



Eastern Black Rhino EEP

(Diceros bicornis michaeli)

Annual Studbook Report 2014

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Eastern Black Rhino EEP

Diceros bicornis michaeli

Annual Studbook Report 2014

(Data current as of December 31, 2014)

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Latest studbook version published: 2013

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Cover Photo: Olmoti at Zurich Zoo, photo courtesy of Robert Zingg.

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1. Introduction

Vision and target for the Black rhino EEP population:

- 1) Ensure a healthy and sustainable EAZA population to fulfil the needs of EAZA zoos.
- 2) Work closely with the African Rhino Specialist Group (AfRSG) and Governments to make Eastern Black rhino available for return to Africa to supplement populations where needed.

All participants must follow the EAZA EEP rules. Especially that all animals and their offspring are available to the EEP. The receiving institution will normally be responsible for the costs of the transfer, unless a pre agreed local arrangement is made between the institutions. It is the responsibility of the sending institution to ensure that the facilities and level of husbandry at the receiving institution are appropriate.

Please note that there are some restrictions on breeding with some individuals. If you have an animal that has a no breeding recommendation, you will have been made aware of it.

Although this EEP focuses on the Eastern subspecies *Diceros bicornis michaeli*, a pair of the Southern African subspecies, *D.b.minor* at Frankfurt Zoo is included within the studbook listings. It should be noted that these two animals are maintained and managed separately to the *D.b.michaeli*.

This studbook report gives an overview of the Black rhino EEP for 2014, including current population, demographic and genetic overviews.

All data and figures used in this report are produced by, or taken from, PMx Version 1.2 and SPARKS Version 1.65.

2. EEP Status and Development Table

Institution	Status (2014-01-01)			Births			DNS			Transfer EAZA in			Transfer EAZA out			Transfer Non-EAZA in			Transfer Non-EAZA out			Deaths			Status (2014-12-31)						
	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U				
Bassin d'Arcachon, France	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
Berlin Zoo, Germany	1	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6	0	
Chester Zoo, UK	3	7	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	7	0	
Cologne Zoo, Germany	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
Doie le Fontaine, France	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	
Ebeltoft Safari Park, Denmark	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	
Frankfurt, Germany	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
Hannover Zoo, Germany	1	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	
Howletts Wild Animal Park, UK	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	
Krefeld Zoo, Germany	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	
Leipzig Zoo, Germany	1	3	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	
Magdeburg Zoo, Germany	1	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	
Paignton Zoo, UK	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
Pont Scorff Zoo, France	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
Port Lympne Wild Animal Park, UK	3	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	10	0	
Rotterdam Zoo, Germany	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	
Tallinn Zoo, Estonia	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
Zurich Zoo, Switzerland	1	2	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	
	23	45	0	3	1	0	0	0	0	3	1	0	3	2	0	0	0	0	0	0	0	0	0	0	1	1	0	Total			
																												25	45	0	

NB. Frankfurt Zoo holds 1.1 *Diceros bicornis minor*

3. Population Overview

3.1 Current Status

As of 31.12.2014 there were 25.45 (70) Black rhino within the EEP, held in 18 collections.

1.1 of these are of the southern subspecies *Diceros bicornis minor* and are held at Frankfurt Zoo. These are included in the demographic, but not genetic analysis of this report.

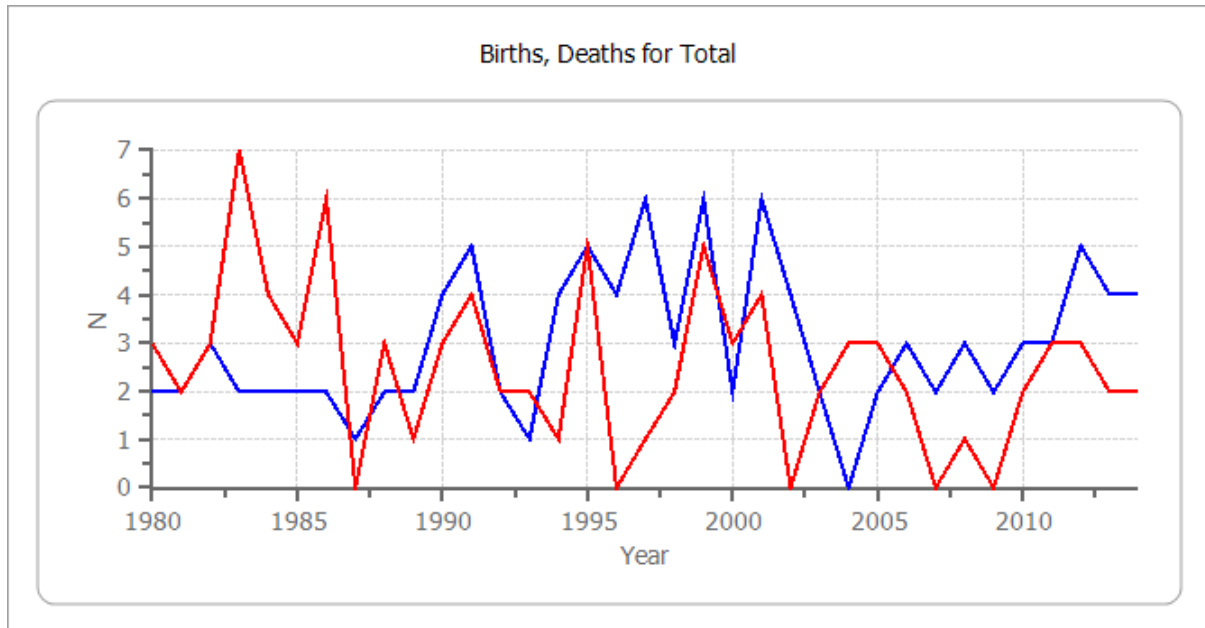
3.2 Events During 2014

Births – 3.1 births (3 EAZA collections)	
Berlin Zoo	2.0
Leipzig Zoo	1.0
Zurich Zoo	0.1

Deaths – 1.1 deaths (2 EAZA collections)		
Leipzig Zoo	1.0	13 days old
Port Lympne Wild Animal Park	0.1	~44 years old

See Graph 1 for how these rates compare to previous years.

Graph 1: Number of births and deaths per year 2002 – 2014 within the Black rhino EEP.



The following transfers also took place during 2014:

Transfers - 3.2 transfers (4 EAZA collections)	
Hannover Zoo to Chester Zoo	1.0
Leipzig Zoo to Hannover Zoo	1.0
Chester Zoo to Port Lympne Wild Animal Park	1.0
Magdeburg Zoo to Port Lympne Wild Animal Park	0.1
Zurich Zoo to Rotterdam Zoo	0.1

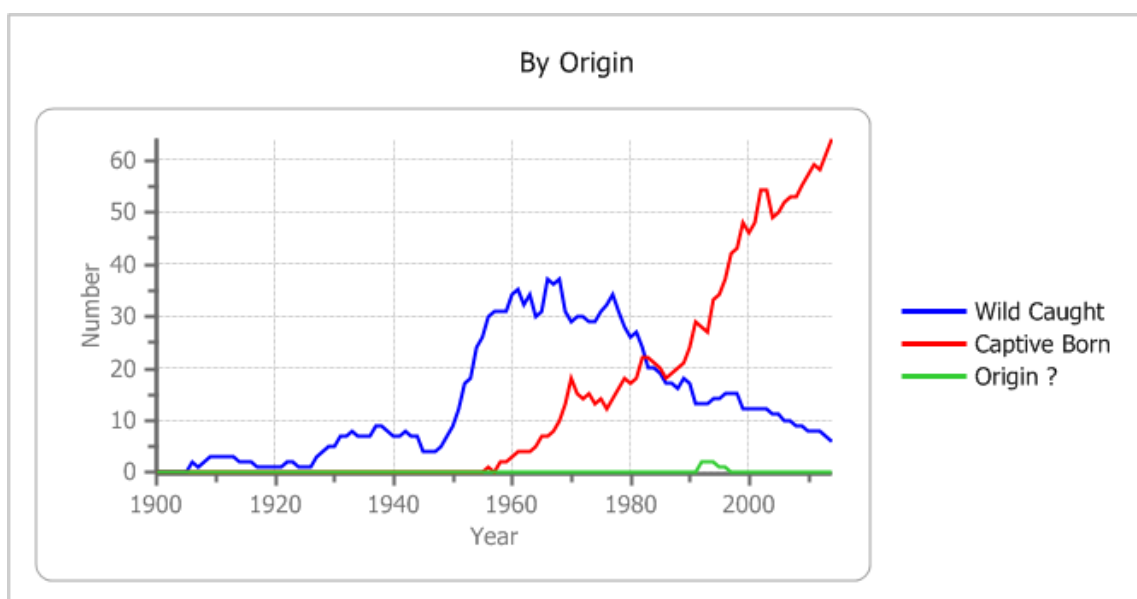
4. Demographic Overview

4.1 Census Graphs

When doing demographic analysis on the Black rhino EEP, we select all animals that were present in the population between 1960 and 2014. This is done using a date filter in SPARKS before exporting data to PMx. Prior to 1960 (shown in Graph 2) the captive population was reliant on wild imports, so the demographic data does not represent what we would expect from a self-sustaining population with natural fluctuation caused by birth and death rates. Indeed, it was not until 1956 that the first Black rhino was born in captivity.

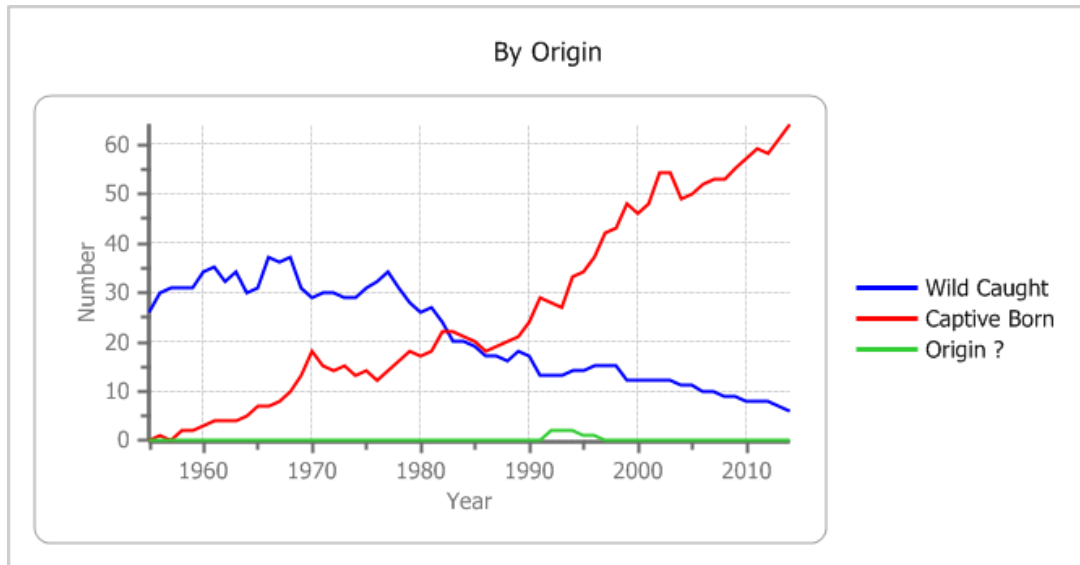
Although 1960 was the very beginning of the captive population shifting towards self-sustainability, and there have been huge advances in captive management since 1960 that may well have affected the population's demographics, we need to select this date as early as possible. It is recommended that the selected time period spans at least twice the life span of an individual, so for such a long lived species the time span selected (54 years) is a minimum of what we need to create demographic projections and predictions.

Graph 2: Census graph of captive Black rhino since 1900 split by origin type – it is not until 1956 that animals are bred in captivity.

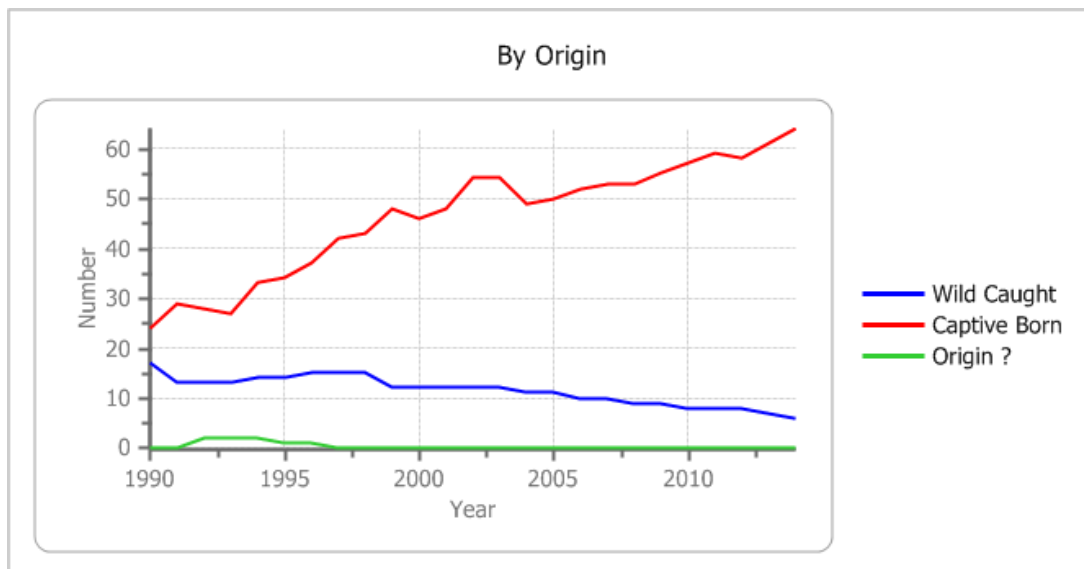


When we look at the census graphs from 1960 until today (Graph 3) we see a steady increase in the captive born population and a decrease in the wild caught animals that die and are not replaced. We can see that the increase in the captive born animals has been quite drastic since 1990 in Graph 4, in fact over doubling in size from 25 to over 65.

Graph 3: There has been a steady increase in the Black rhino captive population since 1955. Census graph here is split by animal origin.



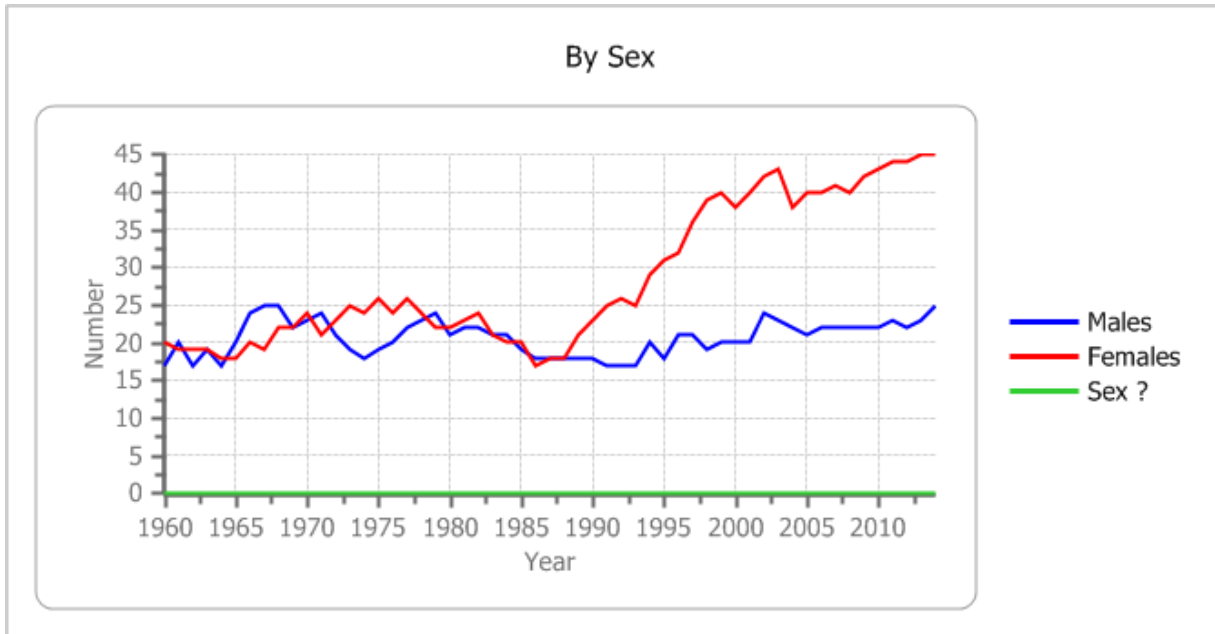
Graph 4: Census graph of Black rhino since 1990 split by origin.



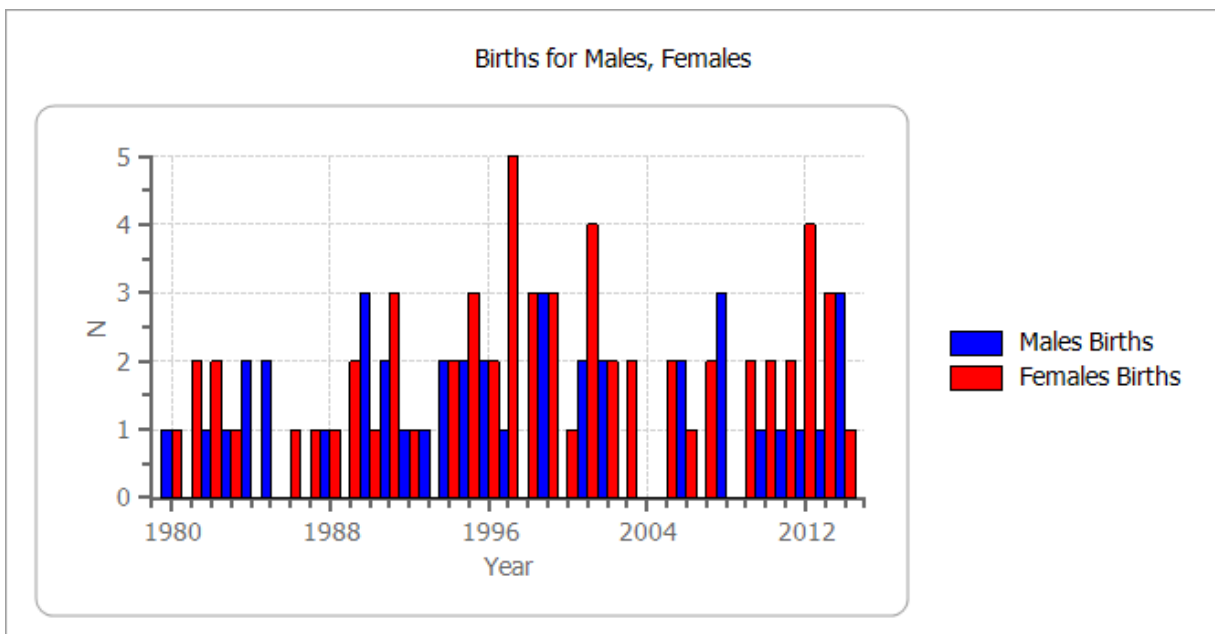
It appears that since 1987 there has been a skew in the sex ratio, with far more females than males in the population (Graph 5). When we look at how many males and females are

born each year since 1980 (Graph 6) we see a slight trend of more females being born, with a total of 62 females born over the last 35 years, but just 41 males. Averages show since 1980 1.2 males were born per year compared to 1.8 females.

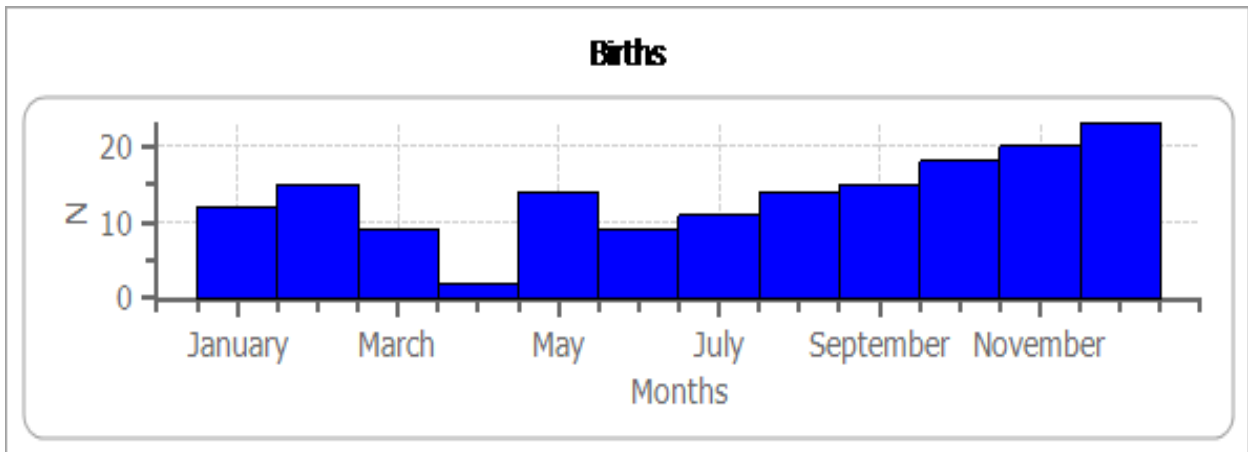
Graph 5: Census graph of Black rhino split by sex.



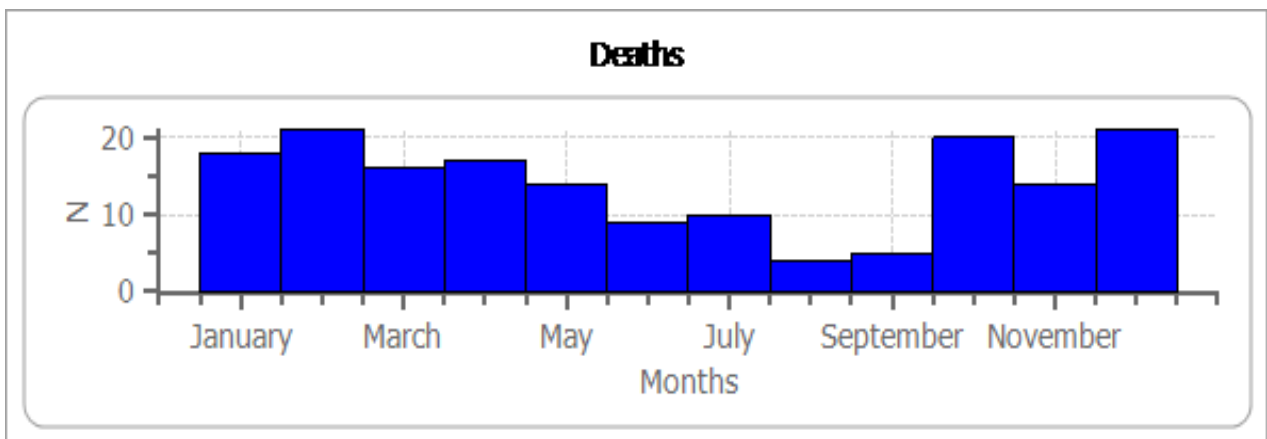
Graph 6: Number of male and female Black rhino born in EAZA collections between 1980 and 2014.



Graph 7: Seasonality of births of Black rhino with EAZA collections.



Graph 8: Seasonality of deaths of Black rhino with EAZA collections.



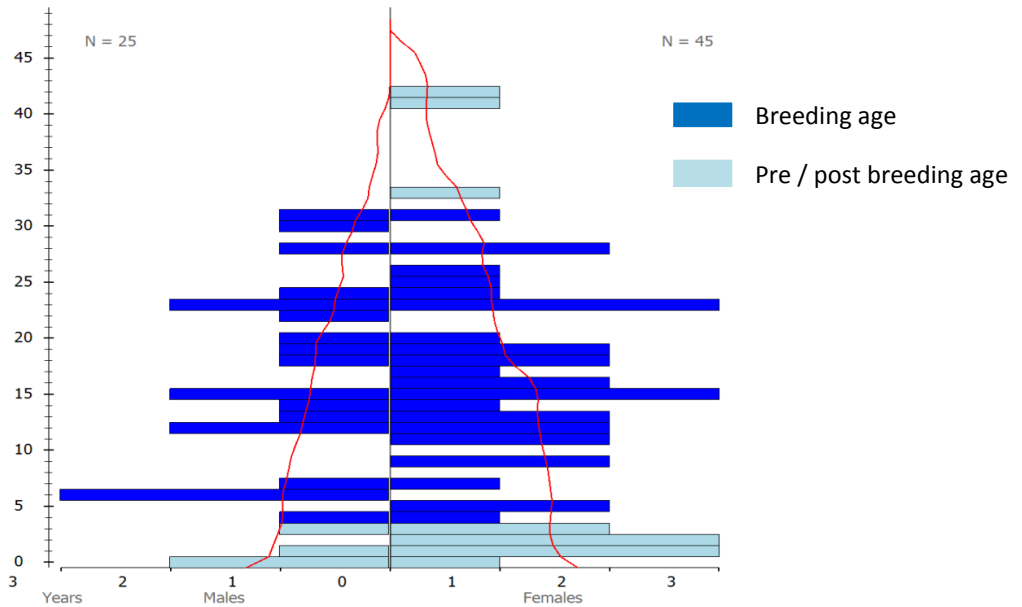
4.2 Age Pyramids

The Age pyramid of the Black rhino EEP population can be seen below (Graph 9). There are 70 black rhinos in the EEP (25.45). The oldest currently living female is 42 years and male is 31 years. The oldest ever recorded female was Kenia who died at Magdeburg in 2013 at ~47 years. The oldest ever male reached the age of 41 years.

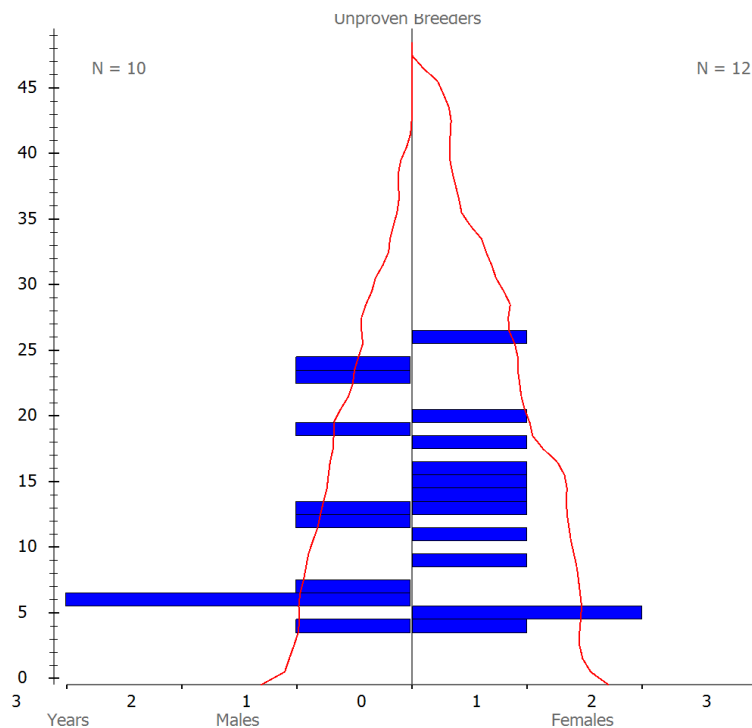
Of the 70 Black rhinos, of breeding age we have 21 males and 33 females. We have 9 pre-reproductive females but just 4 pre-reproductive males. The generation time (time taken from birth to first reproduction) for males is 17.1 years and for females is slightly shorter at 16.4 years.

Currently out of the full 70 only 34 are proven breeders (who have produced one calf, either living or dead). This 34 is made up of 11 males and 24 females. Graph 10 shows the rhinos who are unproven, who have not yet produced one calf.

Graph 9: Age pyramid for the Black rhino population.



Graph 10: Age pyramid for the Black rhino population showing unproven breeders (of breeding age)



4.3 Population Growth and Goals

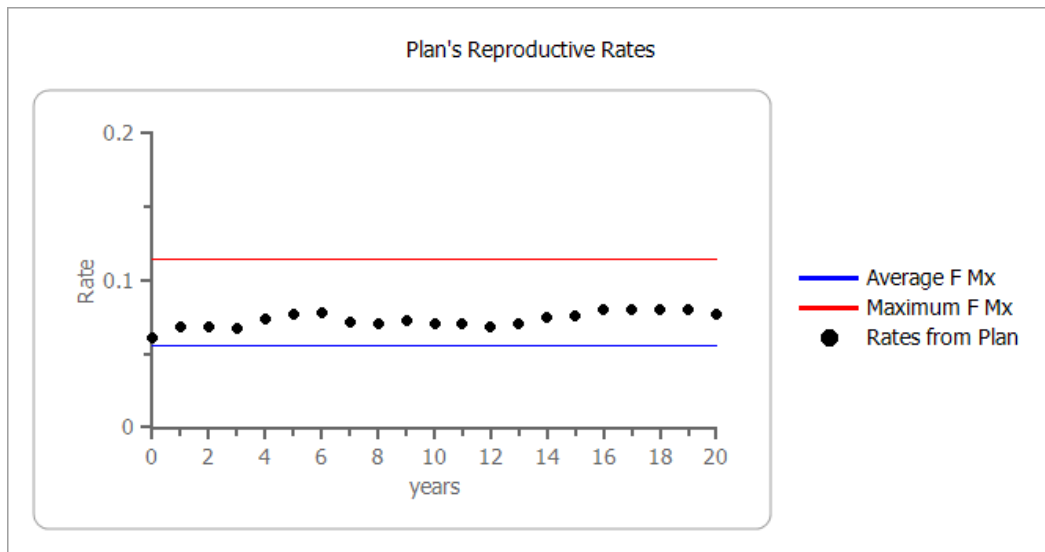
During the time period 1960 – 2014 the lambda, which is the proportional change in population size from one year to the next, based on the life table calculation (expected lambda) averaged for males and females was 0.978. This shows a declining population. But when we look at the population growth rate of 2014, we saw a small increase (lambda from census 1.029) which is positive. If we look at the last three years, we also see a positive lambda of 1.014.

However, after running stochastic projections, taking into account our skewed sex ratio (maximum of 2 females to every one male) we have just a 29% chance of an increase in the population next year (55% chance of decrease and 16% chance of staying the same). PMx predicts that in 20 years if we continue at the average lambda, we will have just 52 rhinos left in the EEP.

We need to increase our birth rate and focus on breeding pairs matched by mean kinship with low inbreeding coefficients. Of course, this is coupled with the drastic need to find new collections to join this EEP. Since 1991, then number of collections participating in the EEP has increased from 10 to the 18 we have today, but we are still struggling for space to place youngsters and move animal around to create important pairings.

In order to maintain our population size of 70 in 2015, we need to achieve 4 births during the year. So we encourage all collections that have a recommendation to breed a specific pair, to make effort to do so. As you can see in Graph 11 below, this reproduction rate is only slightly higher than our average reproductive rate from the last 54 years so should be achievable.

Graph 11: Reproductive rates that must be achieved to maintain a stable population of Black rhino within the EEP.



A full Demographic Summary is shown below:

Demographic Summary	
Size	25.45.0 = 70
Life Expectancy	16.6
30 day mortality	0.15 (N=116)
25% live to	25.7
10% live to	34.6
5% live to	40.6
1% live to	44.6
Oldest living	42.1 (ID:240)
λ	0.978
r	-0.023
R0	0.685
T	16.8 years

5. Genetic Overview

For genetic analysis, individuals who offer no potential genetic contribution to the future population are removed. The oldest ever recorded female to reproduce was 32 years old, so two animals over the age of 40 (SB# 240 Mzima and SB# 220 Kilaguni at Berlin) are removed. One infertile female is also removed (Manyara at Chester Zoo); as are two individuals at Frankfurt of the sub species *Diceros bicornis minor*. This reduces our managed population to 65 (25.45) living individuals.

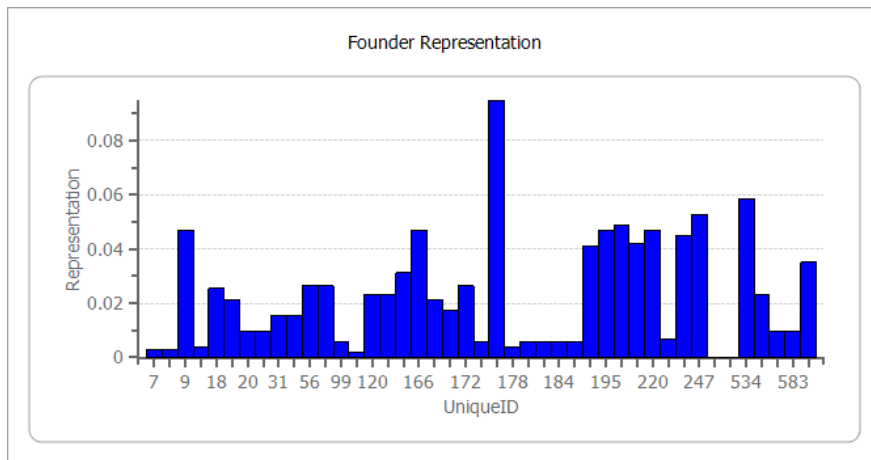
The current living population was founded by 41 animals. These are founders as recorded by SPARKS as those with WILD/WILD parents. This does not include other founders to the EEP population who have been transferred into the EEP from outside Europe and are therefore not related to any other rhinos apart from their offspring. For example Sammy (SB number 750) who came from Osaka, Japan in 1999. The representation of these founders in our living population is shown in Graph 12 below. Of the 41 founders 4 are still alive:

Studbook #	Location	Sex	Age	Descendants	Local ID	House Name
240	Berlin	Female	41	9.0	770025	Mzima
220	Berlin	Female	40	9.0	750016	Kilaguni
558	Lympne	Female	22	3.0	P95039	Vuyu
653	Hannover	Male	21	5.0	400007	Madiba

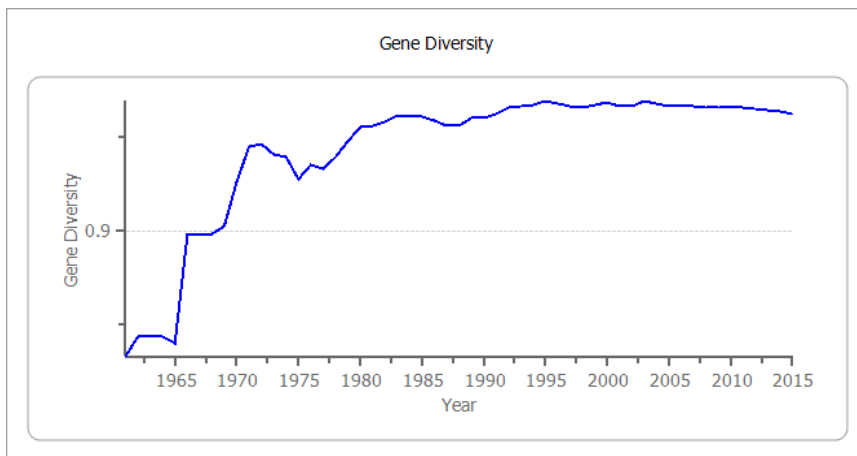
100% of the captive population ancestry is certain, and the genetic diversity of the 65 selected animals (the probability that two alleles from the same locus sampled at random from the population are not identical by descent from a common ancestor) is 0.96 or 96.16%. Graph 13 shows how the gene diversity has changed over time since 1960.

There is a mean inbreeding value of 0.01 (increase from 0.097 in 2013). Graph 14 shows how this has changed over time since 1960. The population mean kinship for the 65 selected animals is 0.0378 (this also shows an increase on last years 0.0366).

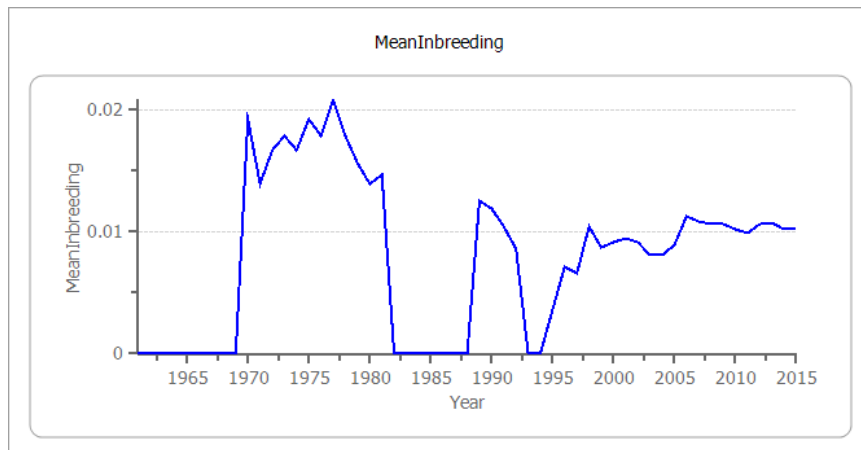
Graph 12: The number of copies of each founder's genes present in the living, descendent population of Eastern Black rhino.



Graph 13: Change in gene diversity from 1960 – 2014 within captive Eastern Black rhino.



Graph 14: Change in mean inbreeding from 1960 – 2014 within captive Eastern Black rhino.



A full genetic summary is shown below:

Genetic Summary	
Founders	41
Potential (additional) founders	0
Living animals	70
Living descendants	64
% Ancestry known	100%
% Ancestry certain	100%
Gene diversity	0.9616
Population mean kinship	0.0378
Gene value	0.9582
Founder genome equivalents	13.22
Founder genomes surviving	20.21
Potential gene diversity	0.9780
Mean inbreeding	0.0103
Ne/N	0.3817

The table below gives us genetic values for each of the 65 individuals included in the genetic analysis, ordered by location. It includes:

- Mean kinship (MK) - the mean kinship coefficient between an individual and all individuals in the living population.
- Mean kinship rank (MK Rank) - a rank of all the mean kinships in the population (1 being the highest)
- Inbreeding coefficient (F) - the probability that the two alleles at a genetic locus are identical by descent from an ancestor common to both parents.

The most important animals to breed are those with the lowest mean kinship value (MK) or the highest (i.e. rank 1) mean kinship rank (MK Rank). Ideally the inbreeding coefficients (F) should be 0. We must also consider age; the oldest animals with the lowest mean kinships are genetically the most important due to their reduced time left for breeding.

Eastern Black Rhinoceros, *Diceros bicornis michaeli*, EEP Studbook Report 2014

SB#	Location	House Name	Sex	Birth Date	Sire	Dam	F	Mk	Mk rank	Age years	# Living Offspring	Last Repro Date
689	Arcachon	Jane lee	F	1998-01-24	268	175	0.0000	0.0530	37f	16	0	2007-09-22
926	Arcachon	Dzanti	M	2007-11-24	283	540	0.0625	0.0455	17m	7	0	--
762	Bekesbrne	Salome	F	2000-01-25	283	282	0.0000	0.0383	26f	14	0	--
903	Bekesbrne	Zambezi ii	M	2002-12-31	534	408	0.0000	0.0310	10m	12	1	2012-07-01
950	Bekesbrne	Damara	F	2005-12-18	302	558	0.0000	0.0239	5f	9	0	--
220	Berlinzoo	Kilaguni	F	1974-01-01	Wild	Wild	0.0000	0.0234	6f	41	3	2001-08-11
240	Berlinzoo	Mzima	F	1973-01-01	Wild	Wild	0.0000	0.0225	4f	42	2	1996-02-18
366	Berlinzoo	Ine	F	1986-10-06	219	220	0.0000	0.0349	19f	28	4	2012-08-06
450	Berlinzoo	Jasper	M	1991-09-13	268	175	0.0000	0.0706	24m	23	9	2014-10-14
546	Berlinzoo	Kumi	F	1995-06-14	347	366	0.1250	0.0366	21f	19	2	2014-10-14
886	Berlinzoo	Maburi	F	2002-08-03	653	295	0.0000	0.0337	17f	12	2	2014-10-02
993	Berlinzoo	Akili	F	2012-08-06	450	366	0.0000	0.0566	39f	2	0	--
1056	Berlinzoo	Hodari	M	2014-10-02	450	886	0.0000	0.0560	20m	0	0	--
1057	Berlinzoo	Dayo	M	2014-10-14	450	546	0.0000	0.0573	23m	0	0	--
349	Chester	Kifaruu ii	M	1984-10-21	171	150	0.0000	0.0210	4m	30	2	2001-03-03
680	Chester	Kitani	F	1997-06-16	430	422	0.1250	0.0325	14f	17	1	2012-07-06
696	Chester	Manyara	F	1998-08-15	430	312	0.0000	0.0239	8f	16	0	--
714	Chester	Magadi	M	1999-02-09	534	194	0.0000	0.0366	13m	15	4	2013-06-29
883	Chester	Zuri	F	2007-03-05	341	428	0.0000	0.0352	20f	7	1	2013-06-29
898	Chester	Ema elsa	F	2002-11-02	283	619	0.0000	0.0405	28f	12	2	2012-10-03
947	Chester	Malindi	F	2005-11-03	653	295	0.0000	0.0317	13f	9	1	2013-03-07
998	Chester	Chanua	F	2012-10-03	714	898	0.0000	0.0425	29f	2	0	--
1049	Chester	Dakima	F	2013-03-07	714	947	0.0000	0.0381	24f	1	0	--
1051	Chester	Embu	M	2013-06-29	714	883	0.0000	0.0398	16m	1	0	--

Eastern Black Rhinoceros, *Diceros bicornis michaeli*, EEP Studbook Report 2014

SB#	Location	House Name	Sex	Birth Date	Sire	Dam	F	Mk	Mk rank	Age years	# Living Offspring	Last Repro Date
927	Ebeltoft	Thabo	M	2008-05-06	528	437	0.0000	0.0371	14m	6	0	--
928	Ebeltoft	Kito	M	2008-04-03	450	366	0.0000	0.0566	22m	6	0	--
956	Ebeltoft	Bashira	F	2009-05-15	714	898	0.0000	0.0425	29f	5	0	--
453	Fontaine	Katakata	M	1990-10-18	18	19	0.0000	0.0156	2m	24	0	--
532	Fontaine	Tisa	F	1994-05-20	347	220	0.0000	0.0289	9f	20	0	--
910	Fontaine	Binti	F	2003-11-02	450	366	0.0000	0.0566	39f	11	0	--
417	Hannover	Sany	F	1989-10-01	268	282	0.0000	0.0469	33f	25	2	2001-03-03
436	Hannover	Saba	F	1991-02-07	166	220	0.0000	0.0303	11f	23	1	2000-01-10
610	Hannover	Ndugu	M	1996-02-18	9	240	0.0000	0.0308	8m	18	2	2014-10-11
533	Koln	Taco	M	1995-02-06	349	417	0.0000	0.0378	15m	19	0	--
437	Krefeld	Nane	F	1991-04-04	166	240	0.0000	0.0327	15f	23	4	2013-07-13
528	Krefeld	Usoni	M	1994-07-01	252	217	0.0000	0.0337	12m	20	4	2013-07-13
1050	Krefeld	Nabila	F	2013-07-13	528	437	0.0000	0.0371	22f	1	0	--
743	Leipzig	Nandi	F	1999-05-07	450	481	0.0625	0.0598	41f	15	1	2013-09-14
767	Leipzig	Sarafine	F	2000-01-10	450	436	0.0000	0.0563	38f	15	1	2014-10-11
1052	Leipzig	Samia	F	2013-09-14	610	743	0.0000	0.0491	35f	1	0	--
341	Lympne	Kingo	M	1983-10-02	142	195	0.0000	0.0322	11m	31	3	2010-11-04
342	Lympne	Arusha	F	1983-11-11	142	194	0.0000	0.0288	8f	31	2	2003-09-16
384	Lympne	Rosie	F	1988-11-24	18	19	0.0000	0.0156	2f	26	0	--
558	Lympne	Vuyu	F	1991-07-01	Wild	Wild	0.0000	0.0117	1f	23	3	2009-12-25
663	Lympne	Ruaha	F	1996-12-21	318	195	0.0000	0.0225	3f	18	2	2011-01-22
750	Lympne	Sammy	M	1999-11-11	346	183	0.0000	0.0117	1m	15	1	2012-07-06
754	Lympne	Rufiji	F	1999-06-21	534	342	0.0000	0.0330	16f	15	0	--

Eastern Black Rhinoceros, *Diceros bicornis michaeli*, EEP Studbook Report 2014

SB#	Location	House Name	Sex	Birth Date	Sire	Dam	F	Mk	Mk rank	Age years	# Living Offspring	Last Repro Date
888	Lympne	Solio	F	2001-07-30	534	195	0.0000	0.0303	11f	13	0	--
911	Lympne	Nyasa	F	2003-09-16	391	342	0.0000	0.0463	32f	11	1	2012-07-01
955	Lympne	Asani	M	2008-10-29	750	680	0.0000	0.0258	5m	6	0	--
968	Lympne	Nyota	F	2009-12-25	341	558	0.0000	0.0259	6f	5	0	--
973	Lympne	Nkosi	M	2011-01-22	430	663	0.0000	0.0305	7m	3	0	--
975	Lympne	Mala	F	2011-12-24	653	295	0.0000	0.0298	10f	3	0	--
992	Lympne	Kissima	F	2012-07-01	903	911	0.0000	0.0425	31f	2	0	--
295	Magdeburg	Mana	F	1981-09-15	9	153	0.0000	0.0342	18f	33	4	2011-12-24
559	Magdeburg	Maleika	F	1995-12-23	386	295	0.0000	0.0381	24f	19	0	2012-07-15
653	Magdeburg	Madiba	M	1992-07-01	Wild	Wild	0.0000	0.0176	3m	22	3	2012-07-15
428	Paignton	Sita	F	1990-10-12	166	298	0.0000	0.0264	7f	24	1	2007-03-05
892	Paignton	Manyara	M	2002-09-18	534	456	0.0000	0.0309	9m	12	0	--
438	Pontscorf	Jakob	M	1991-06-23	386	387	0.1250	0.0485	18m	23	0	--
662	Rotterdam	Wanda	F	1996-07-03	252	150	0.0000	0.0234	4f	18	0	--
890	Rotterdam	Vungu	M	2001-11-08	341	558	0.0000	0.0259	6m	13	0	--
974	Rotterdam	Naima	F	2011-12-10	610	767	0.0000	0.0474	34f	3	0	--
969	Tallin	Kigoma	M	2010-02-07	450	886	0.0000	0.0560	20m	4	0	--
971	Tallin	Kibibi	F	2010-07-04	528	437	0.0000	0.0371	22f	4	0	--
857	Zurich	Jeremy	M	2000-12-21	283	387	0.1250	0.0551	19m	14	1	2014-12-28
861	Zurich	Samira	F	2001-03-03	349	417	0.0000	0.0398	27f	13	1	2014-12-28
1058	Zurich	Olmoti	F	2014-12-28	857	861	0.0313	0.0511	36f	0	0	--

6. SPARKS Reports

6.1 Living during 2014

Restricted to: (Diceros bicornis)
 Dates: 1 Jan 2014 - 31 Dec 2014
 Association: \Sparks\EAZA.fed
 Status: Living during 1 Jan 2014 - 31 Dec 2014
 Report ordered by: current/last location (alphabetic)

```
=====
Stud# | Sex | Birth Date | Sire | Dam | Location | Date | LocalID | Event | Name |
=====
```

ARCACHON - Musee Aquarium D'Arcachon, Arcachon, Gironde, France

```
  689  F   24 Jan 1998   268   175  DVURKRALV  24 Jan 1998   058039  Birth  JANE LEE
                                     ARCACHON  25 Nov 2011   _____  Transfer

  926  M   24 Nov 2007   283   540  DVURKRALV  24 Nov 2007   058051  Birth  DZANTI
                                     ARCACHON  25 Nov 2011   _____  Transfer
```

Totals: 1.1.0 (2)

BEKESBRNE - Howletts Wild Animal Park, Hythe, Kent, England (UK)

```
  762  F   25 Jan 2000   283   282  DVURKRALV  25 Jan 2000   058040  Birth  SALOME
                                     LYMPNE    27 Nov 2001   P21047  Transfer
                                     BEKESBRNE 18 Oct 2004   H20448  Transfer

  903  M   31 Dec 2002   534   408  LYMPNE    31 Dec 2002   P22060  Birth  ZAMBEZI II
                                     BEKESBRNE 11 Sep 2013   H21286  Transfer

  950  F   18 Dec 2005   302   558  LYMPNE    18 Dec 2005   P20578  Birth  DAMARA
                                     BEKESBRNE 10 Sep 2013   H21285  Transfer
```

Totals: 1.2.0 (3)

BERLINZOO - Zoologischer Garten Berlin Ag, Berlin, Germany

```
  220  F   ~ 1974   WILD   WILD  TANA RIV   ~ 1974   NONE  Capture  KILAGUNI
                                     DEMMER    28 Nov 1974   _____  Transfer
                                     DE GARDA  1 Dec 1974   _____  Transfer
                                     BERLINZOO 19 Oct 1975   0053    Transfer
                                     BERLINZOO 19 Oct 1975   750016  Transfer

  240  F   ~ 1973   WILD   WILD  TANA RIV   ~ 1973   NONE  Capture  MZIMA
                                     DEMMER    28 Mar 1975   _____  Transfer
                                     DE GARDA  1 Jun 1975   _____  Transfer
                                     BERLINZOO 6 May 1977   770025  Transfer

  366  F   6 Oct 1986   219   220  BERLINZOO  6 Oct 1986   0087    Birth    INE
                                     BERLINZOO  6 Oct 1986   860038  Transfer

  450  M   13 Sep 1991   268   175  DVURKRALV  13 Sep 1991   058025  Birth    JASPER
                                     LEIPZIG   6 Oct 1993   M01312  Transfer
                                     BERLINZOO  5 Nov 1999   990324  Loan to

  546  F   14 Jun 1995   347   366  BERLINZOO  14 Jun 1995   950206  Birth    KUMI

  886  F   3 Aug 2002   653   295  MAGDEBURG  3 Aug 2002   400008  Birth    MABURI
                                     BERLINZOO  7 Jul 2004   MO200002  Transfer

  993  F   6 Aug 2012   450   366  BERLINZOO  6 Aug 2012   M1200035  Birth    AKILI

 1056  M   2 Oct 2014   450   886  BERLINZOO  2 Oct 2014   M1400043  Birth    HODARI

 1057  M   14 Oct 2014   450   546  BERLINZOO  14 Oct 2014   M1400044  Birth    DAYO
```

Totals: 3.6.0 (9)

CHESTER - North of England Zoological Society, Upton-by-Chester, Cheshire, England (UK)

Eastern Black Rhinoceros, *Diceros bicornis michaeli*, EEP Studbook Report 2014

349	M	21 Oct 1984	171	150	ZURICH	21 Oct 1984	840011	Birth	KIFARU II
					FRANKFURT	27 Jul 1987	399	Loan to	
					HANNOVER	27 Sep 1991	IV207	Loan to	
					MAGDEBURG	18 Apr 2012	400011	Transfer	
					HANNOVER	28 Oct 2013	IV207	Transfer	
					CHESTER	12 Sep 2014	C14674	Loan to	
680	F	16 Jun 1997	430	422	CHESTER	16 Jun 1997	28489	Birth	KITANI
					FRANKFURT	16 Jun 1997	38492	Ownership	
696	neutF	15 Aug 1998	430	312	CHESTER	15 Aug 1998	26055	Birth	MANYARA
714	M	9 Feb 1999	534	194	LYMPNE	9 Feb 1999	P99015	Birth	MAGADI
					CHESTER	24 May 2005	C05265	Loan to	
883	F	5 Mar 2007	341	428	PAIGNTON	5 Mar 2007	8052	Birth	ZURI
					CHESTER	14 Jun 2011	C11443	Transfer	
898	F	2 Nov 2002	283	619	DVURKRALV	2 Nov 2002	058044	Birth	EMA ELSA
					CHESTER	13 Apr 2005	C0593	Loan to	
947	F	3 Nov 2005	653	295	MAGDEBURG	3 Nov 2005	400009	Birth	MALINDI
					CHESTER	25 Sep 2008	C08583	Transfer	
998	F	3 Oct 2012	714	898	CHESTER	3 Oct 2012	C12686	Birth	CHANUA
1049	F	7 Mar 2013	714	947	CHESTER	7 Mar 2013	C1363	Birth	DAKIMA
1051	M	29 Jun 2013	714	883	CHESTER	29 Jun 2013	C13429	Birth	EMBU

Totals: 3.7.0 (10)

EBELTOFT - Ree Park - Ebeltoft Safari, Ebeltoft, Arhus, Denmark

927	M	6 May 2008	528	437	KREFELD	6 May 2008	1884	Birth	THABO
					EBELTOFT	21 May 2010	DIB001	Transfer	
928	M	3 Apr 2008	450	366	BERLINZOO	3 Apr 2008		Birth	KITO
					EBELTOFT	6 Oct 2011	DIB002	Loan to	
956	F	15 May 2009	714	898	CHESTER	15 May 2009	C09219	Birth	BASHIRA
					EBELTOFT	22 Jun 2012	DIB003	Loan to	

Totals: 2.1.0 (3)

FONTAINE - BioParc De Doué, Doué-la-Fontaine, Maine-et-Loire, France

453	M	18 Oct 1990	18	19	LYMPNE	18 Oct 1990	P90002	Birth	KATAKATA
					LONDON RP	18 Oct 1990	A1259	Ownership	
					WHIPNADE	22 Oct 1993	L2166	Transfer	
					CHESTER	22 Jul 1998	26044	Loan to	
					FONTAINE	9 Jun 2005	2DB90	Transfer	
532	F	20 May 1994	347	220	BERLINZOO	20 May 1994	940061	Birth	TISA
					KOLN	2 Jun 1997	2250	Loan to	
					FONTAINE	4 Aug 2008	4DB94	Loan to	
910	F	2 Nov 2003	450	366	BERLINZOO	2 Nov 2003	M21482	Birth	BINTI
					FONTAINE	11 May 2006	3DB03	Loan to	

Totals: 1.2.0 (3)

FRANKFURT - Zoologischer Garten Frankfurt, Frankfurt Am Main, Hesse, Germany

393	F	~ 1986	WILD	WILD	MANAPOOL	~ 1986	NONE	Capture	TSORORO
					RHODES WD	10 Jan 1989		Transfer	
					FRANKFURT	17 Jul 1989	22109	Transfer	
394	M	~ 1986	WILD	WILD	ZIMBABWE	~ 1986	NONE	Capture	KALUSHO
					RHODES WD	10 Jan 1989		Transfer	
					FRANKFURT	17 Jul 1989	22108	Transfer	

Totals: 1.1.0 (2)

Eastern Black Rhinoceros, *Diceros bicornis michaeli*, EEP Studbook Report 2014

HANNOVER - Zoo Hannover GmbH, Hannover, Lower Saxony, Germany

417	F	1 Oct 1989	268	282	DVURKRALV HANNOVER	1 Oct 1989 4 Sep 1991	058022 IV206	Birth Transfer	SANY
436	F	7 Feb 1991	166	220	BERLINZOO LEIPZIG HANNOVER	7 Feb 1991 7 Feb 1991 23 Sep 1993 14 Oct 2003	910034 M00447 M00447 IV311	Birth Loan to Transfer Loan to	SABA
610	M	18 Feb 1996	9	240	BERLINZOO LEIPZIG HANNOVER	18 Feb 1996 4 Jul 2001 1 Jan 2002 17 Sep 2014	960019 M03019 M03019 IV517	Birth Loan to Transfer Transfer	NDUGU

Totals: 1.2.0 (3)

KOLN - Cologne Zoo, Koeln, N Rhine-Westph, Germany

533	M	6 Feb 1995	349	417	HANNOVER ZURICH KOLN	6 Feb 1995 6 Feb 1995 10 Jun 1997	IV220 950008 2251	Birth Ownership Loan to	TACO
-----	---	------------	-----	-----	----------------------------	---	-------------------------	-------------------------------	------

Totals: 1.0.0 (1)

KREFELD - Zoo Krefeld GmbH, Krefeld, N Rhine-Westph, Germany

437	F	4 Apr 1991	166	240	BERLINZOO DVURKRALV KREFELD	4 Apr 1991 1 Oct 1993 26 May 1994	910035 058034 740	Birth Loan to Transfer	NANE
528	M	1 Jul 1994	252	217	ZURICH DORTMUND KREFELD	1 Jul 1994 27 Nov 1996 30 Oct 2003	940006 081004 1572	Birth Loan to Loan to	USONI
1050	F	13 Jul 2013	528	437	KREFELD	13 Jul 2013	739	Birth	NABILA

Totals: 1.2.0 (3)

LEIPZIG - Zoologischer Garten Leipzig, Leipzig, Sachsen, Germany

743	F	7 May 1999	450	481	LEIPZIG	7 May 1999	M02619	Birth	NANDI
767	F	10 Jan 2000	450	436	LEIPZIG	10 Jan 2000	M02731	Birth	SARAFINE
1052	F	14 Sep 2013	610	743	LEIPZIG	14 Sep 2013	M10148	Birth	SAMIA
1055	M	11 Oct 2014	610	767	LEIPZIG	11 Oct 2014 24 Oct 2014	M10342	Birth Death	

Totals: 1.3.0 (4)

LYMPNE - Port Lympne Wild Animal Park, Hythe, Kent, England (UK)

195	F	~ 1970	WILD	WILD	E.AFRICA DEMME BEKESBRNE LYMPNE	~ 1970 15 Sep 1971 20 Oct 1971 26 Jan 1973 16 Jul 2014	NONE H71007 P73003	Capture Transfer Transfer Transfer Death	RUKWA
[Death by: Unknown means]									
341	M	2 Oct 1983	142	195	LYMPNE CHESTER LYMPNE PAIGNTON LYMPNE	2 Oct 1983 21 Jul 1995 9 Jul 1996 16 Jan 2003 8 May 2008	P83001 25165 P83001 4937 P83001	Birth Loan to Transfer Loan to Transfer	KINGO
342	F	11 Nov 1983	142	194	LYMPNE	11 Nov 1983	P83002	Birth	ARUSHA
384	F	24 Nov 1988	18	19	LONDON RP CHESTER LYMPNE	24 Nov 1988 10 Aug 1999 13 Jun 2011	A797 M00116 P21138	Birth Transfer Transfer	ROSIE
558	F	~ 1991	WILD	WILD	ADDO NP	~ 1991	NONE	Capture	VUYU

Eastern Black Rhinoceros, *Diceros bicornis michaeli*, EEP Studbook Report 2014

					NZP-WASH	2 May 1995		Transfer	
					LYMPNE	6 Aug 1995	P95039	Loan to	
663	F	21 Dec 1996	318	195	LYMPNE	21 Dec 1996	P96046	Birth	RUAHA
750	M	11 Nov 1999	346	183	OSAKA	11 Nov 1999	401	Birth	SAMMY
					CHESTER	10 Apr 2002	CZ54	Loan to	
					LYMPNE	24 Jun 2014	P21387	Loan to	
754	F	21 Jun 1999	534	342	LYMPNE	21 Jun 1999	P99052	Birth	RUFIJI
					BEKESBRNE	18 Oct 2004	H20447	Transfer	
					LYMPNE	10 Sep 2013	P99052	Transfer	
888	F	30 Jul 2001	534	195	LYMPNE	30 Jul 2001	P21025	Birth	SOLIO
911	F	16 Sep 2003	391	342	LYMPNE	16 Sep 2003	P20331	Birth	NYASA
955	M	29 Oct 2008	750	680	CHESTER	29 Oct 2008	C08640	Birth	ASANI
					LYMPNE	3 Oct 2012	P21244	Loan to	
968	F	25 Dec 2009	341	558	LYMPNE	25 Dec 2009	P20978	Birth	NYOTA
973	M	22 Jan 2011	430	663	LYMPNE	22 Jan 2011	P21104	Birth	NKOSI
975	F	24 Dec 2011	653	295	MAGDEBURG	24 Dec 2011	400010	Birth	MALA
					LYMPNE	7 May 2014	P21378	Transfer	
992	F	1 Jul 2012	903	911	LYMPNE	1 Jul 2012	P21233	Birth	KISSIMA

Totals: 4.11.0 (15)

MAGDEBURG - Zoologischer Garten Magdeburg, Magdeburg, Sachsen-Anhalt, Germany

295	F	15 Sep 1981	9	153	MAGDEBURG	15 Sep 1981	400004	Birth	MANA
559	F	23 Dec 1995	386	295	MAGDEBURG	23 Dec 1995	400006	Birth	MALEIKA
653	M	~ 1992	WILD	WILD	ADDO NP	~ 1992	NONE	Capture	MADIBA
					MAGDEBURG	25 Sep 1996	400007	Transfer	
					HANNOVER	18 Apr 2012	IV484	Transfer	
					MAGDEBURG	28 Oct 2013	400007	Transfer	

Totals: 1.2.0 (3)

PAIGNTON - Paignton Zoo Environmental Park, Paignton, Devonshire, England (UK)

428	F	12 Oct 1990	166	298	BERLINZOO	12 Oct 1990	900044	Birth	SITA
					PAIGNTON	19 Sep 2002	4741	Loan to	
892	M	18 Sep 2002	534	456	LYMPNE	18 Sep 2002	P22032	Birth	MANYARA
					PAIGNTON	17 Jun 2010	8372	Transfer	

Totals: 1.1.0 (2)

PONTSCORF - Zoo De Pont-Scorff, Pont-Scorff, Morbihan, France

438	M	23 Jun 1991	386	387	DVURKRALV	23 Jun 1991	058024	Birth	JAKOB
					KREFELD	24 May 1994	739	Transfer	
					PONTSCORF	13 Nov 2002	100324	Loan to	

Totals: 1.0.0 (1)

ROTTERDAM - Rotterdam Zoo, Rotterdam, South Holland, The Netherlands

662	F	3 Jul 1996	252	150	ZURICH	3 Jul 1996	960005	Birth	WANDA
						3 Jul 1996	960005	Loan to	
					ROTTERDAM	12 Nov 2014	Z14493	Transfer	
890	M	8 Nov 2001	341	558	LYMPNE	8 Nov 2001	P21034	Birth	VUNGU
					BEKESBRNE	14 Oct 2004	H20444	Transfer	
					ROTTERDAM	2 Sep 2013	Z13328	Transfer	
974	F	10 Dec 2011	610	767	LEIPZIG	10 Dec 2011	M09769	Birth	NAIMA
					ROTTERDAM	2 Sep 2013	Z13343	Transfer	

Totals: 1.2.0 (3)

TALLIN - Tallinn Zoo, Tallinn, Estonia

969	M	7 Feb 2010	450	886	BERLINZOO TALLIN	7 Feb 2010 27 Apr 2013	19153	Birth Transfer	KIGOMA
971	F	4 Jul 2010	528	437	KREFELD TALLIN	4 Jul 2010 27 Apr 2013	2030 19154	Birth Transfer	KIBIBI

Totals: 1.1.0 (2)

ZURICH - Zoo Zürich, Zürich, Switzerland

857	M	21 Dec 2000	283	387	DVURKRALV CHESTER FONTAINE ZURICH	21 Dec 2000 13 Apr 2005 9 Jun 2005 12 Jan 2010	058041 C0594 1DB00 B00007	Birth Loan to Loan to Transfer	JEREMY
861	F	3 Mar 2001	349	417	HANNOVER ZURICH	3 Mar 2001 28 Jun 2004	IV281 A10031	Birth Transfer	SAMIRA
1058	F	28 Dec 2014	857	861	ZURICH	28 Dec 2014	B40620	Birth	OLMOTI

Totals: 1.2.0 (3)

TOTALS: 26.46.0 (72)
18 Institutions

7.2 Births

Restricted to: (Diceros bicornis)
Dates: 1 Jan 2014 - 31 Dec 2014
Event: Births
Association: \Sparks\EAZA.fed
Report ordered by: current/last location (alphabetic)

Stud#	Sex	Birth Date	Sire	Dam	Location	Date	LocalID	Event	Name
-------	-----	------------	------	-----	----------	------	---------	-------	------

BERLINZOO - Zoologischer Garten Berlin Ag, Berlin, Germany

1056	M	2 Oct 2014	450	886	BERLINZOO	2 Oct 2014	M1400043	Birth	HODARI
1057	M	14 Oct 2014	450	546	BERLINZOO	14 Oct 2014	M1400044	Birth	DAYO

Totals: 2.0.0 (2)

LEIPZIG - Zoologischer Garten Leipzig, Leipzig, Sachsen, Germany

1055	M	11 Oct 2014	610	767	LEIPZIG	11 Oct 2014 24 Oct 2014	M10342	Birth Death	
------	---	-------------	-----	-----	---------	----------------------------	--------	----------------	--

[Death by: Unknown means]

Totals: 1.0.0 (1)

ZURICH - Zoo Zürich, Zürich, Switzerland

1058	F	28 Dec 2014	857	861	ZURICH	28 Dec 2014	B40620	Birth	OLMOTI
------	---	-------------	-----	-----	--------	-------------	--------	-------	--------

Totals: 0.1.0 (1)

TOTALS: 3.1.0 (4)
3 Institutions

7.3 Deaths

Restricted to: (Diceros bicornis)
 Dates: 1 Jan 2014 - 31 Dec 2014
 Event: Deaths
 Association: \Sparks\EAZA.fed
 Report ordered by: current/last location (alphabetic)

```
=====
Stud# | Sex | Birth Date | Sire | Dam | Location | Date | LocalID | Event |Name |
=====
```

LEIPZIG - Zoologischer Garten Leipzig, Leipzig, Sachsen, Germany

Stud#	Sex	Birth Date	Sire	Dam	Location	Date	LocalID	Event	Name
1055	M	11 Oct 2014	610	767	LEIPZIG	11 Oct 2014	M10342	Birth	
						24 Oct 2014		Death	

Totals: 1.0.0 (1)

```
-----
```

LYMPNE - Port Lympne Wild Animal Park, Hythe, Kent, England (UK)

Stud#	Sex	Birth Date	Sire	Dam	Location	Date	LocalID	Event	Name
195	F	~ 1970	WILD	WILD	E.AFRICA	~ 1970	NONE	Capture	RUKWA
					DEMME	15 Sep 1971		Transfer	
					BEKESBRNE	20 Oct 1971	H71007	Transfer	
					LYMPNE	26 Jan 1973	P73003	Transfer	
						16 Jul 2014		Death	

Totals: 0.1.0 (1)

```
=====
```

TOTALS: 1.1.0 (2)
 2 Institutions

7.4 Transfers

Restricted to: (Diceros bicornis)
 Dates: 1 Jan 2014 - 31 Dec 2014
 Event: Transfers
 Association: \Sparks\EAZA.fed
 Report ordered by: current/last location (alphabetic)

```
=====
Stud# | Sex | Birth Date | Sire | Dam | Location | Date | LocalID | Event | Name |
=====
```

CHESTER - North of England Zoological Society, Upton-by-Chester, Cheshire, England (UK)

```
349 M 21 Oct 1984 171 150 ZURICH 21 Oct 1984 840011 Birth KIFARU
II
FRANKFURT 27 Jul 1987 399 Loan to
HANNOVER 27 Sep 1991 IV207 Loan to
MAGDEBURG 18 Apr 2012 400011 Transfer
HANNOVER 28 Oct 2013 IV207 Transfer
CHESTER 12 Sep 2014 C14674 Loan to
```

Totals: 1.0.0 (1)

HANNOVER - Zoo Hannover GmbH, Hannover, Lower Saxony, Germany

```
610 M 18 Feb 1996 9 240 BERLINZOO 18 Feb 1996 960019 Birth NDUGU
LEIPZIG 4 Jul 2001 M03019 Loan to
1 Jan 2002 M03019 Transfer
HANNOVER 17 Sep 2014 IV517 Transfer
```

Totals: 1.0.0 (1)

LYMPNE - Port Lympne Wild Animal Park, Hythe, Kent, England (UK)

```
750 M 11 Nov 1999 346 183 OSAKA 11 Nov 1999 401 Birth SAMMY
CHESTER 10 Apr 2002 CZ54 Loan to
LYMPNE 24 Jun 2014 P21387 Loan to
975 F 24 Dec 2011 653 295 MAGDEBURG 24 Dec 2011 400010 Birth MALA
LYMPNE 7 May 2014 P21378 Transfer
```

Totals: 1.1.0 (2)

ROTTERDAM - Rotterdam Zoo, Rotterdam, South Holland, The Netherlands

```
662 F 3 Jul 1996 252 150 ZURICH 3 Jul 1996 960005 Birth WANDA
3 Jul 1996 960005 Loan to
ROTTERDAM 12 Nov 2014 Z14493 Transfer
```

Totals: 0.1.0 (1)

TOTALS: 3.2.0 (5)

4 Institutions

Compiled by: Rebecca Biddle thru North of England Zool. Society
 Data current thru: 31.01.2014 European regional
 Printed on 15.01.2014 using Sparks v1.65