ______     Loan to
                                             A80        17 Mar 2012 ______     Loan to
Totals: 0.1.0 (1)
-----------------------------------------------------------------------------------------
A83
    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
                                             A83        14 Mar 2015 ______     Loan to
```

```
   112    M     8 Jun 2010      37       9  HRF         8 Jun 2010 ______     Hatch
                                            A72        29 Oct 2010 ______     Loan to
                                            A83        16 Aug 2012 ______     Loan to

   130    F     9 Jul 2013      35      36  A10         9 Jul 2013 ______     Hatch
                                            HRF         9 Jul 2013 ______     Ownership
                                            A83        14 Mar 2015 ______     Loan to
Totals: 2.1.0 (3)
-----------------------------------------------------------------------------------------

A84
   119    M   ~20 Apr 2011      44       7  A10       ~20 Apr 2011 ______     Hatch
                                            HRF       ~20 Apr 2011 ______     Ownership
                                            A84         8 Sep 2012 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A91
   123    M    24 Jun 2012      37      38  HRF        24 Jun 2012 ______     Hatch
                                            A91        13 Dec 2014 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A94
   120    F   ~19 Sep 2011      44       7  A10       ~19 Sep 2011 ______     Hatch
                                            HRF       ~19 Sep 2011 ______     Ownership
                                            A94         4 Oct 2013 ______     Loan to
Totals: 0.1.0 (1)
-----------------------------------------------------------------------------------------

A95
   122    M    31 May 2012      74      96  A55        31 May 2012 ______     Hatch
                                            HRF        31 May 2012 ______     Ownership
                                            A95        11 Nov 2013 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A103
    94    M    27 Aug 2007      44       7  A10        27 Aug 2007 ______     Hatch
                                            HRF       ~27 Aug 2007 ______     Ownership
                                            A82        10 Mar 2012 ______     Loan to
                                            A92        18 Mar 2013 ______     Loan to
                                            A103        8 Mar 2014 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A104
     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
                                            A65        11 Nov 2012 ______     Loan to
                                            A104       12 May 2014 ______     Loan to

    44    M    31 Oct 2002      35      36  A07        31 Oct 2002 ______     Hatch
                                            HRF        31 Oct 2002 ______     Ownership
                                            A10        24 Jul 2004 ______     Loan to
                                            A65        11 Nov 2012 ______     Loan to
                                            A104       12 May 2014 ______     Loan to

   160    ?    16 Nov 2015      44       7  A104       16 Nov 2015 ______     Hatch
                                            HRF        16 Nov 2015 ______     Ownership
Totals: 1.1.1 (3)
-----------------------------------------------------------------------------------------

A105
    82    M    26 Dec 2005      25      60  A37        26 Dec 2005 ______     Hatch
                                            HRF        26 Dec 2005 ______     Ownership
                                            A71        30 Aug 2010 ______     Loan to
                                            A85         5 Mar 2014 ______     Loan to
                                            A105        9 Oct 2014 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------

A106
   128    M    15 Jun 2012      35      36  A07        15 Jun 2012 ______     Hatch
                                            HRF        15 Jun 2012 ______     Ownership
                                            A85        20 Oct 2012 ______     Loan to
                                            A106        5 Oct 2014 ______     Loan to
Totals: 1.0.0 (1)
-----------------------------------------------------------------------------------------
```

```
A109
   111    M    13 May 2010      37      38  HRF        13 May 2010 ______     Hatch
                                             A39         3 Dec 2011 ______     Loan to
                                             A63        17 Mar 2014 ______     Loan to
                                             A109      ~25 Jan 2015 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A110
    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
                                             A110       14 Mar 2015 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A111
   110    F    23 Mar 2010      44       7  A10        23 Mar 2010 ______     Hatch
                                             HRF       ~23 Mar 2010 ______     Ownership
                                             A58        10 Nov 2011 ______     Loan to
                                             A10        22 Jan 2012 ______     Loan to
                                             A81        22 Feb 2012 ______     Loan to
                                             A111        3 May 2015 ______     Loan to
Totals: 0.1.0 (1)
-------------------------------------------------------------------------------------

A112
   131    M     4 Oct 2013      35      36  A10         4 Oct 2013 ______     Hatch
                                             HRF         4 Oct 2013 ______     Ownership
                                             A112       12 Sep 2015 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A113
   126    M    16 Aug 2012      37       9  HRF        16 Aug 2012 ______     Hatch
                                             A113       13 Jun 2015 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A114
   124    M    30 Jun 2012      37       9  HRF        30 Jun 2012 ______     Hatch
                                             A114       12 Sep 2015 ______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A115
    87    M   ~15 Oct 2005      25      60  A37       ~15 Oct 2005 ______     Hatch
                                             A115       21 Nov 2015 ______     Transfer

    89    M    18 Jan 2007      25      60  A37        18 Jan 2007 ______     Hatch
                                             A115      ~21 Nov 2015 ______     Transfer

    92    M    10 Aug 2007      25      60  A37        10 Aug 2007 ______     Hatch
                                             HRF       ~10 Aug 2007 ______     Ownership
                                             A115       21 Nov 2015 ______     Loan to
Totals: 3.0.0 (3)
-------------------------------------------------------------------------------------

AMSTERDAM - Artis Royal Zoo
    77    F    13 Jul 2006      44       7  A10        13 Jul 2006 ______     Hatch
                                             HRF        13 Jul 2006 ______     Ownership
                                             A63        14 Aug 2010 ______     Loan to
                                             AMSTERDAM   2 May 2014 ______     Loan to

    93    M    30 Jul 2007      44       7  A10        30 Jul 2007 ______     Hatch
                                             HRF        30 Jul 2007 ______     Ownership
                                             A63        14 Aug 2010 ______     Loan to
                                             AMSTERDAM   2 May 2014 ______     Loan to

   115    ?     6 Jul 2011      37       9  HRF         6 Jul 2011 ______     Hatch
                                             AMSTERDAM   6 Nov 2012 R12043     Loan to

   117    ?    12 Jun 2011      37       9  HRF        12 Jun 2011 ______     Hatch
                                             AMSTERDAM   6 Nov 2012 R12042     Loan to
Totals: 1.1.2 (4)
-------------------------------------------------------------------------------------

HRF - Homopus Research Foundation
    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

    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
```

```
   133    ?    12 Jun 2014      37       9  HRF        12 Jun 2014 ______     Hatch

   135    ?    10 Jul 2014      37       9  HRF        10 Jul 2014 ______     Hatch

   136    ?     2 Sep 2014      37       9  HRF         2 Sep 2014 ______     Hatch

   142    ?    15 May 2015      37      38  HRF        15 May 2015 ______     Hatch

   154    M       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                            HRF        22 Sep 2015 ______     Transfer

   159    F       ????        WILD    WILD  SPRINGBOK  22 Sep 2015   NONE     Capture
                                            HRF        22 Sep 2015 ______     Transfer
Totals: 2.2.4 (8)
-------------------------------------------------------------------------------------------
===========================================================================================
TOTALS: 49.23.14 (86)
```

5. SPECIFIC INFORMATION FROM STUDBOOK PARTICIPANTS

The analysis of husbandry conditions at locations with captive-bred (F1) *H. signatus* breeding pairs (see Chapters 1 and 3) yielded the following compilation:

	Annual production of eggs and hatchlings
	Occasional production of eggs and hatchlings
	No egg production

Location	Sexes	Enclosure (l x w x h)	Average temperatures (°C)				Temperatures measured	Basking spot	Illumination	Photoperiod
			Summer		Winter					
			Retreat minimum	Retreat maximum	Retreat minimum	Retreat maximum				
A10 (old enclosure)	Housed together year-round	80 x 75 cm (open top)	20	± 30	18	± 24-25	Minimum temps measured 3-4 times during coldest period	Daily, but few hours during heat	Large window facing northwest	8-13 hrs, steps of 1 hr/month
A10 (new enclosure)	Housed together year-round	80 x 75 cm (open top)	25 (up to 30)	± 33	16-17	± 24-25	Minimum temps measured 3-4 times during coldest period	Daily, but few hours during heat	1 x 36 W fluorescent + 1 x 36 W Reptisun 10.0	8-13 hrs, steps of 1 hr/month
A55[1]	Housed together year-round	115 x 85 x 70 cm	± 24	± 33	± 15	± 24	Not measured	Daily, 1 x Solar Raptor 70 W	1 x fluorescent	9.5-12 hrs
HRF	Housed together year-round	200 x 100 cm (open top)	19.7	24.8	14.1	19.3	Every 15 minutes, Siemens LOGO!	Daily, 1 x incandescent spot 25 W and daylight	Large roof windows, supplemented with 1 x 70 W CDM when daylight is low	10-14 hrs, adjusted daily via astrotimer N29°41'30"
A08	No information received									
A67	?	120 x 60 x 60 cm	20	37	18	25	Monthly	Daily, but switched off 2 weeks in winter and 3 weeks in summer	Not present, only basking spot	8-12 hrs
A40	Housed together year-round	90 x 90 x 50 cm	?	?	?	?	Not measured	Daily, 1 x incandescent spot 60 W and 1 x incandescent spot 80 W	Not present, only basking spots; in spring and autumn at sunset daylight	One hour difference between summer and winter
A57	Housed together year-round	90 x 60 x 60 cm	20	20	15	18	From time to time with infrared thermometer	Daily, 2 x Solar Raptor, but one switched off in winter	Solar Raptor lamps serve as illumination	10-14 hrs

[1] Poor survival of hatchlings

Based on this compilation, the following findings are of importance:

- *Homopus signatus* can successfully reproduce under a range of different temperature and photoperiod regimes.

- Location A40 did not provide any significant climatic cycle. It is likely that this was a major factor explaining the lack of egg-production at this location. Location A40 has improved husbandry in 2015 (see Chapter 3).

- The lack of egg production at location A57 was less obvious, but might relate to the relatively low maximum retreat temperature in summer (e.g., resulting in little metabolic activity for vitellogenesis and spermetogenesis) or too low light intensity (illumination) away from the spotlights.

- The average maximum retreat temperature at location A67 in summer was much higher than the body temperature that *H. signatus* prefers (29-31°C) and in fact might be very close to lethal temperature. It seemed important to reduce this temperature.

Location A46

Compared to their natural habitat, *H. areolatus* enclosures in Namibia have very high temperatures. Therefore, shade cloth was installed to cover one third of the adult enclosure during the summer months. As a result, each year only 1-2 hatchlings (hatched in the enclosure) were females. Since 2011, the cloth was only used when temperatures exceeded 38°C. Consequently, more females are born (see Chapter 4). It appears that *H. areolatus* females selects nesting sites with relatively high temperatures.

Offspring born in 2012 and 2014.

Offspring born in 2013.

A problem are still soft ticks showing up from the end of October. The picture below shows an adult (female) tick on the shell of a *H. areolatus* born in 2014. We have to inspect the tortoises regularly to prevent escalation of the problem, specifically in recently hatched tortoises.

Location A66

A detailed report is presented in Appendix 1. In addition, reproductive data are as following:

						Incubation										
Date	**Time**	**Location**	**Eggs**	**Mass**	**Substrate**	**Days**	**Hrs/day**	**T (°C)**	**Hrs/day**	**T (°C)**	**RH (%)**	**Incubation results**	**Days**	**Animal**	**Mass**	**Remarks (sizes in mm)**
08-10-2009	16:00	Indoors	1	7	Jurakies	All	12	32	12	28.5	77-82	Not developed				Egg 31.0x20.0
07-07-2010	16:30	Outdoors	2	8	Vermiculite	All	12	32	12	28	77-82	1 not developed, 1 died early				Egg 31.5x21.5, embryo
14-08-2010	16:50	Outdoors	2	9.8	Vermiculite	All	12	32	12	28	77-82	1 not developed, 1 died early				Egg 32.5x22.1+29.5x21.8, embryo
01-10-2010	15:00	Indoors	2	9	Jurakies	All	24	32.6-32.9	-	-	77-82	Not developed				Egg 32.5x22.1
05-11-2010	15:15	Indoors	1	8	Jurakies	All	24	32.9-33.3	-	-	77-82	Died late				Egg 29.8x21.8, embryo
22-08-2012	16:11	Outdoors	1	12	Jurakies	All	24	32.6-32.9	-	-	77-82	Not developed				Egg 35.0x24.5
01-11-2012	14:00	Indoors	1	9	Jurakies	All	24	32.6-32.9	-	-	77-82	Not developed				Egg 31.1x22.3
10-04-2013	17:00	Indoors	3	8-9.5	Vermiculite	All	12	32	12	28	77-82	1 not developed, 2 died late				Egg 31.5x23.0+31.0x23.0+30.0x22.5
14-05-2013	15:00	Indoors	2	8-8.5	Vermiculite	All	12	32	12	28	77-82	Not developed				Egg 28.0x21.5+28.0x22.0
21-06-2013	16:00	Outdoors	2	8+9	Jurakies	All	12	32.5	12	28	77-82	Not developed				Egg 30.5x22.5+29.5x21.5
01-08-2013	12:30	Outdoors	2	-	Jurakies	All	14	32.5	10	28	77-82	1 not developed, 1 died during hatching				Egg not measured (pipped D-5)
16-09-2013	13:00	Indoors	1	-	Jurakies	All	14	32.5	10	28	77-82	Not developed				Egg not measured, egg small and round
19-10-2013	19:00	Indoors	2	8+10	Jurakies	All	14	32.5	10	28	77-82	Not developed				Egg not measured
18-11-2013	16:00	Indoors	1	9	Jurakies	All	14	32.5	10	28	77-82	Not developed				Egg not measured
08-12-2013	16:00	Indoors	1	9	Jurakies	All	14	33	10	28.5	77-82	Hatched, 26-03-2014	108	1	6	Egg not measured, hatchling 30.0x28.8x17.0
05-05-2014	17:00	Indoors	2	10	Jurakies	All	14	33	10	28.5	77-82	1 not developed, 1 died early				Egg 31.0x23.0, embryo
05-06-2014	16:00	Indoors	2	10	Jurakies	All	14	33	10	28.5	77-82	1 not developed, 1 died during hatching				Egg 31.0x23.0+29.6x24.0 (egg entirely opened)
10-07-2014	16:00	Indoors	2	8+9	Jurakies	77	14	33	10	28.5	77-82	Died early				Egg 29.9x22.8+27.6x22.5, embryo
						Rest	14	31.5	10	28	77-82	Died half-way				
09-08-2014	17:00	Outdoors	2	9+9	Jurakies	50	14	33	10	28.5	77-82	Hatched, 15-11-2014	99	1	8	Egg not measured, hatchling 31.4x30.2x16.3
						Rest	14	31.5	10	28	77-82	Hatched, 18-11-2014	102	1	6.2	Egg not measured, hatchling 29.7x29.1x16.2
14-10-2014	16:00	Indoors	3	9+11	Jurakies	67	14	32.5-33	10	28	77-82	2 not developed				Egg 30.5x23.1+28.3x23.4, fertile egg 32.7x24.1
						Rest	14	31	10	28	77-82	Hatched, 07-02-2015	117	1	5	Limb deformed (turned 180°) and many scute anomalies, euthanised by vet on 27-02-2015

Location A77

Both *H. areolatus* kept at location A77 hatched in Namibia in February 2008. In June 2011, the tortoises were transferred to location A77. Location A77 is experienced keeping and breeding various turtle genera over a period of more than 40 years. In winter, *H. areolatus* is kept in a terrarium in a *Wintergarten*. Temperatures vary with weather conditions, from 6-8°C during severe frost to 30°C on sunny days. The tortoises are well capable to deal with such temperatures, because they will occur in the wild too. Both *H. areolatus* are mature and have been raised without any problems. Although the terrarium is placed in a *Wintergarten*, the tortoises respond to weather conditions outdoors. There is little activity during clouded weather and the tortoises become active in sun.

The tortoises are fed with dandelion, chickweed, flowers and herbs. In winter, they also receive lambs lettuce, Chinese cabbage, parsley, dried herbs and hay. Therefore, it is easy to cater for them. It is interesting to note that *H. areolatus* uses its sense of smell to find food. Every 3-4 weeks, a small piece of dog food is hidden in the enclosure, after which the tortoise start to search for it immediately and readily find it. They appear to like to eat dog food.

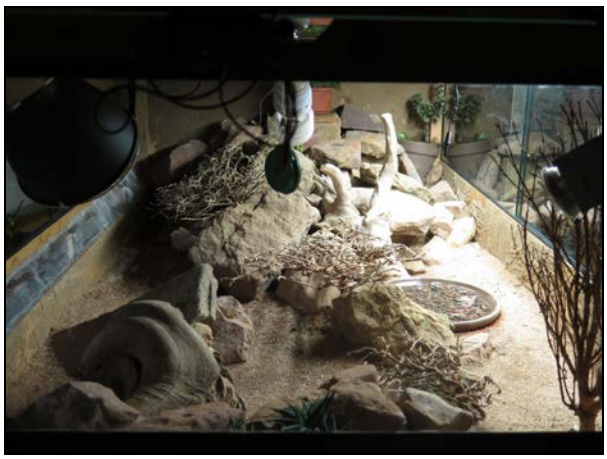
In the enclosure, there are two Bright sun lamps and 30 Watt fluorescent tubes, as well as an ultrasound humidifier. The humidifier runs three times daily. Tortoises are soaked once weekly. In winter, the terrarium is closed with glass panes.
In summer, the tortoises are transferred to an outdoor enclosure. Similar to the indoor enclosure, the outdoor enclosure is divided in two compartments to house the two males separately. This is important, or the males would attack and bite one another. Despite the fact that the males cannot be housed together, their husbandry and observing them is very enjoyable.

Die beiden Areolen Flachschildkröten sind in Namibia im Februar 2008 geschlüpft. Im Juni 2011 habe ich die Tiere erhalten. Erfahrungen über Haltung und Nachzuchten von Schildkröten verschiedener Gattungen liegen seit mehr als 40 Jahren vor.
Die Haltung der Tiere erfolgt im Winter in einem Terrarium, welches sich in einem Wintergarten befindet. In dem Wintergarten stellen sich schwankende Temperaturen ein, je nach Wetterlage können die Temperaturen bei starken Frost bis auf 6-8°C in der Nacht absinken bei sonnigem Wetter tagsüber aber auch bis auf 30°C ansteigen. Diese Temperaturschwankungen werden von den Tieren gut vertragen, da sicherlich auch in der Natur entsprechende Temperaturschwankungen auftreten. Die Tiere sind jetzt ausgewachsen und haben sich sehr gut entwickelt, es gibt keine Probleme bei der Haltung. Obwohl sich das Terrarium in einem Wintergarten befindet reagieren sie auf das Außenwetter. Bei bedecktem Himmel verstecken sie sich und bei Sonne kommen sie hervor.
Zum Fressen erhalten sie Löwenzahn, Vogelmiere, Blüten, Wiesenpflanzen im Winter auch Ackersalat, Chinakohl, Petersilie, getrocknete Kräuter, Heu. Es ist also nicht schwierig die Schildkröten mit entsprechender Nahrung zu versorgen. Interessant ist dass sie sehr gut riechen. Dies zeigt sich wenn ich ihnen alle 3-4 Wochen ein kleines Stückchen Hundetrockenfutter im Terrarium verstecke, sofort suchen sie danach und finden es auf Anhieb. Offensichtlich schmeckt es ihnen sehr gut.
Das Terrarium ist mit 2 Bright sun Lampen und 30 Watt Neonröhren, sowie einem Ultraschall Luftbefeuchter ausgestattet, dieser läuft 3xmal am Tag. Einmal in der Woche bade ich die Tiere. Im Winter wird das Terrarium mit Glasscheiben abgedeckt in der Übergangszeit bleibt es offen.

Im Sommer befinden sich die Schildkröten in einem Freiluftgehege. Da es sich um 2 männl. Tiere handelt mussten wir sowohl das Terrarium wie auch das Freilandgehege durch eine Zwischenwand abtrennen. Das ist zwar schade, lässt sich aber nicht vermeiden, da sie sonst aufeinander losgehen und sich ineinander verbeißen. Trotzdem macht die Haltung und Beobachtung der beiden *H. areolatus* viel Spaß.

Location A91

One male *H. signatus* is kept in the enclosure below.



Location A104

A first hatchling *H. signatus* was born on 16 November. The body size of the hatchling was incredibly large compared to the size of the egg. It took several days for the hatchling to hatch, after which it was placed on a wet tissue and returned to the incubator for 24 hours. After that, it

was placed in a small enclosure. The hatchling is feeding well and drinks during its weekly soaking. It is active and appears very curious.

Location A109

After studying the past annual reports of the Homopus Research Foundation and book (i.e., "A Guide to the Tortoises of Namibia" and the "Tortoises Terrapins and Turtles of Africa", I keep my *H. signatus* male in an outdoor enclosure in the summer months. This appears to work well.

Location A110

I kept my *H. signatus* male outdoors in Portugal for about three months, on a balcony facing East. Although air temperatures were pretty high, the tortoise hid most of the time. It kept eating, but after moving the tortoise back indoors, it started to eat more and was more active. Body mass increased only a few grams outdoors, but the tortoise became heavier after moving it indoors. It seems that outdoor enclosures for *H. signatus* in Portugal would need to be exposed to sun throughout the day. In that case, outdoor husbandry might be successful in late spring and summer. However, the stress from seasonally moving *H. signatus* from one enclosure to another maybe unacceptable.

The decoration of the indoor enclosure was improved based on field experience in the natural habitat of *H. signatus*.

Location HRF

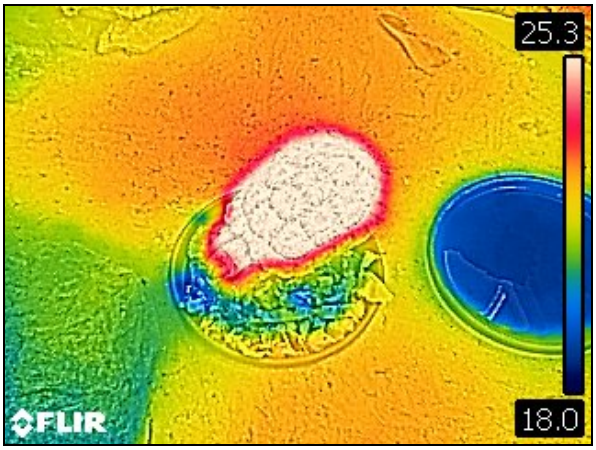
The focus in 2015 was on the acclimation of two new founders (see Paragraph 1.1) and on well-controlled incubation of eggs. Thermometers were calibrated to assure that incubation temperatures were accurate. Thermometer calibration is a service that is offered by many companies (simply Google "thermometer calibration service") and costs around 30-40 euro. It is strongly advised that studbook participants have thermometers calibrated that are used in incubators. Incubation conditions were as reported in the 2014 annual report, but it will take another two years until the gender of the hatchlings may be reliably determined.


calibration certificate

To increase insight in the thermal conditions in tortoise enclosures, a FLIR C2 thermal camera was acquired and tested. It presents full temperature ranges and underlying digital photos in one image, and is usable for tortoise enclosures as well as electrical installations controlling enclosure climates (see 2012 annual report).

Switchboard for climate control

Open *Homopus* enclosure early November at noon



Homopus signatus feeding after heating up

6. NEW PUBLICATIONS

The following overview summarises all manuscripts and articles that were submitted, accepted, published, or under review in 2015.

Subject	Submitted	Accepted	Published	Journal
Small home ranges in the Namaqualand speckled tortoise, *Homopus signatus*, in spring	2013	2014	2015	Journal of Herpetology (English)
Twenty years of husbandry and breeding of the speckled tortoise (*Homopus signatus*) in a studbook: accomplishments and challenges for the future	2015	2015	2015	The Batagur (English)
Wide variation in carapacial scute patterns in a natural population of speckled tortoises, *Homopus signatus*	2015			African Journal of Herpetology (English)

7. FINANCIAL REPORT

Most materials required for the *H. signatus* thermoregulation study (see Paragraph 1.3) were purchased in 2012, resulting in little expenses in 2015. Expenses for the collection and export of 5.5 new founders *H. signatus* were covered by the five studbook participants where the couples were housed. The transport of veterinary samples from the new founders was covered by the Homopus Research Foundation. A significant donation was received from studbook participant Martijn Kooijman.

There is a small surplus of funds that will be used in upcoming projects.

Revenues		***Expenses***	
Net amount €	**Item**	**Amount €**	**Item**
Project H. signatus 2012-2015		*Project H. signatus 2012-2015*	
389	Remaining funds 2014	65	Various research materials
200	Donations private individuals		
589	Subtotal	65	Subtotal
Collecting and exporting 5.5 founders H. signatus		*Collecting and exporting 5.5 founders H. signatus*	
1,013	Donations 5 receiving locations	128	Permits
		129	Transport
		651	Clearance
		48	Materials
		56	Various
1,013	Subtotal	1,011	Subtotal
Other		*Other*	
95	Donation V. Loehr to cover costs bank account	95	Annual costs bank accounts
0	Interest bank account	185	Transport veterinary samples founders to Italy
		340	Reservation expenses 2016
95	Subtotal	621	Subtotal
1,697	Total	1,697	Total

8. PERMIT OVERVIEW

The activities reported in this document would not have been possible without the following permits issued by the South African and Namibian authorities:

Exporting of H. areolatus

- Exporting permit 49683 (Ministry of Environment and Tourism, Namibia)
- CITES exporting permit 8830 (Ministry of Environment and Tourism, Namibia)
- CITES exporting permit 3558 (Ministry of Environment and Tourism, South Africa)
- Health certificate 13\1\4\2\ 09/2- 1676/04 (Ministry of Agriculture, Water and Rural Development, Namibia)
- Various additional permits issued to individual studbook participants (Namibia)

Collecting and exporting of H. femoralis

- Collecting permit AAA004-00010-0035 (CapeNature, South Africa)
- CITES exporting permit 58679 (Department of Environmental Affairs and Tourism, South Africa)
- Health declaration dated 17-03-06 (Department of Agriculture, South Africa)

Collecting and exporting of H. signatus

- Collecting permit 331/95 (Western Cape Nature Conservation Board, South Africa)
- Collecting permit 28/2001 (Northern Cape Nature Conservation, South Africa)
- Collecting permit 053/2015 (Northern Cape Department of Environment and Nature Conservation)
- CITES exporting permits 16579 and 281/95C (Department of Environmental Affairs and Tourism, South Africa)
- CITES exporting permit 148487 (Northern Cape Department of Environment and Nature Conservation)
- Permit to move animals/animal products 2001/10/3/A (Department of Agriculture, South Africa)

Field study on H. boulengeri

- Research permits 755/05, 43/2005 and 35/2005 (Northern Cape Nature Conservation, South Africa)

Field study on H. femoralis

- Research permit AAA-004-000185-0035
- Research permit AAA-004-00020-0028
- Research permit AAA-004-000392-0035
- Research permit AAA-004-00027-0028

Field studies on H. signatus and H. s. cafer

- Research permits 137/99, 84/99, 019/2001, 010/2001, 46/2003, 26/2003, 8/2003, 168/2003, 43/2003, 158/2003, 633/2003, 25/2003, 158/2004 and 633/2004 (Northern Cape Nature Conservation, South Africa)
- Research permits 428/2002 and 41/2002 (Western Cape Nature Conservation Board, South Africa)
- Research permits 152/2012 and 153/2012, 460/2013 and 052/2015 (Northern Cape Department of Environment and Nature Conservation, South Africa)

Appendix 1

Detailed *H. areolatus* husbandry information from location A66 (Marcel and Lydia Reck).

Haltungsbericht Homopus areolatus location A66

April bis Juni 2015

Am 13. April 2015 holte unser Sohn mit seiner Frau die Tiere bei location A54 ab. Der Zoll ging reibungslos und die Tiere kamen gut bei uns an.

Innenterrarium:
Das Terrarium vom separat gehaltenen Männchen Nr. 79, nach Weisung des Studbook sieht wie folgt aus:

Das Weibchen Nr. 81 geniesst alleine ein grösseres Gehege:


Die Tiere haben sich gut eingelebt bei uns, es gab keine Probleme. Das Verhalten war ruhig, gefressen haben sie nicht regelmässig, im Monat Juni machten sie eine Ruhepause, beide Tier haben je 10g an Gewicht abgenommen. Die Beurteilung ist allgemein schwierig, da wir die Tiere noch nicht so gut kennen. Wichtig ist eine stetige Kontrolle.

Die Einrichtung sieht wie folgt aus:
Pflanzen und Höhlen, damit sie sich gut verstecken können. Bodengrund roter Namibiasand mit Lehmanteil, da Grabfähig.

Beim Weibchen im grösseren Terri eine Silvania FL T5/865 Daylight als Tageslicht, eine X-Reptile und eine Ultra-Vitalux Lampe.
Beim Männchen im kleineren Terri ohne Ultra-Vitalux.

Man beachte, dass bei uns die Terri's alle oben und vorne offen sind, damit kein Hitzestau entsteht. Der UV- Anteil und die Lux-Werte muss man unbedingt messen können, zur genauen Einstellung der Lampen.

Aussenterrarium:
Am 3. Juni 2015 bei wunderbar warmem Wetter wurden die Tiere ins Aussenterrarium, ebenfalls getrennt, platziert.

Die Einrichtung sieht folgender Massen aus, damit in kälteren Tagen die Tiere sich aufwärmen können, ist in beiden Terrarien je ein 150 Watt Baustrahler montiert.
Ein Teil der Terrarien im Lampenbereich sind zusätzlich mit einer Glasscheibe gedeckt, damit die Tiere auswählen können, ob sie im Trocken- oder im Nassbereich sich aufhalten möchten. Ueber die ganzen Gehege ist ein selbsttragendes Drahtgeflecht montiert. Als allgemeinen Wetterschutz noch eine Noppenfolie, damit das Gehege individuell abgedeckt werden kann. Noppenfolie 1-fach lässt 75% UV durch. Bodengrund, Pflanzen und Versteck Möglichkeiten wie im Innenterrarium. Mit dieser Technik arbeiten wir über 6 Jahre, seit wir afrikanische Landschildkröten halten. Haben auch schon mehrmals im Detail darüber geschrieben.



Männchen Nr. 79



Weibchen Nr. 81


Am 14. Juni 2015 staunten wir nicht schlecht, das Weibchen fing unter den wilden Erdbeeren an zu graben und dies schon 8 Wochen nach dem Umzug zu uns. Vorsichtig wurden zwei Eier ausgegraben.


Da wir 3 Jahre nicht brüten dürfen, bewahren wir sie als Beweis im Kühlschrank bei 6°C auf.


Diese 2 Tiere machen uns sehr viel Freude auch wenn sie leider getrennt leben müssen. Wir haben einen gewissen Stolz, dass das Weibchen bereits Eier legte. Vielleicht haben wir bald das Glück, fremdes Blut zu erhalten.

Haltungsbericht Homopus areolatus location A66

Juli bis Dezember 2015

Im Juli verhielten sich die Tiere aktiv bei dem schönen Wetter. Das Highlight kam am 7. August, da legte das Weibchen wieder 2 Eier (2.Gelege) fast hätten wir es nicht bemerkt, bei einer Kontrolle bewegten sich die wilden Erdbeerenblätter in regelmässigen Abständen. Beim genauen Hinschauen, sahen wir sie schon bei Decken der Eigrube. Sie wählte dieses Mal einen Platz im Halbschatten, aber in der Nähe der Aluminiumumrandung, die als guten Wärmleiter die Wärme sehr gut in den Boden abgibt und speichert.
Nun befinden sich auch diese zwei Eier im Kühlschrank, eigentlich tut es sehr weh, wenn man bedenkt, dass es nichts geben darf.




Anfangs September, bevor wir ein paar Tage verreisten, zogen die Tiere in ihr Winterquartier,(natürlich wie immer getrennt), da es für die Betreuung und Fütterung der Tiere durch unsere Ferienablösung einfacher war.

female male

Die Tiere lebten sich wieder schnell ein wir merkten keinen Stress. Die Einrichtung wurde von beiden Tieren erkundet und gut wieder angenommen.

female male

Am 26. September 2015 hob sie die dritte Eigrube aus, legte erneut 2 Eier in den neu warm befeuchteten Bodengrund mit 32°C, die sie wie immer behutsam platzierte und wie gewohnt schön und sauber zudeckte.

Nun sind schon 6 Eier von 2015 von diesem female Nr. 81 im Kühlschrank zur Aufbewahrung.

Falls es nochmals Eier legt bis Ende Jahr, werden wir dies Nachliefern!

Das erste Paar mit female Nr. 77 das von Oktober 2009 bis Ende 2014 bei uns war, legte in dieser Zeit 35 Eier.

Unser Fazit: wir halten dieses neue Paar wie das vorherige und glauben, dass wir es soweit Richtig machen mit der allgemeinen Pflege, Haltung und Fütterung. Über unsere technische Einrichtung hatten wir ja schon mehrmals geschrieben (z.B. Marginata).

Für irgendwelche Vorschläge oder Verbesserungen sind wir aber immer offen.