

Marker, L. (2005). The international cheetah studbook. *Animal Keeper's Forum* 7/8: 378-383.

Keywords: *Acinonyx jubatus*/breeding/captivity/cheetah/Studbook

Abstract: The International Cheetah Studbook has the purpose of registering all cheetah in the world held in both zoological and private facilities, and providing information about existing animals by publishing the studbook contents enabling the creation of the preconditions for selecting breeding animals. The first edition of the International Cheetah Studbook was published in 1988. The 2002 International Cheetah Studbook is the 12th edition and includes all cheetahs known to be alive as of 31 December 2002 and combines all information available for the period 1 January, 2002 to 31 December, 2002.

The International Cheetah Studbook

*By Laurie Marker, PhD.
Founder/Executive Director
Cheetah Conservation Fund, Namibia*

The International Cheetah Studbook has the purpose of registering all cheetah in the world held in both zoological and private facilities, and providing information about existing animals by publishing the studbook contents enabling the creation of the preconditions for selecting breeding animals. The first edition of the International Cheetah Studbook was published in 1988. The 2002 International Cheetah Studbook is the 12th edition and includes all cheetahs known to be alive as of 31 December 2002 and combines all information available for the period 1 January, 2002 to 31 December, 2002 (Marker 2004).

The International Studbook has added captive animals around the world. In its first edition, the Studbook included wild-caught and captive-born animals, which were alive in 1980 and after, as well as founders with live offspring from 1980 and earlier. Over the years, more historic data from facilities has been collected and recorded in the Studbook. Each registered animal has a studbook card.

Each Studbook is published in a similar format including several sections for easy use and includes the following sections: Introduction of the population (Section A); major changes in the captive population from 1 January through 31 December of a given year (Section B); a summary of the captive population of cheetah, by Studbook number, at individual facilities as of 31 December of each year (Section C); all additions during the given year (Section D), that year's births (Section E); that year's deaths (Section F); and transfers during that year (Section G). Section F is an additional sub-section titled "Assumed dead". These animals have not been reported dead, but have been removed by the Studbook Keeper as it is assumed they are dead. Unfortunately, the Studbook Keeper has no recent information on them. Section H is a Studbook listing of all live animals as of December 31 of each that year, and Section I is a complete Studbook through 31 December of the year. A CD version of the Studbook is mailed to each facility holding cheetahs. The International Cheetah Studbook comes out at least a year past. The 2003 and 2004 Studbook are currently being processed.

The data in the Studbook has been computerized using the International Species Inventory System's (ISIS) Sparks Studbook Program. The information is compiled from various sources: Bi-annual questionnaires sent to all facilities holding cheetah; International Species Inventory System (ISIS); and importantly, personal communications. Excellent cooperation has been obtained from most facilities, and it is hoped that the data is accurate and complete. The Cheetah Studbook Keeper makes entries based on reported evidence and must assume that all information received from breeders is correct. Owners and holders of cheetahs are urged to check the Studbook for accuracy and if there are any discrepancies, the Studbook Keeper would appreciate notification.

2002 International Studbook Data

The international cheetah captive population on 31 December 2002 was 1,340 (695,644.1) animals in 241 facilities in 51 countries. The captive population of cheetahs live in eight geographical regions. Figure 1 shows the percentage of cheetah living in these regions as of the end of 2002. Table 1 is a breakdown of the eight regions by country and includes the number of facilities and the number of cheetah in each country for 2002. In addition, 43 cheetahs are found in unknown locations (primarily sales to game dealers where the final destination was not submitted to the Studbook Keeper).

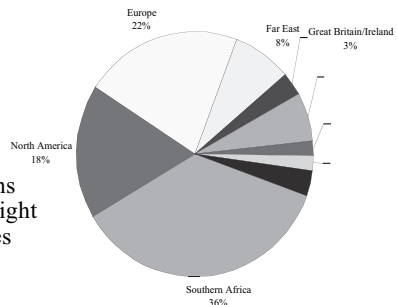


Figure 1. 2002 Captive Cheetah Population by Region - 1,340 Animals

Table 1 - 2002 - Regional Groupings

	Facilities	Total	M	F	U
<u>Southern Africa</u>					
Botswana	1	2	2	0	0
Namibia	28	174	92	82	0
South Africa	13	297	149	148	0
Zimbabwe	1	9	5	4	0
2002 - 4 countries, 43 facilities, 482 (248.234.0)					
<u>North America</u>					
Canada	4	23	9	14	0
United States	56	212	108	104	0
2002 - 2 countries, 60 facilities, 235 (117.118.0)					
<u>Europe</u>					
Austria	5	15	9	6	0
Belgium	4	13	5	8	0
Bulgaria	1	2	2	0	0
Czech Republic	5	23	10	13	0
Denmark	1	3	1	2	0
France	13	60	32	28	0
Germany	20	65	34	30	1
Italy	2	5	2	3	0
Netherlands	6	52	31	21	0
Poland	4	10	7	3	0
Portugal	3	5	2	3	0
Russia	1	8	3	5	0
Spain	3	7	3	4	0
Sweden	2	9	6	3	0
Switzerland	4	13	8	5	0
Uzbekistan	2	2	0	2	0
2002 - 16 countries, 76 facilities, 292 (155.136.1)					
<u>Far East</u>					
Burma	1	2	1	1	0
China	1	6	2	4	0
Indonesia	2	10	6	4	0
Japan	8	47	28	19	0
Malaysia	1	3	2	1	0
Singapore	1	10	5	5	0
Sri Lanka	1	2	0	2	0
Thailand	3	26	10	16	0
2002 - 8 countries, 18 facilities, 106 (54.52.0)					
<u>Great Britain/Ireland</u>					
England	9	29	15	14	0
Scotland	1	1	1	0	0
Northern Ireland	1	3	2	1	0
Ireland	2	11	6	5	0
2002 - 4 countries, 13 facilities, 44 (24.20.0)					
<u>N/E Africa/Middle East/India</u>					
Ethiopia	1	1	1	0	0
Israel	2	4	4	0	0
Jordan	1	2	1	1	0
Kenya	4	8	2	6	0
Morocco	1	2	1	1	0
Qatar	2	2	1	1	0
Saudi Arabia	1	5	3	2	0
Tunisia	1	3	2	1	0
United Arab Emirates	3	56	32	24	0
Dubai	1	2	2	0	0
2002 - 10 countries, 17 facilities, 85 (49.36.0)					
<u>Central and South America</u>					
Argentina	1	3	2	1	0
Brazil	2	3	1	2	0
Chile	1	2	1	1	0
Cuba	1	1	1	0	0
Mexico	3	18	7	11	0
2002 - 5 countries, 8 facilities, 27 (12.15.0)					
<u>Australia/ New Zealand</u>					
Australia	4	14	6	8	0
New Zealand	3	12	8	4	0
2002 - 2 countries, 7 facilities, 26 (14.12.0)					
<u>Other</u>					
Unknown location	43	22	21	0	
2002 Total - 51 countries, 241 facilities, 1340 (695.644.1)					

2002 Total - 51 countries, 241 facilities, 1340 (695.644.1)

From January 1, 2002 to 31 December 2002, 296 new animals were registered. These additions include historical information on 101 animals previously registered as T-numbers, newly imported wild-caught animals, and births during this period. One litter born at Munster in 2001 was registered in 2002. Of the new additions, 50 (20.30.0) animals were wild caught. Of these animals, 44 (19.25.0) went to two facilities in Namibia. Three (0.3.0) cheetahs were caught in South Africa and went to one facility. One (0.1.0) cheetah apparently from Somalia went to a facility in the United Arab Emirates. One cheetah hand-raised in Kenya was recorded as being owned privately.

2002 STUDBOOK INFORMATION

The captive cheetah population on December 31, 2002 was 1340 (695.644.1) animals in 241 facilities in 51 countries. Of the 1340 animals, 69% or 926 (497.429.0) are captive-born and 28% or 372 (179.193.0) are wild born. These figures shows a decrease by 42 animals in the number of captive-born animals in the population compared to 2001. The number of wild-born animals also decreased by 36 animals compared to the population of wild-born animals in 2001.

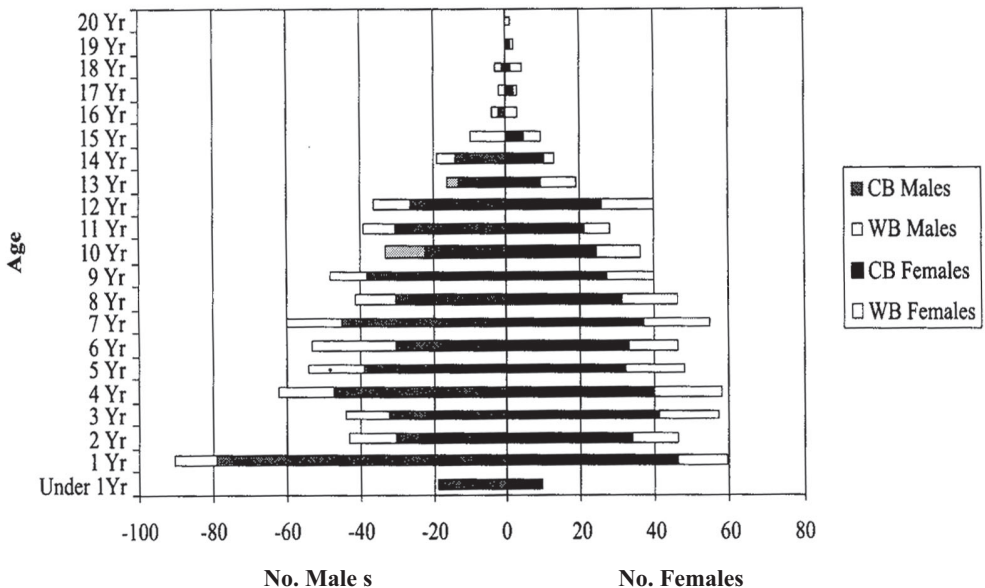


Figure 2. Age/Sex Structure of the 2002 Captive Cheetah Population for Wild-Born (WB) and Captive Born (CB). (Of these live cheetah, 1 is over 20 years of age and is believed to be a non-reported death).

Successful parentage was reported in 2002 with animals as young as two years old and as old as 15 years. The majority of successful breeding for both sexes occurs between three and 10 years of age. The data are relevant in assessing the age structure of the 2002 population. As shown in Figure 2, 53% or 712 animals (362.350) of the 2002 population are within the prime breeding age bracket (>3-<10 years of age). Of the animals in this age bracket, 34% or 210 (101.109) are wild born. The percentage of sub-adult animals (0-<3 years of age) is 20% or 266 (152.114) animals, of which 18%, 49 (24.25) animals are wild-born. Twenty four percent or 320 (162.158) animals are older than the usual breeding age (>10) of which 35% or 113 (54.59) are wild-born.

During 2002, 118 (71.41.6) cubs were born in 43 litters in 15 facilities in nine countries. Table 3 lists these litters of cubs and facilities. These births represent a decrease in productivity from 2001 when 137 cubs were born. Of the 118 cubs born, 24 (10.9.5) died under one month of age, which represents a 20% infant mortality. Five (2.3.0) cubs died between one month and six months of age.

Total cub deaths less than six month of age were 29 (12.12.5), which represents a 25% cub mortality, much the same as in 2001.

Table 3 – 2002 Births by Facility

FACILITIES	NO. LITTERS	NO. CUBS	NO.CUB DEATHS	NO BREEDING
			UNDER A MONTH	M/F
Bogor	1	1 (0.1.0)	0 (0.0.0)	1.1
Cincinnati	1	2 (1.1.0)	1 (0.1.0)	1.1
Dvurkralove	3	6 (2.3.1)	2 (0.1.1)	2.2
Fontaine	1	5 (2.3.0)	1 (0.1.0)	1.1
Fossilrim	1	3 (2.1.0)	0 (0.0.0)	1.1
Hilvarenb	1	3 (2.1.0)	0 (0.0.0)	1.1
Hoedspruit	6	17 (7.7.3)	3 (0.0.3)	5.6
Luther	1	4 (2.2.0)	0 (0.0.0)	1.1
Munster	1	5 (3.1.1)	1 (1.0.0)	1.1
Oudtshoorn	5	9 (6.3.0)	3 (2.1.0)	3.4
Peaugres	7	19 (13.5.1)	12 (7.4.1)	3.4
Pret DW	11	34 (26.8.0)	0 (0.0.0)	6.11
Sharjah	2	3 (2.1.0)	0 (0.0.0)	2.2
*Singapore	1	4 (2.2.0)	0 (0.0.0)	1.1
Wass BR C	1	3 (1.2.0)	1 (0.1.0)	1.1
15 FACILITIES	43	118(71.41.6)	24 (10.9.5)	30.38

*Indicates first time breeding success

On a facility basis, 15 of the 241 facilities that held cheetah in 2002 had reproductive success. As shown in Table 3, 14 of those facilities had previous reproductive success, and one of the facilities had success for the first time in 2002. There were 30 males and 38 females that were reproductively active during the year. The age distribution of successful breeders in 2002 is presented in Figure 3, and the age distribution of all breeding animals alive at the end of 2002 is presented in Figure 4. This data is relevant in assessing the age structure of the 2002 population. At the end of 2002 there were 164 (73.91) proven breeders alive in the captive population. During 2002, only 68 animals, 4.7 % of the captive population successfully bred and 11% of these (18) were wild-caught animals.

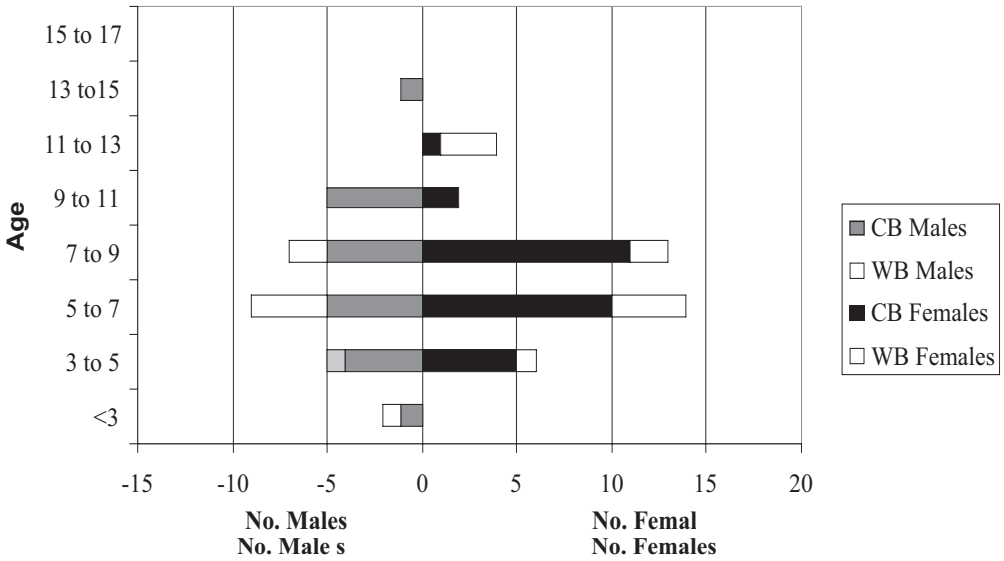


Figure 3. Age Distribution of Animals that Successfully Reproduced in 2002

Of the 1340 cheetahs alive in the 2002 population, 130 animals are proven breeders or animals that have breed at least once. This number permits the computation of the effective breeding size (N_e) for the 2002 population using the formula:

$$N_e = \frac{4 \times M \times F}{M + F} = 67$$

Where M is the number of breeding males and F is the number of breeding females, this value (N_e) is equivalent to 5% of the captive population.

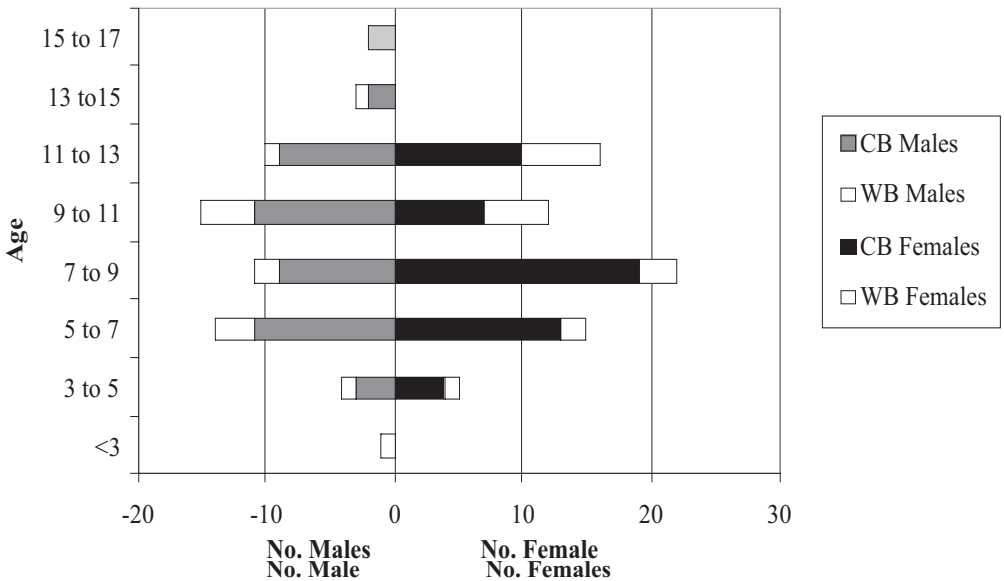


Figure 4. Age Distribution of Proven Breeders Alive as of 31 December 2002

Deaths reported in 2002 totalled 122, including cub deaths. Figure 5 shows the age at death of captive-born and wild-caught cheetah by sex in 2002. Of the animals that died, 34% or 41 animals were within the prime breeding age group ($\geq 3 \leq 10$ years of age); 39% or 48 animals were under three years of age, of which 79% or 38 were under one year old; and 27% or 33 were over 10 years of age.

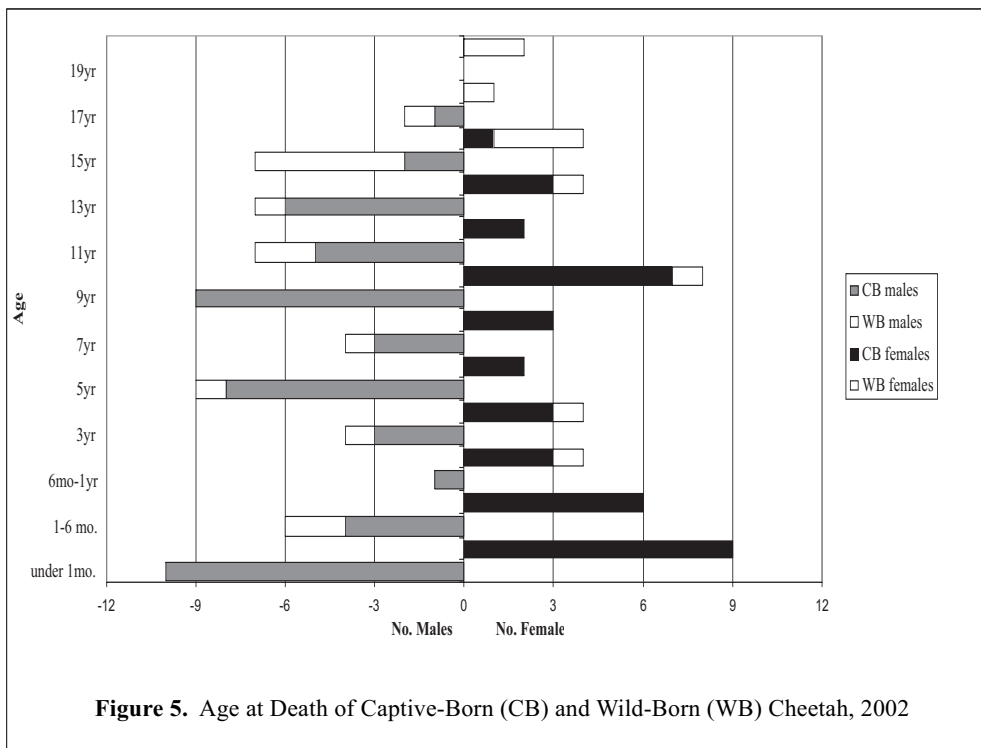


Figure 5. Age at Death of Captive-Born (CB) and Wild-Born (WB) Cheetah, 2002

Of the 118 (71.41.6) cubs born, 24 (10.9.5) died under one month of age, which represents a 20% infant mortality. Five (2.3.0) cubs died between one month and six months of age. Total cub deaths fewer than six months of age was 29 (12.12.5), which represents a 25% cub mortality, much the same as the previous year.

During 2002, 78 known facilities transferred animals either into or out of their facilities. Forty-one facilities transferred 90 (51.39) cheetahs to 55 facilities. There are 13 new facilities holding cheetah, and 28 facilities that are no longer holding cheetah. Many of the facilities removed are the ones holding cheetahs assumed dead due to their age. Unfortunately, no new information was received on these animals. Since the end of 2001, there has been a decrease of 36 animals in the world's captive cheetah population.

Reference

Marker, L. 2004. 2002 International Cheetah Studbook. Cheetah Conservation Fund, Otjiwarongo, Namibia.