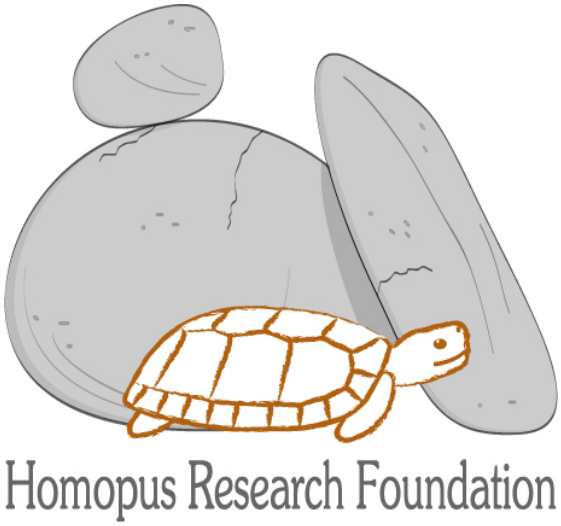
Homopus Research Foundation



Annual Report

2014

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January 2014

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1. INTRODUCTION AND ACHIEVEMENTS IN 2014

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 2014, several activities contributed to this aim. The current report presents an overview of achievements in 2014, as well as activities planned for 2015 and thereafter. Moreover, the actual studbook populations for *Homopus areolatus*, *Homopus femoralis* and *Homopus signatus* are described, focussing on changes that occurred in 2014. All previous annual reports can be found on the website of the Homopus Research Foundation.

The 2013 annual report anticipated on several results for 2014. The following table summarises these plans, with results obtained in 2014.

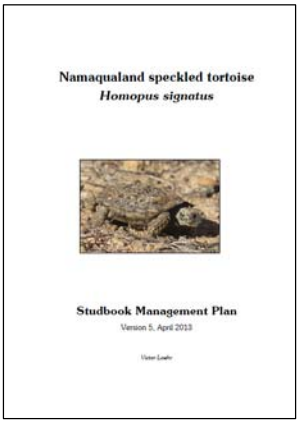
Result	**Due**
Manuscript submitted on: • Behaviour in wild *H. signatus* 2014: A draft ready for submission was prepared but not yet submitted. It will be submitted in February 2015. In addition, a published paper on husbandry and breeding of *H. areolatus* was reprinted in the newsletter of the Namibia Scientific Society. See Chapter 6.	31-12-2014
Poster on *H. signatus* prepared for display at the conference facilities of Goegap Nature Reserve 2014: The poster was completed and sent to Goegap Nature Reserve on 14 January. A compressed version is depicted in Chapter 6.	01-06-2014
Fieldwork conducted on *H. signatus* thermoregulation 2014: Fieldwork conducted in September-October. See Paragraph 1.3.	Sep-2014
Memorandum of understanding with Northern Cape Department of Environment and Nature Conservation reviewed and signed 2014: Memorandum of understanding reviewed but not signed. See Paragraph 1.1.	31-12-2014
Permit application to collect and export 5.5 wild *H. signatus* drawn up and submitted 2014: Preferably, the memorandum of understanding with the Northern Cape Department of Environment and Nature Conservation would have been signed before applying for permits. Since the signing was delayed, a permit application was submitted on 29 November.	31-12-2014
Evaluation of breeding and non-breeding *H. signatus* husbandry conditions in studbook completed 2014: A questionnaire was developed and distributed on 18 December. Some responses were received, but the analysis was postponed to 2015.	31-12-2014

Further progress that is worth listing:

- A request was received for collaboration in a study on habitat suitability modelling for *Homopus* (Zoologisches Forschungsmuseum Alexander Koenig, Germany).
- Contributions were delivered for new IUCN Red List assessments for *Homopus* spp.
- Reprint requests for *Homopus* papers were received from the Conservation Manager: Cousine Island (Seychelles) and from private individuals (Germany, South Africa).
- Most scientific papers produced by the Homopus Research Foundation were posted for download on Researchgate.
- The Homopus Research Foundation and its projects were updated in the Dutch National Academic Research and Collaborations Information System.
- Presentations were held:
    - Journey to Namaqualand. III Students Herpetological Conference, Wrocław, Poland, 13/14 December 2014.
    - Tortoises of the genus *Homopus*: overview, field research and husbandry. University of Copenhagen, Denmark, 16 November 2014.
    - Presentation about the exchange of experience on husbandry and breeding at a tortoise meeting in Andechs, Germany, 5 July 2014.
    - Meerjarige, gecontroleerde kweek van *H. signatus* (Multi-annual, controlled breeding of *H. signatus*), Zemst, Belgium, 26 June 2014 (see Appendix 1).
- Invitations were received:
    - Presenting at the 11th Quasi-annual Terrapin, Tortoise and Freshwater Turtle Meeting as a

part of the 35th Annual Symposium on Sea Turtle Biology and Conservation, Mugla, Turkey.
    - Leading a conservation workshop at a meeting of the Dutch-Belgium zoo foundation Harpij.
- Review requests were received from:
    - Salamandra
    - International Zoo Yearbook
    - African Herp News
- Information requests were received regarding:
    - cranial dimorphism and beak morphology in *Homopus* spp. (Canada);
    - research methodologies for the identification of wild-caught tortoises from photographs (Netherlands);
    - postdoc positions at the Homopus Research Foundation (China);
    - husbandry of tortoises in an existing head-starting programme for *Psammobates geometricus* (South Africa);
    - female incubation temperatures in *H. signatus* (Austria);
    - establishment of a non-profit company for tortoise conservation (South Africa);
    - identifications of tortoises on photographs (South Africa).
- Private tortoise keepers in Germany, Netherlands and South Africa asked to obtain *Homopus* spp. Some of them received *H. areolatus* or *H. signatus* in 2014.
- The Homopus Research Foundation was visited by Michael Ogle from Knoxville Zoological Gardens (USA) on 3 June.
- Photographic material was provided to several private individuals with websites on tortoises on the internet.
- A request from CapeNature (South Africa) was received to compile a photographic library of *Homopus* photographs that could host photos from other photographers.
- The website of the Homopus Research Foundation was updated with actual studbook overviews, photos and several other changes.

1.1. Long-term studbook management plan Homopus signatus



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.

Because the realisation of the studbook management plan requires efforts from the Homopus Research Foundation and the Northern Cape Department of Environment and Nature Conservation, a memorandum of understanding between these two parties was drafted in 2013. In June 2014, a message from the Department was received stating that no major problems or objections were found. However, the review process was not completed in 2014. The Department has indicated that the reason for the delay is the busy schedules of the staff responsible for the reviewing process, particularly the deputy director. In order to help the process, the Homopus Research Foundation has offered to hold a presentation about the foundation and its work at the Department's head office in Kimberley, South Africa, in September 2015.

In order for the studbook management plan to succeed, the addition of new bloodlines to the captive population is urgently required. Currently, very few combinations of F1 offspring can produce F2 offspring without inbreeding the tortoises (see Chapter 3). To prevent inbreeding, many F1 offspring are currently kept solitary. Although ideally the memorandum of understanding between the Homopus Research Foundation and the Department would have been signed before applying for permits to collect new founders in the wild, it was acknowledged that waiting longer might jeopardise the realisation of the studbook management plan. Therefore, permit applications were submitted for collecting and exporting 5.5 *H. signatus* from the wild. In addition, a permit was requested to establish the Homopus Research Foundation formally as Wildlife Facility. If the permits will be granted collecting will take place in September 2015.

1.2. Long-term studbook management plan Homopus areolatus

The studbook on *H. areolatus* does not yet have clear aims and methods. In 2013, a discussion paper was distributed among all studbook participants. The responses on the discussion paper were summarised and distributed among the participants in February 2014. However, one group of participants that keeps offspring from location A46 required more time to discuss the options and met in Andechs, Germany, in July. Subsequently, the group produced a draft strategy for the studbook that was not in line with the requirements posed by the Homopus Research Foundation (e.g., realistic aims, involving all participants, assuring that tortoises obtained under strict conditions will not be used for commercial purposes). It was agreed that representatives of the group would have a second meeting in Namibia in February 2015. After that meeting, it will be decided what will be an appropriate next step towards the studbook management plan.

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 24 September till 11 October 2014, and attended by studbook participants from Germany (Michael Hebbeler) and Poland (Mikołaj Kažmierczak). Despite a large search effort similar to efforts in previous years, only 16 live *H. signatus* were encountered, including 15 recaptures from 2013 and before. Most individuals (12 individuals) were female, with only four males. The year 2014 had an early spring and the study site was dry during the fieldwork. Tortoises had good body conditions and it appeared that many individuals were hiding to wait for future rainfall and plant growth. Active females may have carried shelled eggs.

From the eight females that were equipped with transmitters and iButtons (fitted in 2013), four were recaptured using telemetry. Three others were found opportunistically while their transmitters were failing. Two of the transmittered females were dead. All equipment was removed from recaptured females. One female is still missing and may have a failing transmitter too. It will be attempted to locate this individual in September-October 2015.

Only two of 10 males with iButtons were recaptured and released after removing their iButtons. One additional iButton that a male had lost in 2012-2013 was found. Although this study would end in 2014, it will be extended one study period in September-October 2015 because of the large number of tortoises that still carries research equipment. Consequently, data processing and writing of a manuscript will be completed in 2016.

The 15 tortoise models left in the field in 2013 were still in position, but one batch of three models was severely damaged by people and the data were lost. All models were removed from the study site.

2. PLANS FOR 2015 AND THEREAFTER

The table below lists results anticipated for 2015 and thereafter, with progress indicated:

Result	Due	Current status
Manuscripts submitted on:		
• Scute abnormalities in wild *H. signatus* '00-'04	31-12-2015	Data available
• Thermoregulation in wild *H. signatus* '12-'15	31-12-2016	Data in part available
• Population dynamics in *H. signatus* '00-'15	31-12-2017	Data in part available
Fieldwork conducted on *H. signatus* thermoregulation	Sep-2015	Applied for permit
Memorandum of understanding with Northern Cape Department of Environment and Nature Conservation reviewed and signed	31-12-2015	Draft memorandum of understanding under review by department.
5.5 *H. signatus* collected in the wild and added to the captive population[1]	31-10-2015	Applied for permits
Evaluation of breeding and non-breeding *H. signatus* husbandry conditions in studbook completed	01-07-2015	Questionnaire distributed among participants.
Studbook management plan *H. areolatus* drafted	31-12-2015	Responses from participants on discussion paper summarised.
Presentation and discussion held on in situ and ex situ conservation of *Homopus* (workshop Dutch-Belgium zoo foundation Harpij)	13-05-2015	Not yet started
Habitat of *Homopus* spp. visited by four European studbook participants	Jan-2015	Not yet started

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

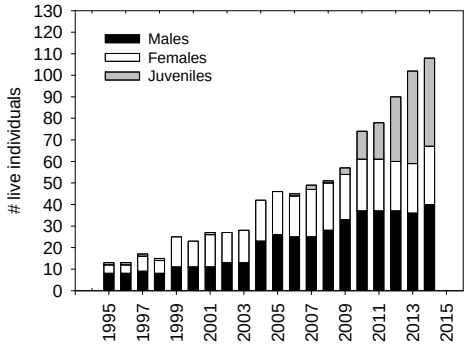
3. STUDBOOK SUMMARIES

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 2014, only location A45 was unresponsive, for the second year in a row.

Homopus areolatus

Live specimens on 1 January 2014: 101 (excluding 6 specimens lost to follow-up)
Number of locations on 1 January 2014: 26 (7 countries, 2 zoos; excluding 2 locations lost to follow-up)
New registrations: 0
Births: 9, at 3 locations
Deaths: 2, at 1 location
Live specimens on 31 December 2014: 108 (excluding 6 specimens lost to follow-up)
Number of locations on 31 December 2014: 33 (7 countries, 2 zoos; excluding 2 locations lost to follow-up)
Interpretation of changes:

With the exception of location A44, all locations that

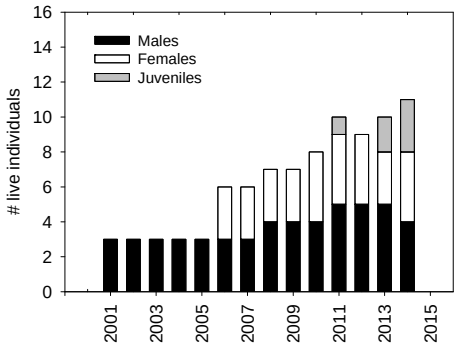


produced offspring in 2013 continued to do so in 2014. In addition, location A54 produced eggs that did not hatch. It is likely that some offspring that were produced in 2014 (e.g., at location A56) have not yet been registered in the studbook, pending the outcome of the discussion on the studbook management plan for *H. areolatus* (see Paragraph 1.2). One hatchling that was born and registered in 2014 died in the same year due to unknown causes. At the same location, a hatchling from 2013 died. The husbandry protocol for hatchlings was improved (e.g., diligence about a varied diet, adding supplemental calcium and soakings) and the two remaining hatchling appear to do well.

The number of tortoises and locations in this studbook kept increasing. Relatively uncoordinated growth of the population, as is currently the case in the absence of a studbook management plan, may have its drawback on the genetic quality of the captive population. For example, 33% of the hatchlings born in 2014, and 38% of the ones that survived, are inbred. Moreover, bloodline 58 x MULT4 (and 16 x 17) remains heavily over-represented, which is worrisome in light of the potential of the captive population to produce genetically healthy offspring in the future. The studbook management plan that is currently in preparation (see Paragraph 1.2) may address these issues.

Homopus femoralis

Live specimens on 1 January 2014: 10
Number of locations on 1 January 2014: 3 (2 countries)
New registrations: 0
Births: 3
Deaths: 2
Live specimens on 31 December 2014: 11
Number of locations on 31 December 2014: 3 (2 countries)
Interpretation of changes:

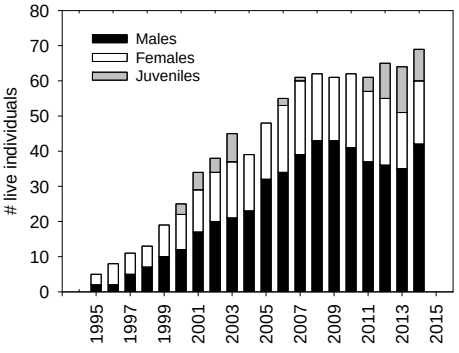


The number of locations that bred *H. femoralis* decreased from two to one. Location HRF produced, for the first time, what appears the maximum obtainable annual reproduction for a female, consisting of three eggs, all of which hatched. Unfortunately, the loss of an adult female at location A08 in 2013 was followed by the loss of an adult male and the only hatchling born at this location. There are no obvious causes for the 2014 mortality and a post-mortem could not be conducted. Perhaps outdoor husbandry during Dutch summers, in combination with relatively low temperatures indoors in winter, caused a gradual decline in the physical condition of the tortoises. However, this is speculation and appears not in line with the cause of death of the female in 2013 (i.e., metabolic disorder).

Due to the long-term lack of breeding at location A10, a captive-bred male was transferred from location HRF to location A10. The combination of this male with female 5 is not desirable from a genetic point of view, but for the current, fragile captive population increasing breeding results and gathering reproductive data is more important than genetic management. A second transfer considered a captive-bred male from location HRF to a new location. This transfer was based on a formal agreement (Appendix 2) that ensures that the tortoise will remain available for scientific study, and will not be used commercially.

Homopus signatus

Live specimens on 1 January 2014: 64 (excluding 16 specimens lost to follow-up)
Number of locations on 1 January 2014: 35 (10 countries, 2 zoos; excluding 1 location lost to follow-up)
New registrations: 0
Births: 9, at 3 location
Deaths: 4, at 2 locations
Live specimens on 31 December 2014: 69 (excluding 16 specimens lost to follow-up)
Number of locations on 31 December 2014: 35 (10 countries, 2 zoos; excluding 1 location lost to follow-up)
Interpretation of changes:



Breeding results improved compared to 2013. Three

offspring born from wild-caught founders increased the potential of the captive population to, eventually, produce genetically healthy F2 hatchlings. Location HRF continued its breeding results after lack of breeding in 2013. Three final hatchlings born at a third location (A55) died at a young age, similar to the 2013 result for this location. One hatchling died in absence of the keeper during holidays and a second hatchling was found upside down under the basking spot. The third hatchling died without an apparent cause. Husbandry conditions of all hatchlings were similar to those for three earlier, surviving hatchlings.

An additional loss for the population was the death of an adult captive-bred female. This female died shortly after a transfer from a location that had lost additional *H. signatus* in 2011-2012. Although the cause of death is not known, it is likely related to the previous location, which no longer keeps *H. signatus*. One male and one female housed at location PRAHA (unresponsive in 2012-2013) turned out to have died in 2011.

The captive population contains six locations with mature, genetically unrelated captive-bred tortoise couples, but their reproductive success is relatively poor. The questionnaire and subsequent analysis (see Chapters 1 and 2) will hopefully improve breeding results at these locations. In 2014, location A67 produced five eggs that did not develop and location A104 produced two eggs that may hatch in 2015. New genetically unrelated captive-bred couples continue to be formed as the two surviving wild-caught couples in the studbook produce offspring. To fortify the genetic information from female 60 (lost to follow-up) in the population, offspring from this female produced in 2013 will be combined with offspring from bloodline 35 x 36.

In the second generation, there are few opportunities to form genetically unrelated couples, due to the small number of bloodlines in the captive population. Consequently, many F2 individuals are kept solitarily. The permit applications submitted in 2014 (see Paragraph 1.1) will help to, eventually, produce mates for these individuals.

Another challenge for the studbook is the skewed sex ratio. Most hatchlings continue to be males. Location A10 currently breeds a considerable percentage females, and location HRF will experiment with a new incubation regime in 2015 (see Chapter 5). It is important that locations that incubate eggs monitor incubation conditions and exchange information to improve the sex ratio of the offspring.

The population remains relatively fragile due to the small number of adult females and due to the small number of offspring remaining from deceased founders. For these individuals, the recommendation in the previous annual report remains in place; risks (e.g., changing enclosures, implementing untested husbandry methods) should be minimised as much as possible.

4. ACTUAL STUDBOOK OVERVIEWS

Homopus areolatus: Total 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. ltf means that a specimen is lost to follow-up.

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
A03								
1	F	????	WILD	WILD	KRAAIFONT	~ Jul 1997	_____	Transfer
					HRF	21 Nov 1997	I	Transfer
					A03	14 Dec 1997	HZ0525	Transfer
						9 Nov 1998		Death
2	F	????	WILD	WILD	KRAAIFONT	~ Jul 1997	_____	Transfer
					HRF	21 Nov 1997	II	Transfer
					A03	14 Dec 1997	_____	Transfer
						13 Aug 1999		Death
6	M	????	MULT1	MULT2	KRAAIFONT	????	_____	Hatch
					HRF	21 Nov 1997	VI	Transfer
					A03	14 Apr 2001	HZ0738	Loan to
						~12 Sep 2007		Death
7	M	????	WILD	WILD	ROTTERDAM	????	_____	Transfer
					A03	????	HZ0457	Loan to
						5 Jul 1998		Death
32	F	????	WILD	WILD	A29	~ Jun 2000	_____	Transfer
					A03	15 Jun 2001	HZ0752	Transfer
						16 May 2002		Death

33	F	????	WILD	WILD	LONDON RP	????	______	Transfer
					A03	23 Dec 2001	HZ0793	Transfer
						28 Jul 2003		Death
45	M	14 Dec 1999	58	UNK5	A46	14 Dec 1999	______	Hatch
					HRF	4 Nov 2004	V3	Transfer
					A03	5 Nov 2004	HZ0989	Loan to
						25 Mar 2006		Death

Totals: 3.4.0 (7)

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
117	?	6 Sep 2010	5	4	A10	6 Sep 2010	______	Hatch
					HRF	6 Sep 2010	______	Ownership
					A10	4 Dec 2010		Death

Totals: 1.1.1 (3)

A12

8	F	????	WILD	WILD	KRAAIFONT	????	______	Transfer
					A12	~16 Sep 1999	A1	Transfer
						19 Mar 2000		Death
9	F	????	WILD	WILD	A13	????	______	Transfer
					A12	~16 Sep 1999	BLACKY	Transfer
						30 Apr 2000		Death
13	M	????	WILD	WILD	KRAAIFONT	????	______	Transfer
					A12	~16 Sep 1999	A7	Transfer
						15 Feb 2000		Death
15	F	????	WILD	WILD	A13	????	______	Transfer
					A12	~16 Sep 1999	A4	Transfer
						15 Feb 2000		Death
19	?	5 Feb 2000	MULT3	11	A12	5 Feb 2000	______	Hatch
						5 Feb 2000		Death
20	?	16 Mar 2000	MULT3	11	A12	16 Mar 2000	______	Hatch
						16 Mar 2000		Death
21	?	16 Mar 2000	MULT3	11	A12	16 Mar 2000	______	Hatch
						16 Mar 2000		Death

Totals: 1.3.3 (7)

A16

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	______	Hatch
						30 Mar 2003		Death
38	F	5 Apr 2003	16	17	A16	5 Apr 2003	______	Hatch
						28 Nov 2006		Death
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
61	?	17 Dec 2006	16	17	A16	17 Dec 2006	______	Hatch
						~ 9 May 2007		Death

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

Totals: 8.8.11 (27)

A26

27	M	????	WILD	WILD	KRAAIFONT	????			Transfer
					A26	9 Jul 2001		ltf	Transfer
28	F	????	WILD	WILD	KRAAIFONT	????			Transfer
					A26	9 Jul 2001		ltf	Transfer

Totals: 1.1.0 (2)

A27

29	M	????	WILD	WILD	KRAAIFONT	????			Transfer
					A27	9 Jul 2001			Transfer
						9 Nov 2001			Death
30	F	????	WILD	WILD	KRAAIFONT	????			Transfer
					A27	9 Jul 2001			Transfer
						11 Nov 2001			Death

Totals: 1.1.0 (2)

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

Totals: 2.4.0 (6)

A42

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

Totals: 1.0.0 (1)

A43

12	F	????	WILD	WILD	KRAAIFONT	????			Transfer
					A12	~16 Sep 1999	A6		Transfer
					A43	~ May 2004		ltf	Loan to
14	F	????	WILD	WILD	KRAAIFONT	????			Transfer
					A12	16 Sep 1999	BABY		Transfer
					A43	~ May 2004		ltf	Loan to

Totals: 0.2.0 (2)

A44									
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
						14 Feb 2012		Death
41	M	????	WILD	WILD	WUPPERTAL	28 Mar 1991	91586B	Transfer
					A44	27 Aug 2010	H.BERT	Loan to
						24 Oct 2013		Death
113	M	30 Mar 2010	47	37	A44	30 Mar 2010		Hatch
					HRF	30 Mar 2010		Ownership
					A44	20 Aug 2010		Death
114	M	30 Mar 2010	47	37	A44	30 Mar 2010		Hatch
					HRF	30 Mar 2010		Ownership
					A44	26 Aug 2010		Death
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
148	M	27 Apr 2013	94	62	A44	27 Apr 2013		Hatch
						29 Apr 2013		Death
149	?	27 Apr 2013	94	62	A44	27 Apr 2013		Hatch
					HRF	27 Apr 2013		Ownership
150	M	27 Apr 2013	94	62	A44	27 Apr 2013		Hatch
						29 Apr 2013		Death
Totals: 5.1.4 (10)									
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
34	M	30 Jun 2002	16	17	A16	30 Jun 2002		Hatch
					A45	27 Feb 2005		Loan to
53	M	12 Jun 2005	34	25	A45	12 Jun 2005		Hatch
Totals: 2.1.0 (3)									
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
100	?	3 Feb 2010	58	MULT4	A46	3 Feb 2010		Hatch
						25 Sep 2010		Death
103	?	3 Apr 2010	58	MULT4	A46	3 Apr 2010		Hatch
						18 Sep 2010		Death
104	?	3 Mar 2010	58	MULT4	A46	3 Mar 2010		Hatch
						13 May 2010		Death
106	?	9 Apr 2010	58	MULT4	A46	9 Apr 2010		Hatch
						16 Sep 2010		Death
123	?	23 Jan 2012	58	MULT4	A46	23 Jan 2012		Hatch
124	?	24 Jan 2012	58	MULT4	A46	24 Jan 2012		Hatch
125	?	31 Jan 2012	58	MULT4	A46	31 Jan 2012		Hatch
126	?	1 Feb 2012	58	MULT4	A46	1 Feb 2012		Hatch
127	?	2 Feb 2012	58	MULT4	A46	2 Feb 2012		Hatch
128	?	3 Feb 2012	58	MULT4	A46	3 Feb 2012		Hatch
129	?	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

Totals: 1.2.21 (24)

A48

47	M	~ Dec 1993	UNK3	UNK4	A47	~ Dec 1993		Hatch
					A48	~ 2000		Transfer
					A44	21 Nov 2004	HUGO	Transfer
					A48	19 Jun 2014		Transfer
90	M	3 Feb 2009	47	37	A44	3 Feb 2009		Hatch
					A48	3 Feb 2009		Ownership
						10 Feb 2009		Transfer
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: 3.0.1 (4)

A54

79	M	~15 Mar 2007	58	MULT4	A46	~15 Mar 2007		Hatch
					A54	~15 Jun 2008		Transfer
80	?	~15 Mar 2007	58	MULT4	A46	~15 Mar 2007		Hatch
					A54	~15 Jun 2008		Transfer
						15 Oct 2008		Death
81	F	~15 Mar 2007	58	MULT4	A46	~15 Mar 2007		Hatch
					A54	~15 Jun 2008		Loan to
					HRF	15 Jun 2008		Ownership
82	F	~15 Mar 2007	58	MULT4	A46	~15 Mar 2007		Hatch
					A54	~15 Jun 2008		Loan to
					HRF	15 Jun 2008		Ownership
83	?	~15 Mar 2007	58	MULT4	A46	~15 Mar 2007		Hatch
					A54	~15 Jun 2008		Transfer
						15 Oct 2008		Death

Totals: 1.2.2 (5)

A56

67	F	8 Apr 2004	58	MULT4	A46	8 Apr 2004		Hatch
					A56	~15 Jun 2008		Transfer
68	M	8 Apr 2004	58	MULT4	A46	8 Apr 2004		Hatch
					A56	~15 Jun 2008		Transfer
					A66	18 Sep 2009		Transfer
					A56	29 Dec 2014		Transfer
70	F	14 Mar 2004	58	MULT4	A46	14 Mar 2004		Hatch
					A56	~15 Jun 2008		Transfer
						8 May 2009		Death
75	M	6 Jan 2004	58	59	A46	6 Jan 2004		Hatch
					A56	~15 Jun 2008		Transfer
76	M	11 Jan 2004	58	59	A46	11 Jan 2004		Hatch
					A56	~15 Jun 2008		Transfer
77	F	14 Feb 2005	58	MULT4	A46	14 Feb 2005		Hatch
					A56	~15 Jun 2008		Transfer
					A66	18 Sep 2009		Transfer
					A56	29 Dec 2014		Transfer
78	F	23 Mar 2005	58	MULT4	A46	23 Mar 2005		Hatch
					A56	~15 Jun 2008		Transfer

89	M	6 Feb 2009	58	MULT4	A46	6 Feb 2009		Hatch
					A56	23 May 2011		Transfer
					A66	9 Sep 2011		Transfer
					A56	29 Dec 2014		Transfer
92	M	~ 7 Mar 2009	58	MULT4	A46	~ 7 Mar 2009		Hatch
					A56	23 May 2011		Transfer
					A66	9 Sep 2011		Transfer
					A56	29 Dec 2014		Transfer
99	?	17 Feb 2010	75	67	A56	17 Feb 2010		Hatch
154	?	24 Mar 2014	68	77	A66	24 Mar 2014		Hatch
					A56	29 Dec 2014		Transfer
155	?	15 Nov 2014	68	77	A66	15 Nov 2014		Hatch
					A56	29 Dec 2014		Transfer
156	?	18 Nov 2014	68	77	A66	18 Nov 2014		Hatch
					A56	29 Dec 2014		Transfer

Totals: 5.4.4 (13)

A70

110	?	8 Mar 2010	47	37	A44	8 Mar 2010		Hatch
					HRF	8 Mar 2010		Ownership
					A70	5 Sep 2010		Loan to
112	?	30 Mar 2010	47	37	A44	30 Mar 2010		Hatch
					HRF	30 Mar 2010		Ownership
					A70	5 Sep 2010		Loan to

Totals: 0.0.2 (2)

A73

69	M	~22 Apr 2004	58	MULT4	A46	~22 Apr 2004		Hatch
					A56	~21 May 2006		Transfer
					A73	19 Jun 2010		Transfer
71	F	~ 6 Mar 2004	58	MULT4	A46	~ 6 Mar 2004		Hatch
					A56	~21 May 2006		Transfer
					A73	19 Jun 2010		Transfer

Totals: 1.1.0 (2)

A74

74	M	~11 Feb 2004	58	MULT4	A46	~11 Feb 2004		Hatch
					A56	~21 May 2006		Transfer
					A74	~ Mar 2009	ltf	Transfer

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)

A86

72	M	14 Mar 2004	58	MULT4	A46	14 Mar 2004		Hatch
					A56	~21 May 2006		Transfer
					A86	29 Apr 2012		Transfer
98	F	11 Feb 2010	58	MULT4	A46	11 Feb 2010		Hatch
					A87	~ 1 Jun 2012		Transfer
					A86	2 Apr 2014		Transfer

Totals: 1.1.1 (3)

A87

97	M	27 Jan 2010	75	67	A56	27 Jan 2010		Hatch
					A87	11 Jun 2011		Transfer
105	F	~ 3 Apr 2010	58	MULT4	A46	~ 3 Apr 2010		Hatch
					A87	~ 1 Jun 2012		Transfer
119	F	~20 Jan 2011	58	MULT4	A46	~20 Jan 2011		Hatch
					A87	~ 1 Jun 2012		Transfer
120	F	~21 Jan 2011	58	MULT4	A46	~21 Jan 2011		Hatch
					A87	~ 1 Jun 2012		Transfer

Totals: 1.3.0 (4)

```
A88
    87    M   ~25 Feb 2008      58   MULT4  A46       ~25 Feb 2008 ______     Hatch
                                            A56        23 May 2011 ______     Transfer
                                            A88         ~ Apr 2012 ______     Transfer

    91    M    12 Feb 2009      58   MULT4  A46        12 Feb 2009 ______     Hatch
                                            A56        23 May 2011 ______     Transfer
                                            A88         6 Apr 2012 ______     Transfer
Totals: 2.0.0 (2)
-------------------------------------------------------------------------------------

A97
    86    M   ~ 7 Feb 2008      58   MULT4  A46        ~ 7 Feb 2008 ______     Hatch
                                            A56        23 May 2011 ______     Loan to
                                            A66         9 Sep 2011 ______     Loan to
                                            A97        15 Sep 2013 ______     Transfer
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A98
    88    ?     5 Feb 2009      58   MULT4  A46         5 Feb 2009 ______     Hatch
                                            A56        23 May 2011 ______     Loan to
                                            A87        23 Jul 2011 ______     Loan to
                                            A98         9 Mar 2013 ______     Transfer
Totals: 0.0.1 (1)
-------------------------------------------------------------------------------------

A99
    95    M   ~15 Jan 2010      58   MULT4  A46       ~15 Jan 2010 ______     Hatch
                                            A89        ~ 1 Jun 2012 ______     Loan to
                                            A99         27 Jul 2013 ______     Transfer
   101    ?   ~12 Feb 2010      58   MULT4  A46       ~12 Feb 2010 ______     Hatch
                                            A89        ~ 1 Jun 2012 ______     Loan to
                                            A99       ~27 Jul 2013 ______     Transfer
                                                        7 Aug 2013 ______ ltf
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A100
    96    M   ~18 Jan 2010      58   MULT4  A46       ~18 Jan 2010 ______     Hatch
                                            A89        ~ 1 Jun 2012 ______     Loan to
                                            A100      ~13 Jul 2013 ______     Transfer
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A101
   102    M   ~24 Feb 2010      58   MULT4  A46       ~24 Feb 2010 ______     Hatch
                                            A89        ~ 1 Jun 2012 ______     Loan to
                                            A101      ~12 Jul 2013 ______     Transfer
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A102
   118    M    13 Nov 2010      75      67  A56        13 Nov 2010 ______     Hatch
                                            A102      ~22 Nov 2013 ______     Transfer
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A107
   121    M   ~ 2 Feb 2011      58   MULT4  A46        ~ 2 Feb 2011 ______     Hatch
                                            A87        ~ 1 Jun 2012 ______     Loan to
                                            A107      ~19 May 2014 ______     Transfer
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

A108
    73    M    14 Mar 2004      58   MULT4  A46        14 Mar 2004 ______     Hatch
                                            A56        21 May 2006 ______     Loan to
                                            A96        22 Nov 2013 ______     Transfer
                                            A108       29 Nov 2014 ______     Transfer
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------

HRF - Homopus Research Foundation
     3    ?       ????       MULT1   MULT2  KRAAIFONT     ????       ______     Hatch
                                            HRF        21 Nov 1997    III     Transfer
                                                       29 Oct 1999            Death

    26    ?    15 Oct 2001       5       4  HRF        15 Oct 2001   IV-2     Hatch
                                                       26 Apr 2002            Death

    31    ?    11 Nov 2001       5       4  HRF        11 Nov 2001 ______     Hatch
                                                       11 Nov 2001            Death

    36    ?    12 Oct 2002       5       4  HRF        12 Oct 2002 ______     Hatch
                                                       12 Oct 2002            Death
Totals: 0.0.4 (4)
-------------------------------------------------------------------------------------
```

```
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

   151    ?     2 Jun 2013      10      11  TCBCC       2 May 2013    ______    Hatch
                                            4 Mar 2014                          Death

   158    ?    28 Aug 2013      10      11  TCBCC      28 Aug 2013    ______    Hatch
                                           31 Dec 2013                          Death

   159    ?    24 Mar 2014      10      11  TCBCC      24 Mar 2014    ______    Hatch
                                           10 Aug 2014                          Death

   160    ?    11 May 2014      10      11  TCBCC      11 May 2014    ______    Hatch

   161    ?    30 Jun 2014      10      11  TCBCC      30 Jun 2014    ______    Hatch
Totals: 1.1.5 (7)
-------------------------------------------------------------------------------------------

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

    42    F    22 Feb 1999      58   MULT4  A46        22 Feb 1999    ______    Hatch
                                            HRF         4 Nov 2004    NOMARK    Transfer
                                            WUPPERTAL   9 Nov 2004    91586C    Loan to
                                           14 Apr 2005                          Death

    43    F    21 Dec 1999      58   MULT4  A46        21 Dec 1999    ______    Hatch
                                            HRF         4 Nov 2004       CR1    Transfer
                                            WUPPERTAL   9 Nov 2004    91586D    Loan to
                                           26 Mar 2005                          Death

    44    F    20 Dec 2001      58   MULT4  A46        20 Dec 2001    ______    Hatch
                                            HRF         4 Nov 2004       CL2    Transfer
                                            WUPPERTAL   9 Nov 2004    91586E    Loan to
                                            4 Nov 2005                          Death
Totals: 2.4.0 (6)
-------------------------------------------------------------------------------------------
===========================================================================================
TOTALS: 53.44.60 (157)
```

Homopus femoralis: Total studbook population.

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

A08
     1    M       ????        WILD    WILD  A28         ~ Jan 2001    ______    Transfer
                                            HRF        23 Dec 2001         I    Loan to
                                            A08        17 Apr 2002    ______    Loan to
                                                        ~ Oct 2014              Death

     6    F       ????        WILD    WILD  BEAUF W    16 Mar 2006      NONE    Capture
                                            HRF        19 Mar 2006    ______    Transfer
                                            A08         2 Apr 2006    ______    Loan to
                                           11 Mar 2013                          Death

    11    ?     1 Apr 2013       1       6  A08         1 Apr 2013    ______    Hatch
                                            HRF         1 Apr 2013    ______    Ownership
                                            A08         ~ Oct 2014              Death
Totals: 1.1.1 (3)
-------------------------------------------------------------------------------------------

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
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

     9    ?    26 May 2011       3       4  HRF        26 May 2011 ______     Hatch
                                                       28 Dec 2012            Death

    10    F    28 May 2011       3       4  HRF        28 May 2011 ______     Hatch

    12    F    12 Jul 2013       3       4  HRF        12 Jul 2013 ______     Hatch

    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
Totals: 1.3.4 (8)
-------------------------------------------------------------------------------------
=====================================================================================
TOTALS: 5.5.5 (15)
```

Homopus signatus: Total 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. ltf means that a specimen is lost to follow-up. Specimen number 95 is inbred and not available for further breeding.

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

A07
   103    M    10 Aug 2008      35      36  A07         10 Aug 2008 ______     Hatch
                                            HRF         10 Aug 2008 ______     Ownership
                                            A07         27 Feb 2009            Death

   108    ?   ~27 Sep 2009      35      36  A07        ~27 Sep 2009 ______     Hatch
                                            HRF        ~27 Sep 2009 ______     Ownership
                                            A07        ~15 Dec 2009            Death

   116    ?    12 Aug 2010      35      36  A07         12 Aug 2010 ______     Hatch
                                            HRF         12 Aug 2010 ______     Ownership
                                            A07         16 Nov 2010            Death
Totals: 1.0.2 (3)
-------------------------------------------------------------------------------------

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

   101    ?    10 Nov 2008      41      42  A08         10 Nov 2008 ______     Hatch
                                            HRF         10 Nov 2008 ______     Ownership
                                            A08        ~24 Nov 2008            Death
Totals: 2.1.1 (4)
-------------------------------------------------------------------------------------
```

```
A10
     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
                                                          5 Sep 2009            Death

    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

    80    ?    10 Sep 2006      44       7  A10        10 Sep 2006 ______     Hatch
                                              HRF        10 Sep 2006 ______     Ownership
                                              A10         1 Mar 2007            Death

    81    ?     3 Sep 2006      44       7  A10         3 Sep 2006 ______     Hatch
                                              HRF         3 Sep 2006 ______     Ownership
                                              A10         8 Apr 2008            Death

   130    F     9 Jul 2013      35      36  A10         9 Jul 2013 ______     Hatch
                                              HRF         9 Jul 2013 ______     Ownership

   131    M     4 Oct 2013      35      36  A10         4 Oct 2013 ______     Hatch
                                              HRF         4 Oct 2013 ______     Ownership

   132    F    23 Oct 2013      35      36  A10       ~23 Oct 2013 ______     Hatch
                                              HRF        23 Oct 2013 ______     Ownership

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

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

   139    ?     1 Sep 2014      35      36  A10         1 Sep 2014 ______     Hatch
                                              HRF         1 Sep 2014 ______     Ownership
Totals: 3.3.5 (11)
-------------------------------------------------------------------------------------

A12
    45    ?     ~ Jun 2002   MULT1      20  A12         ~ Jun 2002 ______     Hatch
                                                        ~ Jun 2002            Death

    46    ?     ~ Jun 2002   MULT1      20  A12         ~ Jun 2002 ______     Hatch
                                                        ~ Jun 2002            Death

    48    ?     ~ Jul 2002   MULT1      20  A12         ~ Jul 2002 ______     Hatch
                                                        ~ Jul 2002            Death

    49    ?     ~ Jul 2002   MULT1      20  A12         ~ Jul 2002 ______     Hatch
                                                        ~ Jul 2002            Death
Totals: 0.0.4 (4)
-------------------------------------------------------------------------------------

A16
    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

    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

    97    F    15 Sep 2007      35      36  A07        15 Sep 2007 ______     Hatch
                                              HRF        15 Sep 2007 ______     Ownership
                                              A16        14 Mar 2010 ______     Loan to
                                                         6 Apr 2013            Death
Totals: 2.1.0 (3)
-------------------------------------------------------------------------------------

A18
    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
                                                        17 Mar 2013             Death

    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: 1.1.0 (2)
-------------------------------------------------------------------------------------
```

A25									
3	F	????	WILD	WILD	SPRINGBOK	26 Sep 1995	NONE	Capture
					HRF	30 Sep 1995	III	Transfer
					A25	12 Jun 2004		Loan to
						22 Aug 2008		Death
Totals: 0.1.0 (1)									
A31									
22	M	19 Jun 2000	1	2	HRF	19 Jun 2000	II-7	Hatch
					A31	6 May 2002		Loan to
						14 Sep 2002		Death
29	?	15 Jul 2001	1	3	HRF	15 Jul 2001	III-9	Hatch
					A31	6 May 2002		Loan to
						14 Aug 2002		Death
Totals: 1.0.1 (2)									
A33									
63	M	6 Jul 2004	35	36	A07	6 Jul 2004		Hatch
					HRF	6 Jul 2004		Ownership
					A51	14 Aug 2006		Loan to
					A33	30 Dec 2007		Loan to
						12 Nov 2011		Death
66	F	6 Aug 2004	13	5	HRF	6 Aug 2004	040806	Hatch
					A51	2 Jun 2006		Loan to
					A33	30 Dec 2007		Loan to
						1 Apr 2012		Death
Totals: 1.1.0 (2)									
A35									
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
						~ Jul 2006		Death
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
						~ 1 Apr 2007		Death
Totals: 2.0.0 (2)									
A36									
12	M	21 Nov 1997	1	2	HRF	21 Nov 1997	II-4	Hatch
					A07	22 Nov 1998		Loan to
					A18	14 Dec 2001		Loan to
					A31	6 May 2002		Loan to
					A36	8 Dec 2002		Loan to
						20 Oct 2003		Death
Totals: 1.0.0 (1)									
A37									
33	M	19 Aug 2001	1	3	HRF	19 Aug 2001	III-10	Hatch
					A31	6 May 2002		Loan to
					A37	11 Dec 2002		Loan to
						26 Dec 2003		Death
60	F	????	WILD	WILD	UNKNOWN	????	NONE	Capture
					A37	~15 Mar 2003		ltf Transfer
61	M	7 Oct 2003	WILD	60	A37	7 Oct 2003		Hatch
						18 Dec 2011		ltf Transfer
62	F	5 Jun 2004	WILD	60	A37	5 Jun 2004		Hatch
						18 Dec 2011		ltf Transfer
67	M	5 Aug 2004	WILD	60	A37	5 Aug 2004		Hatch
						18 Dec 2011		ltf Transfer
83	?	~15 Jan 2006	25	60	A37	~15 Jan 2006		Hatch
						~15 Jan 2006		Death
84	?	~15 Feb 2006	25	60	A37	~15 Feb 2006		Hatch
						~15 May 2006		Death
85	?	~15 Mar 2006	25	60	A37	~15 Mar 2006		Hatch
						~20 Mar 2006		Death
86	M	~20 Apr 2006	25	60	A37	~20 Apr 2006		Hatch
87	M	~15 Oct 2005	25	60	A37	~15 Oct 2005		Hatch
89	M	18 Jan 2007	25	60	A37	18 Jan 2007		Hatch

```
    92    M    10 Aug 2007      25      60  A37        10 Aug 2007 ______     Hatch
                                            HRF       ~10 Aug 2007 ______     Ownership

    98    M    29 Dec 2007      25      60  A37        29 Dec 2007 ______     Hatch
                                                        7 May 2012 ______     Death
Totals: 8.2.3 (13)
-------------------------------------------------------------------------------------

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

    55    ?     3 Sep 2003       1       2  HRF         3 Sep 2003  II-14     Hatch
                                            A42         7 Nov 2003 ______     Loan to
                                                       13 Mar 2004            Death
Totals: 1.0.1 (2)
-------------------------------------------------------------------------------------

A43
    17    M       ????        WILD    WILD  A12         8 Sep 1999 ______     Transfer
                                            A43         ~ May 2004 ______ ltf Loan to

    18    M       ????        WILD    WILD  SPRINGBOK ~16 Sep 1999   NONE     Capture
                                            A12       ~16 Sep 1999  VIEJO     Transfer
                                            A43         ~ May 2004 ______ ltf Loan to

    19    M       ????        WILD    WILD  SPRINGBOK ~16 Sep 1999   NONE     Capture
                                            A12       ~16 Sep 1999 STUMPY     Transfer
                                            A43         ~ May 2004 ______ ltf Loan to

    21    F       ????        WILD    WILD  SPRINGBOK ~16 Sep 1999   NONE     Capture
                                            A12       ~16 Sep 1999 BERTHA     Transfer
                                            A43         ~ May 2004 ______ ltf Loan to

    27    ?    17 Oct 2000   MULT1   MULT2  A12        17 Oct 2000  SASHI     Hatch
                                            A43         ~ May 2004 ______ ltf Loan to

    28    ?    15 Nov 2000   MULT1   MULT2  A12        15 Nov 2000 PEANUT     Hatch
                                            A43         ~ May 2004 ______ ltf Loan to

    30    ?    26 Jul 2001   MULT1      20  A12        26 Jul 2001 ______     Hatch
                                            A43         ~ May 2004 ______ ltf Loan to

    32    ?    10 Aug 2001   MULT1      20  A12        10 Aug 2001 ______     Hatch
                                            A43         ~ May 2004 ______ ltf Loan to

    47    M       ????        UNK1    UNK2  A12         ~ Jan 2002  ERNST     Transfer
                                            A43         ~ May 2004 ______ ltf Loan to

    56    ?    22 Aug 2003   MULT1      20  A12        22 Aug 2003 ______     Hatch
                                            A43         ~ May 2004 ______ ltf Loan to

    57    ?    17 Sep 2003   MULT1      20  A12        17 Sep 2003 ______     Hatch
                                            A43         ~ May 2004 ______ ltf Loan to

    58    ?    20 Sep 2003   MULT1      20  A12        20 Sep 2003 ______     Hatch
                                            A43         ~ May 2004 ______ ltf Loan to
Totals: 4.1.7 (12)
-------------------------------------------------------------------------------------

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

     5    F    27 Feb 1996    WILD       3  HRF        27 Feb 1996  III-1     Hatch
                                            A50        16 Sep 2006 ______     Loan to
                                                       24 Mar 2009            Death
```

13	M	26 Sep 1998	1	2	HRF	26 Sep 1998	_____	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
					A50	16 Sep 2006	_____	Loan to
						15 Sep 2010		Death
64	M	29 Jul 2004	1	3	HRF	29 Jul 2004	III-19	Hatch
					A50	17 Apr 2005	_____	Loan to
						25 Mar 2009		Death

Totals: 3.1.0 (4)

A52

70	M	24 Jun 2005	1	3	A25	24 Jun 2005	DOPPIE	Hatch
					HRF	24 Jun 2005	_____	Ownership
					A52	5 Jan 2007	_____	Loan to
						11 Jun 2007		Death

Totals: 1.0.0 (1)

A54

68	M	14 Aug 2004	35	36	A07	14 Aug 2004	_____	Hatch
					HRF	15 Aug 2004	_____	Ownership
					A61	8 Oct 2006	_____	Loan to
					A60	~18 Sep 2008	_____	Loan to
					A54	~16 Apr 2011	_____	Loan to
						~17 Oct 2011		Death
75	M	9 May 2006	13	5	HRF	9 May 2006	_____	Hatch
					A54	24 Mar 2007	_____	Loan to
						~27 Oct 2010		Death
102	M	28 Jun 2008	35	36	A07	28 Jun 2008	_____	Hatch
					HRF	28 Jun 2008	_____	Ownership
					A54	2 Jan 2010	_____	Loan to
						~27 Oct 2010		Death

Totals: 3.0.0 (3)

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
127	F	~ Sep 2012	74	96	A55	~ Sep 2012	_____	Hatch
					HRF	12 Sep 2012	_____	Ownership
129	?	22 Jun 2013	74	96	A55	22 Jun 2013	_____	Hatch
					HRF	22 Jun 2013	_____	Ownership
					A55	20 Nov 2013		Death
134	?	27 Jun 2014	74	96	A55	27 Jun 2014	_____	Hatch
					HRF	27 Jun 2014	_____	Ownership
					A55	30 Jun 2014		Death
140	?	11 May 2014	74	96	A55	11 May 2014	_____	Hatch
					HRF	11 May 2014	_____	Ownership
					A55	16 May 2014		Death
141	?	30 Jul 2014	74	96	A55	30 Jul 2014	_____	Hatch
					HRF	30 Jul 2014	_____	Ownership
					A55	7 Sep 2014		Death

Totals: 1.2.4 (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

Totals: 1.1.0 (2)

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
Totals: 2.1.0 (3)
-------------------------------------------------------------------------------------------

A60
    54    F     5 Sep 2003       1       3  HRF         5 Sep 2003 III-17     Hatch
                                            A42         7 Nov 2003 THEODO     Loan to
                                            A60        22 Jan 2010 ______     Loan to
                                                       29 May 2010            Death
Totals: 0.1.0 (1)
-------------------------------------------------------------------------------------------

A62
    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
                                            A62       ~ 9 Oct 2008 ______     Loan to
                                                        2 Jan 2009            Death
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

A63
    78    M    10 Jun 2006      44       7  A10        10 Jun 2006 ______     Hatch
                                            HRF        10 Jun 2006 ______     Ownership
                                            A63         7 Mar 2009 ______     Loan to
                                                       23 Jul 2010            Death

    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

   111    M    13 May 2010      37      38  HRF        13 May 2010 ______     Hatch
                                            A39         3 Dec 2011 ______     Loan to
                                            A63        17 Mar 2014 ______     Loan to
Totals: 3.0.0 (3)
-------------------------------------------------------------------------------------------

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 - Jan Barth, Reinbek, , Germany
   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)
-------------------------------------------------------------------------------------------

A81
   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
Totals: 0.1.0 (1)
-------------------------------------------------------------------------------------------

A83
   112    M     8 Jun 2010      37       9  HRF         8 Jun 2010 _______     Hatch
                                            A72        29 Oct 2010 _______     Loan to
                                            A83        16 Aug 2012 _______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

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)
-------------------------------------------------------------------------------------------

A90
   125    M     7 Jul 2012      74      96  A55         7 Jul 2012 _______     Hatch
                                            HRF         7 Jul 2012 _______     Ownership
                                            A90         1 Mar 2013 _______     Loan to
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

A91
   105    M    27 Jul 2009      37       9  HRF        27 Jul 2009 _______     Hatch
                                            A72        29 Oct 2010 _______     Loan to
                                            A91         9 Mar 2013 _______     Loan to
                                                       19 May 2013             Death
Totals: 1.0.0 (1)
-------------------------------------------------------------------------------------------

A93
    53    F    20 Jul 2003      13       5  HRF        20 Jul 2003 030720      Hatch
                                            A51        16 Sep 2006 _______     Loan to
                                            A33        30 Dec 2007 _______     Loan to
                                            A93        16 Oct 2014 _______     Loan to
                                                       22 Nov 2014             Death

   104    M     4 Jun 2009      37      38  HRF         4 Jun 2009 _______     Hatch
                                            A93        20 Jul 2013 _______     Loan to
Totals: 1.1.0 (2)
-------------------------------------------------------------------------------------------

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    ?    31 May 2012      74       96  A55        31 May 2012 _______     Hatch
                                              HRF        31 May 2012 _______     Ownership
                                              A95        11 Nov 2013 _______     Loan to
Totals: 0.0.1 (1)
-------------------------------------------------------------------------------------------

A99
   123    M    24 Jun 2012      37       38  HRF        24 Jun 2012 _______     Hatch
                                              A99        13 Dec 2014 _______     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
Totals: 1.1.0 (2)
-------------------------------------------------------------------------------------------

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)
-------------------------------------------------------------------------------------------

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
     2    F       ????        WILD     WILD  SPRINGBOK  26 Sep 1995   NONE     Capture
                                              HRF        30 Sep 1995     II     Transfer
                                                         14 May 2004            Death

     4    M       ????        WILD     WILD  SPRINGBOK  28 Sep 1995   NONE     Capture
                                              HRF        30 Sep 1995     IV     Transfer
                                                         24 Dec 1995            Death

     8    ?    26 Jan 1997       1        2  HRF         2 Feb 1997            Death
```

```
    16    ?     4 Oct 1999       1       3  HRF          4 Oct 1999  III-6     Hatch
                                                          4 Oct 1999            Death

    23    ?    19 Jul 2000       1       2  HRF         19 Jul 2000   II-8     Hatch
                                                         29 Jun 2001            Death

    24    ?     2 Aug 2000       1       3  HRF          2 Aug 2000  III-7     Hatch
                                                          2 Aug 2000            Death

    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

    39    ?    11 Jun 2002       1       3  HRF         11 Jun 2002 III-12     Hatch
                                                         20 Jun 2002            Death

    90    F    29 May 2007      37      38  HRF         29 May 2007 ______     Hatch
                                                          8 Jul 2007            Death

   124    M    30 Jun 2012      37       9  HRF         30 Jun 2012 ______     Hatch

   126    M    16 Aug 2012      37       9  HRF         16 Aug 2012 ______     Hatch

   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
Totals: 4.3.8 (15)
-------------------------------------------------------------------------------------

PRAHA - Zoo Praha
    50    M    17 Jun 2003       1       3  HRF         17 Jun 2003 III-15     Hatch
                                             PRAHA       20 Dec 2003 ______     Loan to
                                                          3 Dec 2010            Death

    52    F     9 Jul 2003       1       3  HRF          9 Jul 2003 III-16     Hatch
                                             PRAHA       20 Dec 2003 ______     Loan to
                                                         17 Feb 2011            Death

    65    M    31 Jul 2004      35      36  A07         31 Jul 2004 ______     Hatch
                                             HRF         31 Jul 2004 ______     Ownership
                                             PRAHA       31 Aug 2006 ______     Loan to
                                                         22 Jan 2011            Death
Totals: 2.1.0 (3)
-------------------------------------------------------------------------------------

TCBCC - Turtle Conservancy Behler Chelonian Center
    20    F       ????        WILD    WILD  SPRINGBOK   16 Sep 1999   NONE     Capture
                                             A12        ~17 Sep 1999  MIDGE     Transfer
                                             A43          ~ May 2004 ______     Loan to
                                             TCBCC        7 Jan 2005 SIGN01     Transfer
                                                          1 Jul 2013            Death
Totals: 0.1.0 (1)
-------------------------------------------------------------------------------------

WUPPERTAL - Wuppertal Zoological Garten
    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
                                                          2 Jun 2008            Death
Totals: 0.1.0 (1)
-------------------------------------------------------------------------------------
=====================================================================================
TOTALS: 69.33.39 (141)
```

5. SPECIFIC INFORMATION FROM STUDBOOK PARTICIPANTS

Location A46

One *H. areolatus* was observed producing a clutch of three eggs on 2 September 2014. It happened, here in Namibia, after a cold front had passed over from South Africa, with morning temperatures around 2 °C and 18 °C in the afternoon. I watered the enclosure to imitate rain and snow in South Africa. The next morning, the temperature already reached 10 °C and in the afternoon (15:00 h) it was 25 °C. It

appears that the cold spell together with a much higher humidity and followed by much higher temperatures led to the oviposition. The nesting place is always close to a succulent plant or bush to receive enough shade for the eggs.

On 7 October, the same female produced a second clutch. This clutch was buried at the exact same site as the previous clutch, thus destroying the eggs that were incubating in the nest.

Location A66
Update October 2014:

Hatchling *H. areolatus*

Our first hatchling is now seven months old and has grown well. Current body mass is 20 g and body dimensions are 46 x 43 22.5 mm. We photograph the tortoise monthly to gather data on growth and sex. The tortoise appears healthy, is active and feeds well. The faeces (see photograph) are firm. The egg was incubated at a daily temperature cycle of 33 and 28.5 °C for 14 and 10 h, respectively. Incubation period was 108 days.

Junger *H. areolatus*

Das erste junge Tier ist nun sieben Monate alt, es hat zugenommen und ist gewachsen. Das Gewicht beträgt nun 20 g und ist 46 x 43 x 22,5 mm gross. Wir haben wieder Fotos gemacht, wie letzten Monat, damit wir das Wachstum, das Geschlecht und damit Erfahrungen sammeln können. Das Tier macht einen gesunden Eindruck, es ist aktiv, frisst gut. Der Kot ist fest, siehe Foto beim Baden.

Das Ei wurde wie folgt gebrütet: 14/10 Std. 33/28,5 °C 108 Tage

Deceased hatchling

One of two eggs produced on 5 June 2014 appeared to develop whereas the other was not. After 121 days, the first egg was pipped at two sites. In a previous hatchling, the egg was pipped on day 104 and it hatched on day 108, so we were optimistic. After 122 days, the egg was broken in two halves and pieces had fallen off. After 124 days, all shell had fallen from the egg. On day 125, there was a large crack in the egg membrane; the tortoise was alive, moved when touched and stretched its limb. Since nothing happened thereafter, we noted that the hatchling was dead on day 131. The hatchling had a large yolk sac. We opened the second egg on 14 October and were disappointed with the result. On the photo one can see that the hatchling in the first egg was well-developed, but it had some supernumeral scutes. Eggs were incubated at a daily temperature cycle of 33 and 28 °C for 14 and 10 h, respectively.

Abgestorbenes Tier

Bei einem der Zwei Eier vom 5. Juni 2014 sah es gut aus, das Andere war unbefruchtet. Nach 121 Tagen war das Ei auf zwei Seiten angepickt, (beim ersten Tier das lebt, nach 104 Tagen, geschlüpft nach 108 Tagen), wir waren sehr optimistisch. Nach 122 Tagen war die Schale rings herum gesprungen, zum Teil abgelöst. Nach 124 Tagen alle Schale abgelöst. Nach 125 Tagen durchgehender Riss in der Eihaut. Das Tier lebt, bei jeder Berührung bewegt sich das Tier und streckt ein Bein heraus. Nach 131 Tagen 9-10 Tage später, als nichts weiter geschah, merkten wir, dass sich das Tier nicht mehr bewegt und abgestorben ist. Durch einen Riss in der Eihaut sahen wir, dass noch ein riesiger Dottersack vorhanden war. Am 14. Oktober 2014 öffneten wir das Ei und waren wieder mal bitter enttäuscht, dass es wieder nichts gab. Auf dem Foto sieht man, dass das Tier mit einigen Schildfehlern voll ausgebildet war. Inkubation: 14/10 Std. 33/28 °C

New clutch

Our female keeps producing eggs. On 14 October, she produced three eggs weighing 9, 10 and 11 g. They were produced in the indoor enclosure at the warmest spot at the edge of a hiding place. The heaviest egg has small calcium deposits at the short ends of the egg.

The adults are actively mating, lastly on 30 October.

Neues Gelege

Unser Weibchen gibt auch nicht auf, am 14. Oktober 2014 legte sie wieder und dieses Mal drei Eier (9,10 und 11 g) unter den Höhlenrand im Innenterrarium, wie schon öfters an der wärmsten Stelle. Das schwerste Ei unten im Brutkasten hat an den Enden kleine Kalkerhöhungen an der Schale.

Das allgemeine Verhalten des Paares ist im Moment sehr aktiv, vor zwei Tagen am 30. Oktober 2014 haben sie sich bereits wieder gepaart.

Juvenile male

Our two juvenile males are housed together again and tolerate each other. Therefore, there is no reason to separate them. They feed well and are active. Body masses are stable or increasing.

Juvenile Männchen

Die beiden juvenilen Männchen leben im Moment wieder zusammen und vertragen sich gut. Es besteht kein Anlass sie zu trennen. Sie fressen sehr gut und sind aktiv. Die Gewichte sind stabil, eher höher.

Incubation summary

Ort: I=innen/A=Aussen-Terri							Inkubation		Lf 77-82%						
Sub:V=Vermiculit J=Jurakies S=Seramis															
Legedat.	Zeit	Ort	Eier	Gew	Sub	Tage	Std/Tg	Temp.°C	Std/Nt	Temp.°C	Schlupf	Tage	Tier	Gew	Bemerkungen
08-10-2009	16:00	I	1	7	J		12	32	12	28,5	Unbefruchtet				Ei 31,0x20,0mm
07-07-2010	16:30	A	2	8	V		12	32	12	28	1 unbef. 1 abgest.Anfang				Ei 31,5x21,5 Embryo
14-08-2010	16:50	A	2	9,8	V		12	32	12	28	1 unbef. 1 abgest.Anfang.				Ei 32,5x22,1+29,5x21,8 Embryo
01-10-2010	15:00	I	2	9	J		24	32,6-32,9			Unbefruchtet				Ei 32,5x22,1
05-11-2010	15:15	I	1	8	J		24	32,9-33,3			abgest.Endst.				Ei 29,8x21,8 (Embryo Eingelegt)
22-08-2012	16:11	A	1	12	J		24	32,6-9			Unbefruchtet				Ei 35,0x24,5
01-11-2012	14:00	I	1	9	J		24	32,6-9			Unbefruchtet				Ei 31,1x22,3
10-04-2013	17:00	I	3	8-9,5	V		12	32	12	28	1 unbef. 2 abgest.Endst.				Ei 31,5x23,0+31,0x23,0+30,0x22,5
14-05-2013	15:00	I	2	8-8,5	V		12	32	12	28	Unbefruchtet				Ei 28,0x21,5+28,0x22,0
21-06-2013	16:00	A	2	8+9	J		12	32,5	12	28	Unbefruchtet				Eier 30,5x22,5+29,5x21,5
01-08-2013	12:30	A	2		J		14	32,5	10	28	1 unbef.1 abgest.Schlupf				Ei nicht gemessen (angepickt D-5mm)
16-09-2013	13:00	I	1		J		14	32,5	10	28	Unbefruchtet				Ei nicht gemessen klein und ganz rund
19-10-2013	19:00	I	2	8,10	J		14	32,5	10	28	Unbefruchtet				Ei nicht gemessen
18-11-2013	16;00	I	1	9	J		14	32,5	10	28	Unbefruchtet				Ei nicht gemessen
08-12-2013	16:00	I	1	9	J		14	33,0	10	28,5	26-03-2014	108	1	6	Ei nicht gemessen/Tier 30,0x28,8x17,0
05-05-2014	17:00	I	2	10	J		14	33,0	10	28,5	1 unbef. 1 abgest.Anfang.				Ei 31,0x23,0 Embryo
05-06-2014	16:00	I	2	10	J		14	33,0	10	28,5	1 unbef. 1 abgest.Schlupf				Ei 31,0x23,0+29,6x24,0 (hat ganz geöffnet)
10-07-2014	16:00	I	2	8+9	J	77 Tg	14	33	10	28,5	1 abgest.Anfang				Ei 29,9x22,8+27,6x22,5 Embryo
						Rest	14	31,5	10	28	1 abgest.Mitte				
09-08-2014	17:00	A	2	9+9	J	50 Tg	14	33	10	28,5	15-11-2014	99	1	8	Ei nicht gemessen/Tier 31,4x30,2x16,3
						Rest	14	31,5	10	28	18-11-2014	102	1	6,2	Ei nicht gemessen/Tier 29,7x29,1x16,2
14-10-2014	16:00	I	3	9+11	J	67 Tg	14	32,5-33	10	28	2 unbefruchtet				Ei 30,5x23,1+28,3x23,4 befruchtet+32,7x24,1
						Rest	14	31,0	10	28	1?				21.Jan.2015 = 100 Tage

Location A68

Homopus signatus female number 9 that was transferred in 2014 has adjusted well. Feeding and behavior are regular. Initially, the female was shy but not anymore. From time to time, one of the males is

introduced to the female, but only under strict supervision. The males are not allowed to mate with the female, to avoid confusion of parenthood in offspring since the female was housed together with male 36 at the previous location. In addition, it will be investigated how long the female will be able to produce fertile eggs due to sperm storage.

In September-October 2014, the natural habitat of *H. signatus* was visited for field research:

Location A93

One couple *H. signatus* is kept in the enclosure shown on the next page.

Location A104

In the end of 2014, the male *H. signatus* appeared to become less interested in the female, whereas mating was frequent before. The female appeared gravid, as indicated by the long basking episodes, slow movements and increased posterior height of the shell. Feeding continued as usual. On 28 December, the female produced an egg. In the nest, a second intact egg was found. Egg production was followed by intensive exchange of incubation information with others to ensure optimal incubation conditions.

Location AMSTERDAM

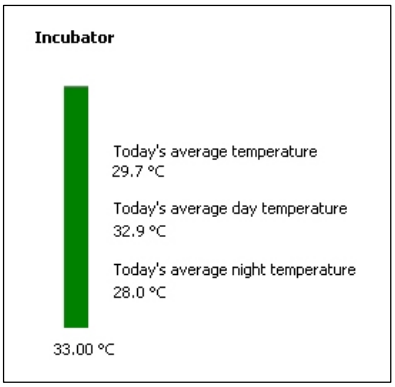
Two couples of *H. signatus* are currently housed in separate compartments of a large enclosure on display.

Photos: Artis Royal Zoo/Ronald van Weeren

Location HRF

The problematic control of the production of male and female *H. signatus* hatchlings at this and other studbook locations requires careful monitoring of incubation conditions. At this location, a daily temperature cycle is used, making eventual incubation temperature less obvious than would a constant temperature. For example, changes from day to night and vice versa coincide with periods of intermediate temperatures, and the day length (i.e., period with high temperatures) varies with the season. In addition, occasional high room temperatures in the terrarium room can cause incubation temperatures to exceed set values.

The Siemens LOGO! used to control and monitor incubation temperatures was reprogrammed to record, besides daily minimum and maximum temperatures, the following parameters:



- Progressive average temperature during the day
  Every 15 minutes one record is taken and included in the daily sample to calculate the average. Recording of day temperatures starts when the temperature is half way between the day and night temperature (i.e., above 30.5 °C).
- Progressive average temperature during the night
  Every 15 minutes one record is taken and included in the daily sample to calculate the average. Recording of night temperatures starts when the temperature is half way between the day and night temperature (i.e., below 30.5 °C).
- Progressive average temperature for 24-h period
  Every 15 minutes one record is taken and included in the daily sample to calculate the average.

These parameters will make it easier to relate the sex of hatched tortoises to incubation temperatures. The Siemens LOGO! uses calibrated sensors and all parameters are automatically stored every 24 h. They can also be viewed online.

In 2015, *H. signatus* eggs will be moved to a second incubator with a constant temperature of 33 °C from incubation day 30 to 50 (i.e., around one third of the average incubation period, when the sex of the hatchling supposedly is determined), to increase the chance of females developing.

Another change in 2014 was the use of an incubation method without substrate. Three eggs of *H. femoralis* and three eggs of *H. signatus* were incubated on dry foam with egg-shaped holes in it, in closed, small plastic containers with small holes in them. A little Seramis at both sides of the containers enabled humidification of the air in the containers, by administering 2 ml of water to the Seramis each week.

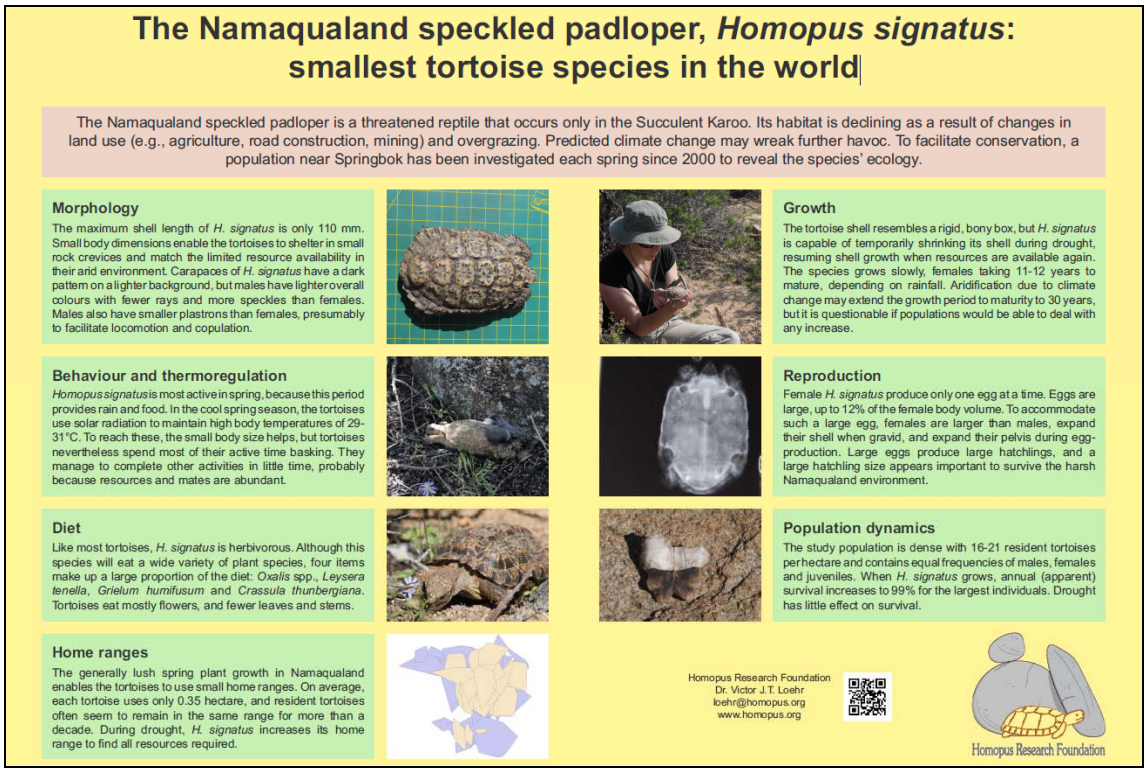
The result of the new incubation method was good: all eggs hatched successfully at a daily temperature cycle of 33/28 °C. One hatchling *H. femoralis* had a supernumeral vertebral scute. Consequently, eggs from *H. femoralis* will be incubated slightly more humid (e.g., adding 1.5 ml of water twice per week) conditions in 2015.

The Siemens LOGO! was equipped with a separate screen in the terrarium room for ease of monitoring and adjusting settings. The working of the screen and setting have been summarised in a short video.

6. NEW PUBLICATIONS

The following overview summarises all manuscripts and articles that were submitted, accepted, published, or under review in 2014.

Subject	Submitted	Accepted	Published	Journal
Small home ranges in the Namaqualand speckled tortoise, *Homopus signatus*, in spring	2013	2014		Journal of Herpetology (English)
The Namaqualand speckled padloper, *Homopus signatus*: smallest tortoise species in the world	-	-	2014	Poster Goegap Nature Reserve (English)
Homopus areolatus, the parrot-beaked tortoise: natural history, captive care, and breeding (reprinted paper)	-	-	2014	Newsletter of the Namibia Scientific Society (English)



7. FINANCIAL REPORT

Most materials required for the current *H. signatus* thermoregulation study (see Paragraph 1.3) were purchased in 2012, resulting in little expenses in 2014. The remaining funds for 2015 will suffice to finalise this study. A significant donation was received from studbook participant Martijn Kooijman.

Financial report Homopus Research Foundation 2014

Revenues		***Expenses***	
Net amount €	**Item**	**Amount €**	**Item**
Project H. signatus 2012-2015		*Project H. signatus 2012-2015*	
109	Remaining funds 2013	p.m.	Various research materials
230	Donations private individuals	339	Reservation project expenses 2015
339	Subtotal	339	Subtotal
Other		*Other*	
83	Donation V. Loehr to cover non-project expenses	84	Annual costs bank accounts
1	Interest bank account		
84	Subtotal	84	Subtotal
422	Total	422	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)
- CITES exporting permits 16579 and 281/95C (Department of Environmental Affairs and Tourism, South Africa)
- 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 (Northern Cape Department of Environment and Nature Conservation, South Africa)
- Research permit 460/2013 (Northern Cape Department of Environment and Nature Conservation, South Africa)

Appendix 1

Meerjarige, gecontroleerde kweek met *Homopus signatus*

Van Loon Frank

-Inleiding
-beschrijving leefgebied
-aktieve periode
-in het terrarium
-incubatie/resultaten

Inleiding :
genus Homopus :
- *femoralis
- *areolatus
- *boulengeri
- *solus
- *signatus

Korte beschrijving van het leefgebied van Homopus signatus :
-Zuid-Afrika
-Namaqualand
-rotsheuveltjes (schuilplaatsen)
-meerdere microhabitats (rivierbedding, rotsplateau, bloemenweide,…) in macrohabitat (op en rond de rotsheuvel)
-uitgesproken seizoenen (winter/zomer, regen/droog)

Aktieve periode :
-vanaf einde winterperiode tot de zomerdroogte (alhoewel de uitgesproken seizoensafscheidingen in het terrarium minder uitgesproken zijn, en de aktiviteitsperiode zich hieraan aanpast)
-winter wordt gekenmerkt door neerslag
-sterke nachtelijke afkoeling (vorst mogelijk)
-zomer wordt gekenmerkt door droogte
-hoge dagtemperaturen
-hoge(re) luchtvochtigheid in de schuilplaatsen

In het terrarium :
-nachtelijke afkoeling tot 20°C (oude opstelling), 16°C nieuwe opstelling
-dagtemperatuur 30°C (winter), 34°C (zomer)
-aangepaste daglengte (8 vs 13 uren)
-hogere luchtvochtigheid, meer sproeibeurten gedurende de winter en lente
-gedurende de zomer enkel sproeien in de schuilplaatsen
-drinken en eten gedurende hele jaar ad libitum

-terrarium : 150x85cm (2 terraria)
-verlichting oude opstelling 2x36W TL
-verlichting nieuwe opstelling 1x36W TL, 1x36W TL 10%UVB
-per legsel 1 ei, in gevangenschap tot 4 legsels/jaar (in het wild is dit aantal sterk afhankelijk van oa. de neerslaghoeveelheid en de daaraan verbonden beschikbare hoeveelheid voedsel/drinken en bedraagt 0 tot waarschijnlijk niet meer dan 2)
-substraatdiepte 12cm

-terrarium voorzien van structuur (schuilplaatsen en vegetatie)
-legplaats is niet zichtbaar van bovenaf, uit het zicht.
-'s zomers : nachtelijke afkoeling tot 25°C (uitzonderlijk tot 28/29°C), dagtemperatuur tot 34°C (uitzonderlijk tot 37°C)
-'s winters ; nachtelijke afkoeling tot 20°C (oude opstelling, tot midden 2007), 16°C (nieuwe opstelling, vanaf midden 2007), dagtemperatuur tot 30°C.

Aktiveiteitsperiode in het terrarium
-In de winterperiode : zonnebaden
-naar het einde van de winterperiode wordt het mannetje alsmaar aktiever en begint het vrouwtje meer en meer te achtervolgen
-typisch “head bobbing”
-paringen vanaf einde winterperiode en gedurende de lente

Legsel :
-1 ei per legsel
-tot 4 legsels per jaar (in gevangenschap)
-typisch 1 maand tussen 2 legsels
-afmetingen ei : 10-14 gram
34 x 25 mm
-ei wordt begraven
-aflegplaats uit het zicht

Incubator :
-incubator = omgebouwde vrieskast
-ontdaan van koelgroep
-onderaan warmtekabel gewikkeld
-1 wikkeling in plastic box met water
-thermostaat met ingestelde nachtafkoeling


LIVING Earth
ELECTRONICS
HEAT
MAX 600W
HabiStat
DIMMING THERMOSTAT
MAINS
HEATER
SENSOR


76
80
72
24
26
84
22
28
68
20
30
88
18
32
64
92
°C
°F
HEAT
MAX 600W

-elk ei afzonderlijk in plastic box (botervlootje 500gr)
-bepaalde hoeveelheid substraat
    oude opstelling (tot 2009): vermiculiet
    nieuwe opstelling : ceramis
-bepaalde hoeveelheid water (volgens gewichtsverhouding, gram substraat/gram water)
-typisch 1/2 tot 1/1
-deksel er gedeeltelijk op
-incubatietijd : ongeveer 100 dagen
-2 weken voor uitkomst, substraat herbevochtigen

Legsels per maand	01	02	03	04	05	06	07	08	09	10	11	12
oude opstelling 2005 - 2008		II	II	III	III							
nieuwe opstelling 2008 – heden	III	IIIIII	IIIIII	I	II	I				I		IIII
nieuwe opstelling f07 2008 – 2012	III	IIII	III	I		I				I		IIII
nieuwe opstelling f36 2013/2014		II	II		II							

Legsels per jaar

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
f07	3(2)	4(4)	4(2)	2(0)	4(0)	4(3)	4(2)	4(/)	1(/)	
f36									4(3)	3(2)

opmerking
2008 : legsels te laat gevonden, eieren rot
2009 : wattage kabel te laag, ovv HRF incubatie op Female, temperatuur te hoog, volgroeide jongen dood in ei
2012 : ovv HRF gestopt met kweken met desbetreffende bloedlijn

Incubatiemethode

oude opstelling : 12/12h, dag/nacht, 32-27°C, 98-110 dagen, f07, 2005-2009

nieuwe opstelling : 18/06h, dag/nacht, 33,5-28°C, 100 dagen, f07, 2009
nieuwe opstelling : 18/06h, dag/nacht, 33,0-29°C, 100 dagen, f07, 2010-2013
nieuwe opstelling : 18/06h, dag/nacht, 33,0-29°C, 130 dagen, f36, 2013-2014

opmerking :
in de nieuwe opstelling is de temperatuur in de broedstoof doorheen de jaren gestegen tot 34-34,5°C, mede door de stijgende temperatuur in de terrariumopstelling, de kamertemperatuur kan in de zomer doorstijgen tot zo'n 40°C.

Male/female ratio

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
f07	100%M	50%M	100%M			100%F	50%M			
f36									100%F	
totaal	-------4.1---------					----------1.4----------				

2008 : legsels te laat gevonden, eieren rot
2009 : wattage kabel te laag, ovv HRF incubatie op Female, temperatuur te hoog, volgroeide jongen dood in ei
2012 : ovv HRF gestopt met kweken met desbetreffende bloedlijn

Female 2013

Male 2013

Appendix 2

Agreement regarding the transfer of *Homopus femoralis*

The undersigned,

<Receiver>, further called "Receiver"

and

Homopus Research Foundation,
for the foundation, Victor Loehr, further called "Donor",

considering that

- three male *Homopus femoralis* were loaned to the Homopus Research Foundation by the British Tortoise Trust in 2001 and their legal acquisition formalised under EU certificate 14NL220398/20;
- three female *H. femoralis* were collected in the wild and transported to the Netherlands in 2006, under collecting permit AAA004-00010-0035, CITES exporting permit 58679, and CITES importing permit 65463;
- the legal acquisition of the males and the import of the females was for scientific purposes (CITES code S), to study behaviour, reproduction and growth, and excludes the use of wild-caught or captive-bred *H. femoralis* for commercial purposes;
- the tortoises have reproduced successfully in captivity;
- distributing offspring over a number of locations will facilitate gathering of data (increasing sample size), and will reduce the risk that all tortoises die in case of a disaster at one location,

have agreed to transfer 1.0.0 *H. femoralis* (known as studbook number 8) from Donor to Receiver as following:

Article 1 - Purpose of the animal

1. The tortoise should remain available for scientific purposes as stipulated in the considerations above.
2. The tortoise should remain registered in the studbook for this species.
3. The tortoise may not be bred without written consent of Donor.
4. Offspring produced at Receiver is subject to the same provisions in this Agreement as the transferred tortoise.

Article 2 - Ownership

1. The tortoise remains the property of Donor and may not be transferred to third parties without written consent of Donor. This concerns the tortoise alive and dead.
2. The tortoise is transferred to Receiver on loan, for indeterminate period of time.
3. The loan ends when, after consulting the other party,
    a. Donor claims the tortoise;
    b. Receiver decides to return the tortoise to Donor;
    c. Receiver transfers the tortoise to a third party, after receiving written consent of Donor.

Article 3 - Data gathering and communication

1. Receiver will gather the following data, and transfer data to Donor at least annually:
    a. Straight carapace length, maximum shell width, maximum shell height, straight plastron length (mm) and body mass (g) on the birthday of the tortoise;

   b. number of offspring produced, with sizes (see previous provision), birth dates and founders;
   c. if the tortoise died the probable cause and date of death.
2. Receiver agrees to share his address details with other parties that have received *H. femoralis*, to facilitate exchange of information.

Article 4 - Finances

1. This Agreement does not involve any transfers of funds from Receiver to Donor, or vice versa.
2. Donor is not liable for any expenses by Receiver.

Article 5 - Final provisions

1. Changes in this Agreement are only possible when Donor and Receiver both agree.
2. In case unforeseen circumstances are such that they reasonably and justifiably require changes, Donor and Receiver will address these circumstances and change this Agreement.
3. This Agreement takes effect on the date that Donor and Receiver have both signed it.

Thus agreed upon, made out in twofold and signed at

Date:	Date:
Location:	Location:
<Receiver>	Victor Loehr