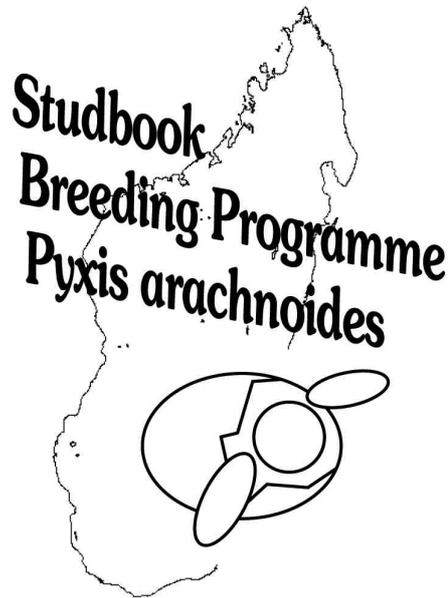


Studbook
Breeding Programme
Pyxis arachnoides



Annual Report
2002

Victor Loehr
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CONTENTS

1. INTRODUCTION AND ACTIVITIES IN 2002	4
1.1. INTRODUCTION	4
1.2. INTERNET SITE.....	4
1.3. PRESENTATIONS AND PUBLICATIONS.....	4
1.4. CONTACTS.....	4
2. PLANS FOR ACTIVITIES IN 2003.....	4
2.1. INTERNET SITE.....	5
2.2. PRESENTATIONS AND PUBLICATIONS.....	5
3. CURRENT LIVING STUDBOOK POPULATION.....	6
4. IMPORTS, BIRTHS AND DEATHS.....	12
5. TOTAL STUDBOOK POPULATION AND FUTURE PERSPECTIVES.....	14

APPENDIX HUSBANDRY CONDITIONS AND ADDITIONAL INFORMATION PER LOCATION

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Since 1992 several Dutch herpetological societies have initiated studbook programmes on reptile and amphibian species. In 1997, all programmes were condensed into an independent foundation currently known as European Studbook Foundation. Early in its development, the foundation formulated the very important criteria that no studbook participant would jeopardise their important herpetological contributions and goals with any commercial enterprise from their specimens, either currently or in the future. The aims of the studbook programmes in general are:

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

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

1. INTRODUCTION AND ACTIVITIES IN 2002

1.1. Introduction

This report is an update of the annual report of the Studbook Breeding Programme *Pyxis arachnoides* published in 2001. The programme aims to form genetically healthy, reproducing captive populations, to study these, and to gather and distribute as much information about *P. arachnoides* as possible. In order to keep the studbook manageable (in terms of number of tortoises and contacts between participants and coordinator), it has been decided that the studbook will operate exclusively in Europe, despite occasional applications from keepers of *P. arachnoides* in the USA. *Pyxis a. arachnoides* especially appears to be present in Europe in sufficiently large numbers. It would be a welcome development if someone in the USA would set up a studbook on *P. arachnoides*, similar to the Studbook Breeding Programme *Pyxis arachnoides*. Eventually, both studbooks could be linked. As was already foreseen in the annual report last year, time constraints of the studbook coordinator (due to involvement in scientific fieldwork on *Homopus* within the Homopus Research Foundation) have resulted in limited available time to manage the programme on *Pyxis arachnoides*. Activities did not extend beyond keeping the studbook registration up to date (also on the internet site), providing advice to participants and others when needed, and preparing this annual overview. However, some reorganisation of the management of the studbook is in progress which will presumably result in more activity in 2003 (see chapter 2).

This report will summarise the activities of the Studbook Breeding Programme *Pyxis arachnoides* in 2002, plans for 2003, and it will give an overview of the current composition and changes in the captive population *P. arachnoides*. Additional information may be obtained from the internet site of the programme, <http://home.kabelfoon.nl/~loehr/pyxis>, or from the studbook co-ordinator.

In the following sections, an overview of the main activities in 2002 is presented.

1.2. Internet site

The internet site of the Studbook Breeding Programme *Pyxis arachnoides* has not undergone any major changes. The actual composition of the studbook population has been updated on a regular basis. The appendices in the annual studbook reports remain the major source of husbandry information.

1.3. Presentations and publications

In 2002, no publications or presentations were generated by the studbook participants

1.4. Contacts

In reply to details regarding incubation of *P. arachnoides* eggs that had been sent to a keeper (outside of the studbook) on Reunion, a message was received that the suggestions had resulted in successful hatching. It gives satisfaction to notice that European *ex situ* efforts can facilitate efforts much closer to the geographic range of *P. arachnoides*.

The Studbook Breeding Programme *Pyxis arachnoides* was also contacted by Joseph Robertia, making an inventory of first captive breeding results with *Pyxis* spp.. Obviously, the studbook registration only allowed first hatching dates to be provided that occurred within the studbook (or registered for specimens included in the studbook).

2. PLANS FOR ACTIVITIES IN 2003

From January 2003, the studbook coordination will be transferred from Victor Loehr to Frank van Loon (franktortoises@hotmail.com). This means that all modifications and new registrations should be sent to Frank, and no longer to Victor. Frank will contact all studbook participants via e-mail, to forward his snail mail address. The transfer will hopefully result in a larger time investment in the

studbook by the studbook coordinator. Needless to remark, all activities will always be a combination of efforts from studbook participants and the coordinator.

2.1. *Internet site*

In 2003, the internet site of the Studbook Breeding Programme *Pyxis arachnoides* will remain to be maintained by Victor Loehr. There are no plans for any major changes. However, the current studbook tables in HTML will be replaced by direct reports generated by the (new) studbook software SPARKS. This will be less time-consuming than updating several different formats, and will allow more frequent updating than was the case until now.

2.2. *Presentations and publications*

One manuscript on keeping and breeding of *P. a. arachnoides* is currently in preparation (in Dutch), and will be submitted for publication in 2003. An English major manuscript on husbandry and breeding of *P. a. arachnoides* is currently in press in the proceedings of the first European symposium on turtles and tortoises (Vienna, January 2002). However, this has not been written by a studbook participant.

3. CURRENT LIVING STUDBOOK POPULATION

The total number of registered live specimens *P. arachnoides* increased from 60 to 65. Five specimens died, and 3 were born. Seven specimens were acquired from outside the studbook. The specimens are currently housed at 13 locations (12 in 2001) in the Netherlands (6), Belgium (1) and Germany (6). All subspecies are represented in the studbook, but *P. a. oblonga* and *P. a. brygooi* are very limited in numbers.

All transfers in 2002 related to subspecies *P. a. arachnoides*. Specimens 67 and 68 were transferred from location A02 to location A11 and A36 in 2002. The keeper at location A02 has stopped keeping of *P. arachnoides*, to focus on other matters than tortoise keeping. Specimen 4 was transferred to a location with unregistered *P. a. arachnoides*, when its mate had died. Location ROTTERDAM has collected a relatively large number of tortoises for experimenting with husbandry conditions, and for that reason specimens 18, 20, and 21 were transferred to ROTTERDAM. Specimens 81, 82, and 83 were purchased.

Table I: Current living studbook population *Pyxis arachnoides* per location as registered in the studbook. The numbers far right are relative numbers per location, indicating which specimens are housed together. MULT1 is sire 26 or 27. UNKx specimens are founders outside of the studbook, used to register relationships between offspring in the studbook.

a) *Pyxis arachnoides arachnoides*

```

=====
Location: A08
=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
26 M ???? WILD WILD A11 ~ 1985 _____ Transfer
A02 29 Dec 1999 I Loan to
A08 18 Feb 2001 _____ Loan to 1
27 M ???? WILD WILD A11 ~ 1985 _____ Transfer
A02 29 Dec 1999 II Loan to
A08 18 Feb 2001 _____ Loan to 1
29 F ???? WILD WILD A11 ~ 1985 _____ Transfer
A02 29 Dec 1999 IV Loan to
A08 18 Feb 2001 _____ Loan to 1
79 ? 6 May 2002 MULT1 29 A08 6 May 2002 _____ Hatch 2
80 ? 26 Jul 2002 MULT1 29 A08 26 Jul 2002 _____ Hatch 2
84 ? 8 Jun 2002 MULT1 29 A08 8 Jun 2002 _____ Hatch 2
Totals: 2.1.3 (6)

```

```

=====
Location: A10
=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
22 M ???? WILD WILD A05 ???? _____ Transfer
A10 28 Jun 1999 PAAM1 Transfer 1
23 M ???? WILD WILD A05 ???? _____ Transfer
A10 28 Jun 1999 PAAM2 Transfer 2
24 F ???? WILD WILD A05 ???? _____ Transfer
A10 28 Jun 1999 PAAF1 Transfer 1
Totals: 2.1.0 (3)

```

Location: A11

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
68	?	14 Jun 2001	MULT1	29	A02	14 Jun 2001	IV-2	Hatch
					A11	17 Feb 2002		Transfer 1

Totals: 0.0.1 (1)

Location: A19

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
40	?	13 Aug 1999	UNK1	UNK2	A07	13 Aug 1999		Hatch
					A19	1 Mar 2000	1	Transfer 1?
41	?	28 Aug 1999	UNK1	UNK2	A07	28 Aug 1999		Hatch
					A19	1 Mar 2000	2	Transfer 1?
42	?	8 Aug 2000	UNK1	UNK2	A07	8 Aug 2000		Hatch
					A19	1 Sep 2000	3	Transfer 1?
43	?	12 Aug 2000	UNK1	UNK2	A07	12 Aug 2000		Hatch
					A19	1 Sep 2000	4	Transfer 1?

Totals: 0.0.4 (4)

Location: A22

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
1	M	9 Sep 1996	UNK1	UNK2	A07	9 Sep 1996		Hatch
					A02	22 Nov 1998	960909	Loan to
					A22	24 Feb 2001		Loan to 1
2	F	16 Nov 1996	UNK1	UNK2	A07	16 Nov 1996		Hatch
					A02	22 Nov 1998	961116	Loan to
					A22	24 Feb 2001		Loan to 1
3	M	16 Sep 1997	UNK1	UNK2	A07	16 Sep 1997		Hatch
					A02	22 Nov 1998	970916	Loan to
					A22	24 Feb 2001		Loan to 1

Totals: 2.1.0 (3)

Location: A23

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
58	M	????	WILD	WILD	A23	30 Jul 2000	DONALD	Transfer 1?
59	F	????	WILD	WILD	A23	30 Jul 2000	DAISY	Transfer 1?
60	F	????	WILD	WILD	A23	30 Jul 2000	EUSEBI	Transfer 2?
61	F	????	WILD	WILD	A23	30 Jul 2000	PAULA	Transfer 3?
62	?	1 Aug 1998	UNK1	UNK2	A07	1 Aug 1998		Hatch
					A23	16 Sep 1999	TIC	Transfer 4
65	?	1 Aug 1998	UNK6	UNK7	A24	1 Aug 1998		Hatch
					A23	1 Jul 1999	TRIC	Transfer 4
66	?	1 Aug 1998	UNK6	UNK7	A24	1 Aug 1998		Hatch
					A23	1 Jul 1999	TRAC	Transfer 4
69	M	????	WILD	WILD	A23	5 Jul 2001	PLUTO	Transfer 2?

83 F ~ 1996 UNK10 UNK11 A38 ~ 1996 _____ Hatch
 A23 1 Aug 2002 TAMARA Transfer 4

Totals: 2.4.3 (9)

Location: A32

```
=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
4 M ???? WILD WILD A04 17 May 1999 ULI Hatch
A32 25 May 2002 ULI Loan to
```

Totals: 1.0.0 (1)

Location: A36

```
=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
67 ? 15 Mar 2001 MULT1 29 A02 15 Mar 2001 IV-1 Hatch
A36 24 Feb 2002 _____ Transfer 1?
81 ? ~ Jan 2000 UNK8 UNK9 A32 ~ Jan 2000 _____ Hatch
A36 15 Aug 2002 _____ Transfer 1
82 ? ~ Jan 2000 UNK8 UNK9 A32 ~ Jan 2000 _____ Hatch
A36 15 Aug 2002 _____ Transfer 1
```

Totals: 0.0.3 (3)

Location: ROTTERDAM

```
=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
18 M ???? WILD WILD A08 ~ Jan 1995 _____ Transfer
ROTTERDAM 4 Sep 2002 704790 Loan to 1
20 M ???? WILD WILD WASS BR C 8 Dec 1990 _____ Transfer
ROTTERDAM 17 Apr 2002 704725 Transfer 2
21 F ???? WILD WILD WASS BR C 8 Dec 1990 _____ Transfer
ROTTERDAM 17 Apr 2002 704726 Transfer 2
34 M ???? WILD WILD ROTTERDAM 7 Jun 1997 703791 Transfer 3
35 M ???? WILD WILD ROTTERDAM 7 Jun 1997 703792 Transfer 4
36 F ???? WILD WILD ROTTERDAM 7 Jun 1997 703793 Transfer 3
37 F ???? WILD WILD ROTTERDAM 7 Jun 1997 703794 Transfer 3
38 M ???? WILD WILD VLISSINGE 12 Jul 1987 _____ Transfer
ROTTERDAM 9 Jul 1997 703825 Transfer 5
48 ? 21 Oct 1999 34 36 ROTTERDAM 21 Oct 1999 704297 Hatch 6
71 F ???? WILD WILD LONDON RP ???? _____ Transfer
ROTTERDAM 23 Dec 2001 704781 Transfer 1
72 F ???? WILD WILD LONDON RP ???? _____ Transfer
ROTTERDAM 23 Dec 2001 704582 Transfer 4
73 ? ???? WILD WILD LONDON RP ???? _____ Transfer
ROTTERDAM 23 Dec 2001 704583 Transfer 7
```

Totals: 5.5.2 (12)

Location: WASS BR C

```

=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
19 M ???? WILD WILD WASS BR C 8 Dec 1990 DAMAGE Transfer 1
    
```

Totals: 1.0.0 (1)

In response to the activities of ROTTERDAM to concentrate *P. a. arachnoides* there, communication has taken place between the studbook coordinator and the participants concerned. In the view of the studbook coordinator, it would have been better to form breeding pairs by transferring female tortoises from ROTTERDAM to locations with solitary males, or few specimens. The high concentration of specimens at ROTTERDAM makes the population vulnerable for disaster, and breeding at ROTTERDAM has not been very successful in past years (presumably due to problems in providing the correct climatic conditions). However, it also has to be kept in mind that many specimens did not arrive at location ROTTERDAM until 2002, with limited opportunities for breeding prior to that year. The advice of the studbook coordinator has not been accepted by ROTTERDAM. One reason for this were EAZA conditions, disabling ROTTERDAM to transfer specimens to private individuals. This is a situation that should be solved in the future, as it may frustrate further collaboration between zoos and private individuals in the studbook.

ROTTERDAM has been asked to recombine its breeding pairs. The genetic variation of group 34, 36 and 37 is not fully exploited as all potential offspring will be related to the same sire, whereas a combination of one of the females with another male could result in 2 unrelated bloodlines. From the date that this breeding group will be separated, all potential offspring should (also) be considered related to male 34 for a period of 3 years due to possible sperm storage. At this moment, ROTTERDAM is in the process of recombining breeding pairs.

Solitary males fit for breeding are present at locations A08 (specimen 26 or 27), A10 (23), and WASS BR C (19). Male 4 at location A32 is probably housed in a breeding pair, since additional specimens *P. a. arachnoides* are present at this location. These have not yet been registered in the studbook, and therefore location A32 has been requested to register these specimens too. Males 1 and 3 at location A22 are still too young for breeding.

A solitary female (59, 60, 61, or 83) is present at location A23. It would be advisable to transfer one female to a location with fewer specimens and with a solitary male, to form an additional (potential) bloodline. To a certain extent, the same situation applies for location A23 as for location ROTTERDAM.

b) *Pyxis arachnoides brygooi*

Location: A03

```

=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
30 M ???? WILD WILD ROTTERDAM 14 Jan 1991 702004 Transfer
A03 4 Jan 1995 HZ0305 Loan to 1
31 F ???? WILD WILD ROTTERDAM 14 Jan 1991 702005 Transfer
A03 4 Jan 1995 HZ0306 Loan to 1
32 ? 10 Oct 1994 30 31 ROTTERDAM 10 Oct 1994 703152 Hatch
A03 25 Apr 1998 HZ0539 Loan to 2
49 F ???? WILD WILD ROTTERDAM ???? _____ Transfer
A03 21 Jun 1998 HZ0561 Loan to 1
50 ? 1 Jul 1996 30 31 A03 1 Jul 1996 HZ0428 Hatch 3
51 ? 27 Oct 1996 30 31 A03 27 Oct 1996 HZ0454 Hatch 4
52 ? 14 May 1999 30 31 A03 14 May 1999 HZ0624 Hatch 5
53 ? 7 Jun 1999 30 31 A03 7 Jun 1999 HZ0627 Hatch 6
54 ? 19 Mar 2000 30 31 A03 19 Mar 2000 HZ0683 Hatch 7
    
```

55	?	12 May 2000	30	31	A03	12 May 2000	HZ0691	Hatch	8
56	M	????	WILD	WILD	A11 A03	~ 1985 16 Oct 1999	_____ HZ0664	Transfer Loan to	9
57	F	????	WILD	WILD	A11 A03	~ 1985 16 Oct 1999	_____ HZ0665	Transfer Loan to	9

Totals: 2.3.7 (12)

Location: A04

```
=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
7 ? ???? WILD WILD A10 19 Sep 1998 _____ Transfer 1
```

Totals: 0.0.1

Location: A10

```
=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
74 ? ???? UNK1 UNK2 A10 10 Oct 2001 PABU01 Transfer 1
75 ? ???? UNK1 UNK2 A10 10 Oct 2001 PABU02 Transfer 1
76 ? ???? UNK1 UNK2 A10 10 Oct 2001 PABU03 Transfer 1
77 ? ???? UNK1 UNK2 A10 10 Oct 2001 PABU04 Transfer 1
78 ? ???? UNK1 UNK2 A10 10 Oct 2001 PABU05 Transfer 1
```

Totals: 0.0.5 (5)

A large proportion of the *P. a. brygooi* population in the studbook is housed at location A03. As has already been outlined for *P. a. arachnoides*, this makes the population vulnerable for disaster, and spreading the specimens over several locations should be considered. Location A03 has argued that long-term growth data is gathered from the captive-bred specimens at this location (a first publication is currently in press in *Salamandra*), and this should be included in any considerations to transfer specimens. The current combination of adult founder specimens appears to be reasonable, given the lack of solitary specimens. However, it is of the utmost importance that locations A03, A04, and A10 provide the gender of their juvenile specimens as soon as this is known, to allow exchange of specimens and formation of additional breeding pairs.

c) *Pyxis arachnoides oblonga*

Location: A17

```
=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
13 ? 24 Oct 1997 UNK1 UNK2 A06 24 Oct 1997 _____ Hatch
A17 25 Jul 2000 _____ Transfer 1?
14 ? 28 May 1997 UNK1 UNK2 A06 28 May 1997 _____ Hatch
A17 25 Jul 2000 _____ Transfer 1?
15 ? 26 Jun 1997 UNK1 UNK3 A06 26 Jun 1997 _____ Hatch
A17 25 Jul 2000 _____ Transfer 1?
```

Totals: 0.0.3 (3)

Location: A18

```

=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
16     ?   27 Apr 1999  UNK1  UNK2  A06      27 Apr 1999 _____ Hatch
                               A18      25 Jul 2000 _____ Transfer 1
17     ?   20 Jul 1999  UNK1  UNK2  A06      20 Jul 1999 _____ Hatch
                               A18      25 Jul 2000 _____ Transfer 1
Totals: 0.0.2 (2)
    
```

No changes have occurred in the *P. a. oblonga* population since last year. Overall, the situation is very worrisome, with only related juvenile specimens in the studbook (see also chapter 5). It is of importance to acquire additional founder specimens in the studbook. As the present specimens all are juveniles, there does not appear to be a high pressure to inbreed these specimens once they are adults; there will be time to acquire unrelated stock.

4. IMPORTS, BIRTHS AND DEATHS

Imports of *P. arachnoides*, organised by the Studbook Breeding Programme *Pyxis arachnoides*, did not take place in 2002. Plans to import small numbers of *P. a. brygooi* and *P. a. oblonga* might be supported by the programme, as it appears increasingly unlikely that a sufficiently large number of tortoises for a viable captive population is present.

The same founder specimens (*P. a. arachnoides*) that produced offspring in 2001 also reproduced in 2002, this time at location A08. Three hatchlings were born, applying the incubation method outlined in the 2001 annual report, appendix 1. The other two subspecies did not reproduce in 2002. At location A08 eggs were produced. These are still is being incubated (see appendix 1 for details).

Table II: Births of *P. arachnoides arachnoides* in 2002. MULT1 is sire 27 or 28.

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
79	?	6 May 2002	MULT1	29	A08	6 May 2002	_____	Hatch
80	?	26 Jul 2002	MULT1	29	A08	26 Jul 2002	_____	Hatch
84	?	8 Jun 2002	MULT1	29	A08	8 Jun 2002	_____	Hatch

Totals: 0.0.3 (3)

A total of 5 *P. arachnoides* died in 2002, at 3 locations. One *P. a. arachnoides* died at location A08, and one at location A23. The first specimen concerned an old female that had an egg manually removed through the cloaca after egg-retention had occurred in 2000. Since 2001 it had a second egg inside, and it was decided that surgery was not yet required. However, the egg broke and probably caused infection and death in 2002. This tortoise was under qualified veterinary attention throughout. The second tortoise died from unknown causes.

Three *P. a. brygooi* (15% of the total studbook population) died at location A04. These specimens became active during artificial winter (resting) season (provided in northern hemisphere summer) when they were kept in a greenhouse. Veterinary inspection revealed an *Aspergillus* infection from which the specimens quickly died, despite of a range of attempted treatments.

Table III: Deaths of *P. arachnoides* in 2002.

=====

a) *Pyxis arachnoides arachnoides*

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
28	F	????	WILD	WILD	A11	~ 1985	_____	Transfer
					A02	29 Dec 1999	III	Loan to
					A08	31 Dec 2000	_____	Loan to
						9 Mar 2002		Death

[Death by: Infection Associated Unknown No Autopsy Planned]

70	M	????	WILD	WILD	A23	14 Jul 2001	OSCAR	Transfer
						1 Apr 2002		Death

[Death by: Other/Unknown Unknown Unknown (after Autopsy)]

Totals: 1.1.0 (2)

b) *Pyxis arachnoides brygooi*

```

=====
Stud # | Sex | Hatch Date | Sire | Dam | Location | Date | Local ID | Event |
=====
      6  ?      ????      WILD  WILD  A04      19 Sep 1998 _____ Transfer
                                         ~15 Aug 2002 _____ Death
[Death by: Infection Associated   Unknown   Digestive   Fungal]

      8  ?      ????      WILD  WILD  A04      19 Sep 1998 _____ Transfer
                                         ~15 Aug 2002 _____ Death
[Death by: Infection Associated   Unknown   Digestive   Fungal]

      9  ?      ????      WILD  WILD  A04      19 Sep 1998 _____ Transfer
                                         ~15 Aug 2002 _____ Death
[Death by: Infection Associated   Unknown   Digestive   Fungal]

Totals: 0.0.3 (3)

```

5. TOTAL STUDBOOK POPULATION AND FUTURE PERSPECTIVES

The current total registered studbook population consists of 75 specimens: 49 *P. a. arachnoides*, 5 *P. a. oblonga*, and 21 *P. a. brygooi* (2 of which are morphologically deviant). From these, 38 are wild-caught specimens and 37 are captive-bred. Captive-bred specimens of all three subspecies are present. All but 9 tortoises are currently alive, housed at 13 (participating) locations.

The population is strongly biased towards subspecies *P. a. arachnoides*. The number of specimens of this subspecies is sufficiently large to offer a positive perspective for the studbook, but it is necessary to combine the specimens in an optimal way to create as many bloodlines as possible, to increase breeding success, and to minimise risks of disaster in the relatively small population (see chapter 3). Also, ongoing discussion with EAZA is required to outline problems that this studbook experiences with regard to transfers of animals between zoos and private individuals.

The other two subspecies are present in much smaller numbers. Especially the situation regarding *P. a. oblonga* is critical. Inclusion of American keepers of this subspecies in the studbook, or importing a small number of (preferably captive) *P. a. brygooi* or *P. a. oblonga* should be considered.

Although many registered specimens in the studbook are captive-bred, it has to be kept in mind that many of these breeding results have been accomplished years ago, and often the reproducing adult specimens are housed at other locations, and have not been registered in the studbook population. In 2002, yet again few breeding results have been reported. Therefore, the main focus from this studbook should still be the distribution of information on husbandry and breeding of *P. arachnoides*. Appendix 1 of this report provides a small contribution to this objective.

Table IV: Total studbook population *Pyxis arachnoides*. MULT1 is sire 26 or 27. UNKx specimens are founders outside of the studbook, used to register relationships between offspring in the studbook.

a) *Pyxis arachnoides arachnoides*

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
1	M	9 Sep 1996	UNK1	UNK2	A07	9 Sep 1996		Hatch
					A02	22 Nov 1998	960909	Loan to
					A22	24 Feb 2001		Loan to
2	F	16 Nov 1996	UNK1	UNK2	A07	16 Nov 1996		Hatch
					A02	22 Nov 1998	961116	Loan to
					A22	24 Feb 2001		Loan to
3	M	16 Sep 1997	UNK1	UNK2	A07	16 Sep 1997		Hatch
					A02	22 Nov 1998	970916	Loan to
					A22	24 Feb 2001		Loan to
4	M	????	WILD	WILD	A04	17 May 1999	ULI	Transfer
					A32	25 May 2002	ULI	Loan to
5	F	????	WILD	WILD	A04	17 May 1999 30 Jun 2001	ESTHER	Transfer Death
18	M	????	WILD	WILD	A08 ROTTERDAM	~ Jan 1995 4 Sep 2002		Transfer Loan to
19	M	????	WILD	WILD	WASS BR C	8 Dec 1990	DAMAGE	Transfer
20	M	????	WILD	WILD	WASS BR C	8 Dec 1990		Transfer
					ROTTERDAM	17 Apr 2002	704725	Transfer
21	F	????	WILD	WILD	WASS BR C	8 Dec 1990		Transfer
					ROTTERDAM	17 Apr 2002	704726	Transfer

Studbook Breeding Programme *Pyxis arachnoides*: annual report 2002

22	M	????	WILD	WILD	A05 A10	???? 28 Jun 1999	_____	PAAM1	Transfer Transfer
23	M	????	WILD	WILD	A05 A10	???? 28 Jun 1999	_____	PAAM2	Transfer Transfer
24	F	????	WILD	WILD	A05 A10	???? 28 Jun 1999	_____	PAAF1	Transfer Transfer
25	?	2 Sep 1999	UNK3	24	A05 A10	2 Sep 1999 18 Sep 1999 20 Feb 2000	_____	PAAU1	Hatch Transfer Death
26	M	????	WILD	WILD	A11 A02 A08	~ 1985 29 Dec 1999 18 Feb 2001	_____	I	Transfer Loan to Loan to
27	M	????	WILD	WILD	A11 A02 A08	~ 1985 29 Dec 1999 18 Feb 2001	_____	II	Transfer Loan to Loan to
28	F	????	WILD	WILD	A11 A02 A08	~ 1985 29 Dec 1999 31 Dec 2000 9 Mar 2002	_____	III	Transfer Loan to Loan to Death
29	F	????	WILD	WILD	A11 A02 A08	~ 1985 29 Dec 1999 18 Feb 2001	_____	IV	Transfer Loan to Loan to
33	M	????	WILD	WILD	ROTTERDAM LONDON RP	14 Jan 1991 11 Aug 2000 ~ Jul 2001	702003 _____		Transfer Loan to Death
34	M	????	WILD	WILD	ROTTERDAM	7 Jun 1997	703791		Transfer
35	M	????	WILD	WILD	ROTTERDAM	7 Jun 1997	703792		Transfer
36	F	????	WILD	WILD	ROTTERDAM	7 Jun 1997	703793		Transfer
37	F	????	WILD	WILD	ROTTERDAM	7 Jun 1997	703794		Transfer
38	M	????	WILD	WILD	VLISSINGE ROTTERDAM	12 Jul 1987 9 Jul 1997	_____	703825	Transfer Transfer
39	F	????	WILD	WILD	VLISSINGE ROTTERDAM	12 Jul 1987 9 Jul 1997 9 Mar 2001	_____	703826	Transfer Transfer Death
40	?	13 Aug 1999	UNK1	UNK2	A07 A19	13 Aug 1999 1 Mar 2000	_____	1	Hatch Transfer
41	?	28 Aug 1999	UNK1	UNK2	A07 A19	28 Aug 1999 1 Mar 2000	_____	2	Hatch Transfer
42	?	8 Aug 2000	UNK1	UNK2	A07 A19	8 Aug 2000 1 Sep 2000	_____	3	Hatch Transfer
43	?	12 Aug 2000	UNK1	UNK2	A07 A19	12 Aug 2000 1 Sep 2000	_____	4	Hatch Transfer
48	?	21 Oct 1999	34	36	ROTTERDAM	21 Oct 1999	704297		Hatch
58	M	????	WILD	WILD	A23	30 Jul 2000	DONALD		Transfer
59	F	????	WILD	WILD	A23	30 Jul 2000	DAISY		Transfer
60	F	????	WILD	WILD	A23	30 Jul 2000	EUSEBI		Transfer
61	F	????	WILD	WILD	A23	30 Jul 2000	PAULA		Transfer
62	?	1 Aug 1998	UNK1	UNK2	A07 A23	1 Aug 1998 16 Sep 1999	_____	TIC	Hatch Transfer

65	?	1 Aug 1998	UNK6	UNK7	A24 A23	1 Aug 1998 1 Jul 1999	_____ TRIC	Hatch Transfer
66	?	1 Aug 1998	UNK6	UNK7	A24 A23	1 Aug 1998 1 Jul 1999	_____ TRAC	Hatch Transfer
67	?	15 Mar 2001	MULT1	29	A02 A36	15 Mar 2001 24 Feb 2002	IV-1 _____	Hatch Transfer
68	?	14 Jun 2001	MULT1	29	A02 A11	14 Jun 2001 17 Feb 2002	IV-2 _____	Hatch Transfer
69	M	????	WILD	WILD	A23	5 Jul 2001	PLUTO	Transfer
70	M	????	WILD	WILD	A23	14 Jul 2001 1 Apr 2002	OSCAR	Transfer Death
71	F	????	WILD	WILD	LONDON RP ROTTERDAM	???? 23 Dec 2001	_____ 704781	Transfer Transfer
72	F	????	WILD	WILD	LONDON RP ROTTERDAM	???? 23 Dec 2001	_____ 704582	Transfer Transfer
73	?	????	WILD	WILD	LONDON RP ROTTERDAM	???? 23 Dec 2001	_____ 704583	Transfer Transfer
79	?	6 May 2002	MULT1	29	A08	6 May 2002	_____	Hatch
80	?	26 Jul 2002	MULT1	29	A08	26 Jul 2002	_____	Hatch
81	?	~ Jan 2000	UNK8	UNK9	A32 A36	~ Jan 2000 15 Aug 2002	_____	Hatch Transfer
82	?	~ Jan 2000	UNK8	UNK9	A32 A36	~ Jan 2000 15 Aug 2002	_____	Hatch Transfer
83	F	~ 1996	UNK10	UNK11	A38 A23	~ 1996 1 Aug 2002	_____ TAMARA	Hatch Transfer
84	?	8 Jun 2002	MULT1	29	A08	8 Jun 2002	_____	Hatch

Totals: 17.15.17 (49)

b) *Pyxis arachnoides brygooi*

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
6	?	????	WILD	WILD	A04	19 Sep 1998 ~15 Aug 2002	_____	Transfer Death
7	?	????	WILD	WILD	A04	19 Sep 1998	_____	Transfer
8	?	????	WILD	WILD	A04	19 Sep 1998 ~15 Aug 2002	_____	Transfer Death
9	?	????	WILD	WILD	A04	19 Sep 1998 ~15 Aug 2002	_____	Transfer Death
30	M	????	WILD	WILD	ROTTERDAM A03	14 Jan 1991 4 Jan 1995	702004 HZ0305	Transfer Loan to
31	F	????	WILD	WILD	ROTTERDAM A03	14 Jan 1991 4 Jan 1995	702005 HZ0306	Transfer Loan to
32	?	10 Oct 1994	30	31	ROTTERDAM A03	10 Oct 1994 25 Apr 1998	703152 HZ0539	Hatch Loan to
49	F	????	WILD	WILD	ROTTERDAM A03	???? 21 Jun 1998	_____ HZ0561	Transfer Loan to

50	?	1 Jul 1996	30	31	A03	1 Jul 1996	HZ0428	Hatch
51	?	27 Oct 1996	30	31	A03	27 Oct 1996	HZ0454	Hatch
52	?	14 May 1999	30	31	A03	14 May 1999	HZ0624	Hatch
53	?	7 Jun 1999	30	31	A03	7 Jun 1999	HZ0627	Hatch
54	?	19 Mar 2000	30	31	A03	19 Mar 2000	HZ0683	Hatch
55	?	12 May 2000	30	31	A03	12 May 2000	HZ0691	Hatch
56	M	????	WILD	WILD	A11 A03	~ 1985 _____ 16 Oct 1999	HZ0664	Transfer Loan to
57	F	????	WILD	WILD	A11 A03	~ 1985 _____ 16 Oct 1999	HZ0665	Transfer Loan to
74	?	????	UNK1	UNK2	A10	10 Oct 2001	PABU01	Transfer
75	?	????	UNK1	UNK2	A10	10 Oct 2001	PABU02	Transfer
76	?	????	UNK1	UNK2	A10	10 Oct 2001	PABU03	Transfer
77	?	????	UNK1	UNK2	A10	10 Oct 2001	PABU04	Transfer
78	?	????	UNK1	UNK2	A10	10 Oct 2001	PABU05	Transfer

Totals: 2.3.16 (21)

c) *Pyxis arachnoides oblonga*

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event
13	?	24 Oct 1997	UNK1	UNK2	A06 A17	24 Oct 1997 _____ 25 Jul 2000 _____		Hatch Transfer
14	?	28 May 1997	UNK1	UNK2	A06 A17	28 May 1997 _____ 25 Jul 2000 _____		Hatch Transfer
15	?	26 Jun 1997	UNK1	UNK3	A06 A17	26 Jun 1997 _____ 25 Jul 2000 _____		Hatch Transfer
16	?	27 Apr 1999	UNK1	UNK2	A06 A18	27 Apr 1999 _____ 25 Jul 2000 _____		Hatch Transfer
17	?	20 Jul 1999	UNK1	UNK2	A06 A18	20 Jul 1999 _____ 25 Jul 2000 _____		Hatch Transfer

Totals: 0.0.5 (5)

Appendix 1

Husbandry conditions and additional information per location

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

Location A08

No changes have been effected since the previous annual report. A detailed manuscript on husbandry and breeding is currently in preparation and will be submitted for publication in 2003.

Of interest are the following egg-laying dates of female 29: 22-07-02, 21-08-02, 28-09-02, 19-11-02. On the last date two eggs were found from the same female. Only one was buried. Although not one hundred percent certain, it is highly likely that these two eggs were produced as one clutch. The productivity of female 29 appears to be relatively high.

Location A10

Introduction

Much has changed during 2002. Gradual changes are being made, hoping that the female will start to lay more eggs. So far, only 1 (infertile?) egg was produced each year. Various communications with other keepers and breeders have convinced me to make some changes in illumination, vitamin additions, and soil.

Illumination

The amount of light provided has been increased. My trip to South Africa this year, and viewing some other terraria has made me believe that there was not enough light in my enclosures. Although the species does not move much and does not bask, it originates from a sunny habitat. At this time light is provided by means of a 60 W halogen lamp and two 36 W tube lights. These tube lights supply light for 2 adjacent enclosures. The photoperiod has remained the same as reported previously.

Drinking

In 2002 I started to provide vitamin D₃ in the drinking water: 10 drops (containing 2400 IE per ml) per litre.

Housing

The smallest of the two males that was in the same enclosure with the female has been transferred to another enclosure. This was done for 2 reasons: (1) To provide a more quiet environment for the female, and (2) to make sure that the sire will be known if breeding will occur. In case the female starts to lay fertile eggs in the near future (< 3 yrs), hatchlings will be considered related to both males due to possible sperm storage. At this time, no eggs have been produced, although mating has occurred.

Incubation

The only egg that is in the incubator is the one from last year (22-10-2001). This will probably not hatch. A final attempt was initiated after a talk with another studbook participant: The egg has been positioned on new, moistened vermiculite (vermiculite:water = 1:3 weight ratio). The egg has also been kept at room temperature for approximately two months (04-03-01 until 29-04-01) and then put back into the incubator with remoistened substrate. The incubation temperature is 32°C (with a maximum of 33°C when the diurnal heating switches on), and 26°C at night, each for 12 hrs.

Remarks

Due to the lack of breeding success this year, some additional changes will be made next year. First, the peat soil will be removed and replaced by sand (size 0/5). Peat may be too acidic. A second change might be to introduce the male to the female periodically rather than continuously. I am not sure about this change yet, because there are breeders who leave the male with the female for the

whole year and this seems to work. Another option could be to transfer the animals to another location that has already bred the species to see the result.

Location A17

No changes have been effected since the previous annual report. The eggs that were produced in 2001 are still in the incubator, and no additional eggs have been produced.

Location A18

The specimens are housed in a terrarium measuring 100 x 40 cm. The substrate consists of sand, and the enclosure is decorated with some bark to provide shelter for the specimens. The terrarium is illuminated by means of two 18 W tube lights and two 60 W Concentra spotlights. Additionally, soil heating is installed (35 x 25 cm). The soil heating as well as both Concentra spots are switched off during the cold and dry period in January/February. The temperature range during this period fluctuates between 17.8 - 26.4°C (mean: 22.0°C) with a humidity reaching from 33.2 - 60.7% (mean: 51.5%). The photoperiod is reduced to 10 hrs, spraying and feeding are completely stopped, and there is also no water available. After 6 weeks, spraying is started again as well as feeding. A water bowl is present in the enclosure. The spotlights as well as the soil heating are switched on gradually. The photoperiod increases gradually to 13.5 hrs in July/August. This time of the year is also the peak of the rainy season, imitated by spraying 6 times weekly. From September, photo period and spraying are reduced gradually. One of the spotlights as well as the soil heating is switched off at the beginning of November. At this time food becomes drier and it is fed only every second day, and from December only twice a week dry food is provided. Most of the year (March until November) green leaves and flowers from *Taraxacum*, *Tussilago*, *Trifolium*, and *Plantago* are fed. During the rest of the year dried leaves from different types of salad, and endive are provided.

Growth

Date	Specimen 0016		Specimen 0017	
	Dimensions (mm) (l x w x h)	Mass (g)	Dimension (mm) (l x w x h)	Mass (g)
10-11-01	82.1 x 57.8 x 35.2	96	53.3 x 42.5 x 28.6	36
22-03-02		94		34
23-11-02	88.2 x 66.1 x 42.9	149	59.7 x 50.2 x 32.4	55