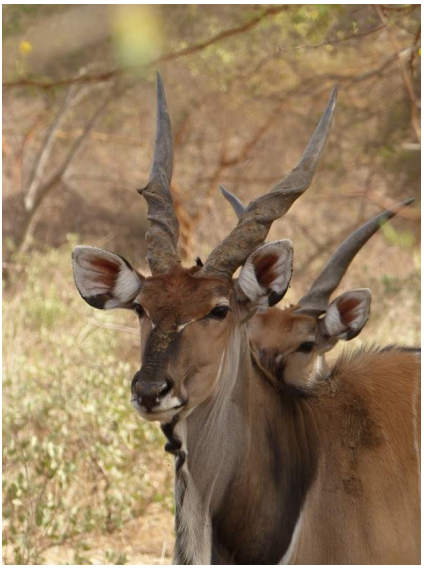
AFRICAN STUDBOOK

WESTERN DERBY ELAND

Taurotragus derbianus derbianus (GRAY, 1847)



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DERBIANUS CONSERVATION

SOCIETÉ POUR LA PROTECTION DE L'ENVIRONNEMENT ET DE LA FAUNE AU SÉNÉGAL

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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DERBIANUS CONSERVATION

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Editors:

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Anna Kubátová
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under the auspices of the Western Derby Eland Conservation Programme
&
Society for the Protection of Environment and Fauna in Senegal
&
Directorate of National Parks of Senegal

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CONTENT

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CONSERVATION de l'ELAND de DERBY

COOPERATION REPUBLIQUE TCHEQUE - SENEGAL

CZECH UNIVERSITY OF LIFE SCIENCES IN PRAGUE

RESERVE de FATHALA

Société pour la Protection de l'Environnement et de la Faune au Sénégal

Direction des Parcs Nationaux du Sénégal

PARTICIPATING ORGANISATIONS AND INSTITUTIONS

Society for the Protection of Environment and Fauna in Senegal (SPEFS) founded the semi-captive Western Derby eland conservation programme, hosting the animals in their two nature reserves and providing them with necessary protection, breeding facilities, and management.

Ministry of Environment and Sustainable Development of Senegal (MESD) and **Directorate of National Parks in Senegal** (DPNS) provides the legislative framework and represents the government authority responsible for nature conservation in Senegal.

Czech University of Life Sciences Prague (CULS Prague) provides the Western Derby eland conservation programme with scientific expertise in the domains of ecology, behaviour, and genetic management.

Derbianus Conservation, z. s. is a non-governmental organization founded at CULS Prague to provide managing and fundraising activities for the Western Derby eland conservation programme. Derbianus Conservation also arranges professional veterinary services for animal transports, supports the development of infrastructure in the nature reserves, provides environmental education both in Senegal and Czech Republic and conducts research activities necessary for the management decisions.

Ministry of Environment of the Czech Republic and **Ministry of Foreign Affairs of the Czech Republic** are the institutions that support Western Derby eland conservation, breeding management and environmental education.

Since 2012 the Western Derby eland conservation programme proudly bears the brand of **WAZA** (World Association of Zoos and Aquariums).

In 2015 Derbianus Conservation, a leading partner in the Western Derby eland conservation programme, became an **Associated member of EAZA** (European Association of Zoos and Aquaria).

In May 2015, Memorandum of understanding between Ministry of Environment of the Czech Republic and Ministry of Environment and Sustainable Development of Senegal focused on biodiversity conservation with an emphasis on Western Derby eland was signed. The NGO Derbianus Conservation was subsequently charged with executing this Memorandum on the Czech side.

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MAIN PARTNERS AND SPONSORS of Western Derby eland conservation programme and cooperating organisations:

PREFACE TO THE VOLUME TEN

The tenth volume of the African studbook for the Western Derby eland (*Taurotragus derbianus derbianus*) brings current demographic and genetic characteristics of the semi-captive population in Bandia and Fathala reserves, Senegal.

In 2017, the Antelope Specialist Group SSC/IUCN updated the conservation status of Lord Derby's eland, changing the status of the species from Near Threatned to Vulnerable and confirms the Western subspecies as critically endangered. We therefore turn our attention to the implementation of the Western Derby elands Conservation Strategy. We launched the preparative phase with Directorate of National Parks and negotiated options for realisation of the Strategy. The Back-Home operation, i.e. the translocation of captive-born animals back to their natural environment in the Niokolo Koba Natioal Park has been highlighted as the first step. It will require a lot of human efforts, professional knowledge, logistics and communication at all levels, from internation to national. The communication at local level, with local rural communities is crucial and will be integral part of the conservation efforts we and all our partners deploy.The Western Derby eland conservation could not have been realised without the support provided by individuals and institutions that care about the future of our environment.

Every donation will move us forward to the goal to help them survive.

Editors

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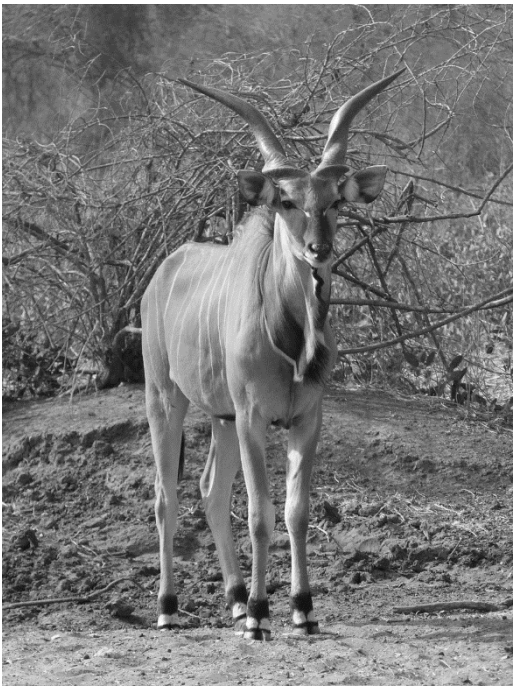
SECTION A:

Western Derby Eland

Conservation Programme



Sub-adult male of Western Derby eland

CURRENT STATUS OF WESTERN DERBY ELAND

The Western Derby eland (*Taurotragus derbianus derbianus*) is currently restricted to only one country in the world – Senegal, and classified as Critically Endangered by IUCN RedList. There are three important localities hosting Western Derby eland: 1) the Niokolo Koba National Park (NKNP) with the only confirmed wild population, 2) the Bandia reserve and 3) the Fathala reserve..

The NKNP in south-eastern Senegal covers 913,000 ha and it is the Senegalese largest and oldest national park. Its importance as a well-preserved ecosystem of Sudanese and Sudano-Guinean savanna with extraordinary rich biodiversity concerns the entire region of the West Africa. The area of NKNP supports high diversity of plant and animal species. Since 1981, NKNP is listed as World Heritage and since 2007 as World Heritage in Danger by UNESCO (UNESCO, 2014). NKNP and its neighbouring areas are probably the only place in the world where the last wild population of Western Derby eland can be found, however it suffers by poaching, cattle grazing and other antropogenic activities. During 2015 and 2016 we ran a camera trap study in the central part of the park, however only two specimens of eland were spotted during the study.

The Bandia reserve is situated 65 km south-east of Dakar, Senegal (14°35' N, 17°00' W), on the south-western border of the classified forest Bandia (Forêt classée de Bandia). The fenced reserve contributes substantially to natural vegetation conservation (Hejcmanová *et al.*, 2010). Very few game species are native in the Bandia reserve, the majority of species is introduced from various areas of Senegal, such as African buffalo (*Syncerus caffer brachyceros*), defassa waterbuck (*Kobus ellipsiprymnus defassa*), roan antelope (*Hippotragus equinus koba*), and from South Africa, such as giraffe (*Giraffa camelopardalis giraffa*), greater kudu (*Tragelaphus strepsiceros*), impala (*Aepyceros melampus*), common eland (*Taurotragus oryx oryx*), and white rhino (*Ceratotherium simum simum*). The Bandia reserve was the first site where the wild-captured Western Derby elands were placed after the NKNP capture operation in 2000 and since, the site and the herd

management have proved to be appropriate for their successful reproduction. The Bandia reserve is well equipped wildlife reserve with facilities such as boma and enclosures.

The Fathala reserve is the fenced area of the Fathala Forest (Forêt de Fathala), the main terrestrial part of the Delta du Saloum National Park (DSNP) situated on the west coast of Senegal (13°39' N, 16°30' W) near the northern border of the Gambia. The area is flat with dry plateaus, passing into shallow humid valleys, such as "Mare of the Dragon". There is some native game such as bushbuck (*Tragelaphus scriptus*), warthog (*Phacochoerus africanus*), patas monkey (*Erythrocebus patas*); and several introduced game species from Senegal, such as African buffalo (*Syncerus caffer brachyceros*), defassa waterbuck (*Kobus ellipsiprymnus defassa*), roan antelope (*Hippotragus equinus koba*), and from South Africa, as giraffe (*Giraffa camelopardalis giraffa*), and white rhino (*Ceratotherium simum simum*). The Fathala reserve also hosts two herds of Western Derby eland in enclosures of approximately 160 ha and 1,800 ha.

In 2017 our research team published a study of Eastern Derby eland (*Taurotragus derbianus gigas*) population in Chinko Protected Area in the Central African Republic. This subspecies is still hunted in most of the area of its distribution. According to the new assessment published by IUCN Red List it has been uplisted from Least Concern to Vulnerable. In cooperation with Chinko we provided results of unique camera trap study in this remote area (Brandlová et al., 2017).

CURRENT SITUATION WITHIN THE SEMI-CAPTIVE POPULATION OF WESTERN DERBY ELAND

The critical situation of the Western Derby eland (WDE) in the wild highlights the importance of a semi-captive population established in 2000 first in Bandia and later in Fathala reserves. Despite of being based on very limited number of founding animals (one male and five females), this population has been continuously growing.

At the beginning of 2017, we continued our regular activities in the field. One of the most important tasks was the identification of new-born calves and control of semi-captive population conditions in breeding and bachelor herds. We have also organized transfers of Derby eland to new breeding herds to avoid inbreeding and to minimize the loss of genetic variability. The largest herd of WDE in the Bandia reserve still shares the enclosure with common elands. Presence of both species in a limited area carries a risk of potential interbreeding, which may irreversibly destroy the gene pool of the critically endangered WDE. Therefore, we separated most of the breeding females from this herd and continued in intensive monitoring of their interactions by direct observation and by intensive DNA survey of both common elands and WDE.

We organized WDE transfers within the Bandia and Fathala reserves in the first half of March 2017. At first, we removed two subadult males from the herd Bandia 1 to Bandia 3 and 5 subadult females from Bandia 1 to Bandia 3 or 5. See Table 1 for details. Transefers continued in Fathala reserve. Four males in the age from one to tree years were removed from herd Fathala 1 to Fathala 2. Every animal was measured and DNA samples were taken duing immobilisations.

Moreover, one male was tranffered from herd Bandia 3 to Bandia 1 without immobilization. The male was led on foot to the new location by using of kad, acacia seed pods.

Tab. 1. Overview of WDE transfers in March 2017:

Name	***Sex***	***Age***	***Date of trasport***	***Moved from***	***Moved to***
Felicia	F	2	2017-03-02	Bandia 1	Bandia 3
Soukeina	F	2	2017-03-02	Bandia 1	Bandia 3
Safira	F	2	2017-03-03	Bandia 1	Bandia 3
Diamaye-Niane	F	1	2017-03-03	Bandia 1	Bandia 5
Dayo	M	1	2017-03-03	Bandia 1	Bandia 3
Driankee	F	2	2017-03-04	Bandia 1	Bandia 5
Docteur	M	2	2017-03-05	Bandia 1	Bandia 3
Fredy	M	1	2017-03-14	Fathala 1	Fathala 2
Fode	M	2	2017-03-14	Fathala 1	Fathala 2
Fadel	M	2	2017-03-14	Fathala 1	Fathala 2
Falco	M	3	2017-03-15	Fathala 1	Fathala 2
Stanley	M	3	2017-03-01	Bandia 3	Bandia 4

For the current structure of Western Derby eland herds kept in Bandia and Fathala reserves see Table 2.

Tab. 2. The actual structure of herds (June 2017) is following: (location + numerical enclosure designation):

Enclosure designation	***Number of males***	***Number of females***	***Herd category***	***Enclosure size***	***Enclosure type***
Bandia 1+2	25	10	Reproductive	3,500 ha	Multiple species
Bandia 3	4	9	Reproductive	80 ha	Single species
Bandia 4	7	0	Bachelor	100 ha	Single species
Bandia 5	3	12	Reproductive	80 ha	Single species
Bandia total	**39**	**31**		**Totally 70**	
Fathala 1	4	10	Reproductive	160 ha	Single species
Fathala 2	14	3	Reproductive	1,800 ha	Multiple species
Fathala total	**18**	**13**		**Totally 31**	

Pedigree analysis

Western Derby eland pedigree data were processed in SPARKS 1.66 (ISIS 1992) and further corroborated in PMx software for pedigree analyses (Ballou *et al.*, 2011; Traylor-Holtzer, 2011). All individuals born until June 2017 were included into the pedigree. "Founders" means wild-born individuals translocated in 2000 from Niokolo Koba National Park to Bandia reserve. Founders were presumed to be unrelated for the purpose of the pedigree analysis, however our results based on DNA analysis have shown considerable similarity among them (Zemanová et al., 2015). Identity of each individual is recorded according to unique stripe pattern that remains the same throughout the life of an individual. Mother-calf relationships are determined from ground observations based on repeated photo documentation of nursing bouts. Regarding the exclusion of sub-adult males from breeding herds, the only adult male was assumed to be the sire of all the descendants in the main breeding herd (Bandia 1) until 2009. In 2010, we left more males in this herd to replace the old one and later we used this approach also in other breeding herds. We aimed that all the males were from the same genetic lineage (same mother-founder) but later it was not always fulfilled due to logistic reasons. Calves from those herds were then recorded as "multiple sired" with probabilities added to each potential sire.

In 2016 we used 11 microsatellites to evaluate genetic structure of the population and we refined missing paternities to calves born in 2003 (Tab. 3). The parentage analysis according to most likely candidate mother was done in Cervus 3.0.7 (Kalinowski et al., 2007). We also checked the mother-calf relationships assigned by observations and corrected two misidentifications from the season 2005/2006 when two mother-calf pairs were switched due to missing photodocumentation. We added this information into the studbook dataset.

Tab. 3. Parentage analysis and maternity assignment

Studbook Number	Sample ID	Name	Dam Studbook Number	Dam Sample ID	Name mother
1013	AD006	Popenguine	1002/1006	NoSample	Dalaba/Tamba
1010	AD007	Karang	1004	AD014	Bembou
1009	AD023	Ndiogoye	1002/1006	NoSample	Dalaba/Tamba
1012	AD024	Fathala	1003	AD019	Salémata
1011	NoSample	Guddi	1005	AD020	Malapa

Demographic analysis

A total of 176 offspring of the Western Derby eland were born from 2000 to 2017 in the herds with 6 founders in fenced areas, initially in the Bandia reserve and later in the Fathala reserve (Fig. 1). Thereby, the Western Derby eland formed a population of 101 living individuals bred in semi-captivity and managed in 6 herds in 2 nature reserves in Senegal in June 2017 (Tables 2 and 4).

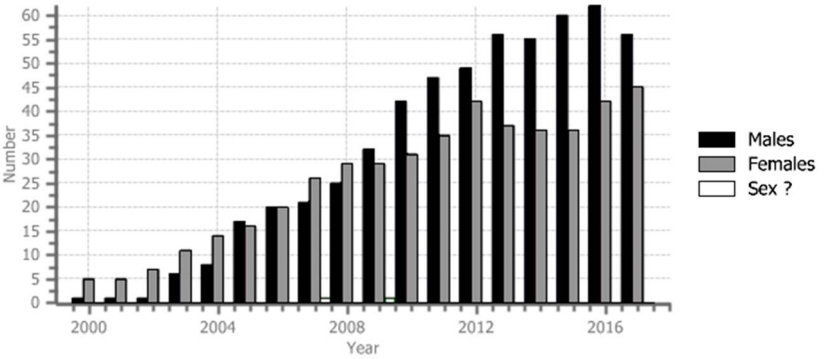


Fig. 1. Population growth rate in the semi-captive Western Derby eland population based on the real data collected between 2000 and 2017.

Tab. 4. Demographic parameters of the Western Derby eland semi-captive population in June 2017.

Variable	Males	Females	Unknown
Founders	1	5	
Present number of individuals *N*	56	45	
Number of pre-reproductive	11	13	
Number of adults in the population	45	32	
Number of proven breeders	25	23	
Births total	93	76	7
Deaths total	38	34	7
Generation length	6.8	5.8	
Deterministic population growth rate (λ) [a]	1.45	1.14	

[a] λ >1 indicates population increase

The reproduction of Western Derby eland in the Bandia reserve started in 2002 with 2 female calves born. Mating occurred most likely synchronously (chi sq = 432.77, df = 11, $p < 0.05$), considering that most calves were born from November to January (86 %) and the rest in October and from February to April (Fig. 2). The sex ratio (male:female) got closer to balance, from 1.58:1 in 2016 to 1.24:1 in 2017 as number of both pre-reproductive and adult females increased (Fig. 3). Number of breeding females increased from 19 to 23 out of 32 adult females, which means that there are still 29% of adult females not reproducing. . The age structure (Fig. 4) also shows a slight improvement of sex ratio towards females. The changes in sex ratio during the whole history of population are shown on Fig. 5.

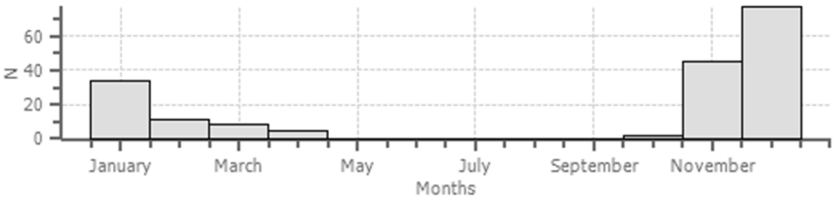


Fig. 2. Birth distributions of Western Derby elands in the Bandia reserve throughout the year in the period of 2002 – 2017.

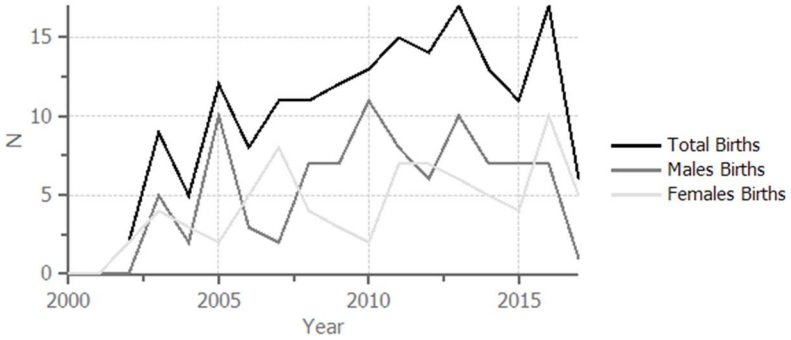


Fig. 3. Number of births of Western Derby elands in semi-captive population in respective years (2000 – 2017).

The earliest reproduction occurred at the age of 2 years in both males and females, the latest recorded reproduction at the age of 16 years (female) and 13 years (male). Average fecundity (M_x = ½ number of offspring born to a parent of age x) was 3.7 for males and 0.3 for females.

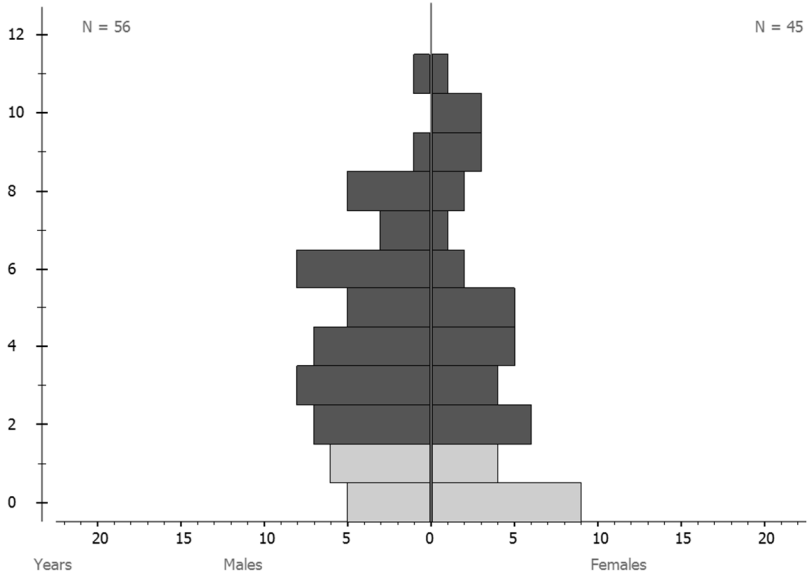


Fig. 4. Male and female age structure of the living individuals of the Western Derby elands held in semi-captivity in June 2017. The light-coloured part represents individuals in non-breeding age.

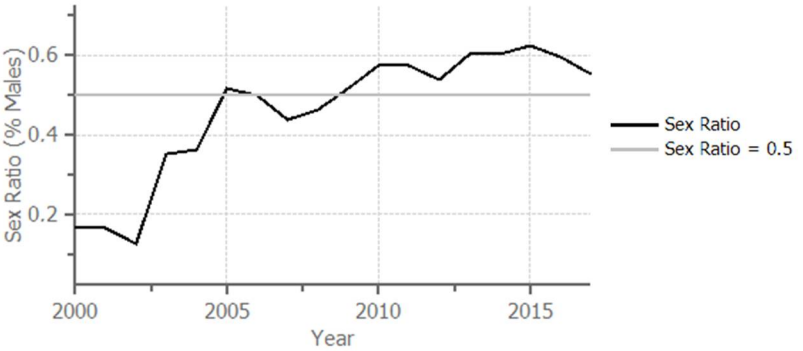


Fig. 5. Development of the sex ratio in the population from 2000 to 2017.

The annual mortality in 2014 reached an alarming value of 21.7 %, then continually dropped to the long-term average in 2016. In 2017 no female died, however we lost a significant number of males, mostly due to their age (Fig. 6). The average values of mortality (Table 5) have not significantly changed, but the population remains sensitive to changes in mortality rates. Mortality was not seasonally distributed (Fig. 7). Survival values and life expectancies are calculated in Table 6.

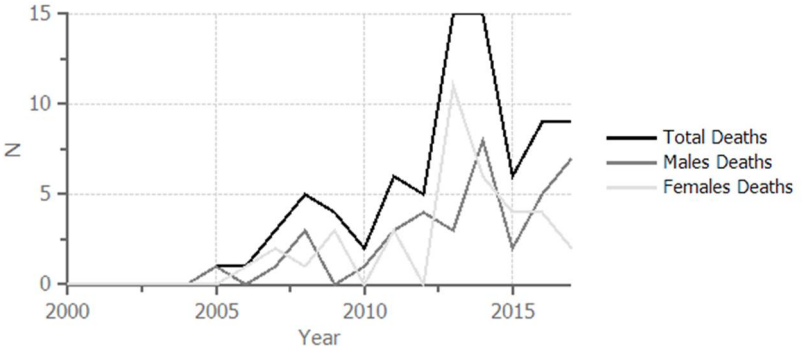


Fig. 6. Overview of deaths of Western Derby eland in semi-captive population since 2000.

Tab. 5. Overview of the mortality in different age categories of semi-captive population of Western Derby eland based on the real data collected between 2000 and 2017.

Mortality	**Total**	**Males**	**females**
30 Day Mortality	0.05 (N=167)	0.04 (N=92)	0.06 (N=75)
0 Age Class Mortality	0.09 (N=156)	0.06 (N=89)	0.13 (N=67)
Avg. Pre-Repro Mort	0.07 (N=148)	0.06 (N=85)	0.10 (N=63)
Avg. Repro Mortality	0.12 (N=43)	0.13 (N=24)	0.11 (N=19)

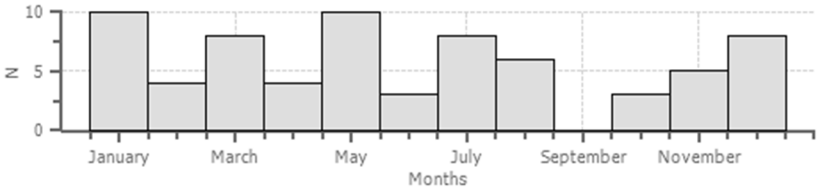


Fig. 7. Non-calf mortality in semi-captive population of Western Derby elands based on the real data collected between 2000 and 2017.

Tab. 6. Survival rates of the WDE population. Lx value shows the ratio of population which will reach specific age.

Survival (years)	Total	Males	females
Lx = 0.50	9.9	9.1	10.6
Lx = 0.25	12.2	11.6	12.9
Lx = 0.10	14.3	12.7	15.9
Lx = 0.05	15.2	13.8	16.5
Lx = 0.01	15.4	13.8	16.9
Life Expectancy	8.9	8.6	9.3
Oldest Living	11.5 (ID:1029)	11.5 (ID:1034)	11.5 (ID:1029)
Oldest Recorded	16.9	13.5	16.9

Analyses of the life table of the Western Derby eland indicated that the annual population growth rate was 1.28, slightly higher than the last year. Net reproductive rate (R_0), which is the rate of change per generation (average number of offspring that an individual will produce per year) increased to 7.5. (12.88 for males and 2.34 for females).

The actual population growth was moderately less than predicted. According to the projections assessing the current situation, population size next year should be 114 animals (104 <> 114 <> 125). Stochastic probability of increase is 100 %, there is 0 % probability that the population remains the same. For the population estimates within 20-year horizon see Figure 8. The population size in 2037 should be 1,241 individuals.

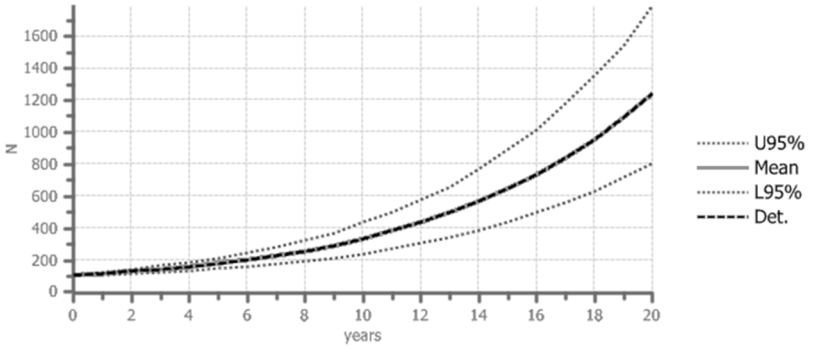


Fig. 8. Stochastic projection of the WDE population size within 20-year horizon.

Genetic analysis

The actual population size of Western Derby elands in semi-captivity since the last year increased to 101. The current effective population size has slightly increased since last year to 37.59 (based on 16.8 breeding males and 21.4 breeding females), which is partially caused by high number of multiple sired offspring, as all the sires apparently influenced the total value despite of their low parenting probabilities (7-20 %). On the contrary the number of breeding females is very realistic. The *Ne/N* ratio remained at 0.37. The overall (mean) effective population size has increased due to management of reproduction since 2008, from 3.71 to 9.24.

After the assignment of missing paternities of animals born in 2003, the animals in the pedigree had 99.4 % of known ancestry genotypes in the population (compared to 92 % without assignment). However, the population has only 69.1 % ancestry certain, because of multiple sires present in the pedigree with different breeding probabilities.

The population has retained 81.48 % of genetic diversity (GD) from the founders. This number has been almost stable since 2008 showing that the breeding management has slowed down the decrease of GD (Fig. 9). Note that the assignment of missing paternities increased the overall level of genetic diversity and in the graph the values were also corrected for the whole history of the population (compare to Brandlová et. al., 2015 - Volume 8). The overall mean level of inbreeding in the population was 0.1541 and increased from 0.0648 in 2008. The level of inbreeding was also positively reflected by assigned paternities (compare to 0.1788 without assignment).

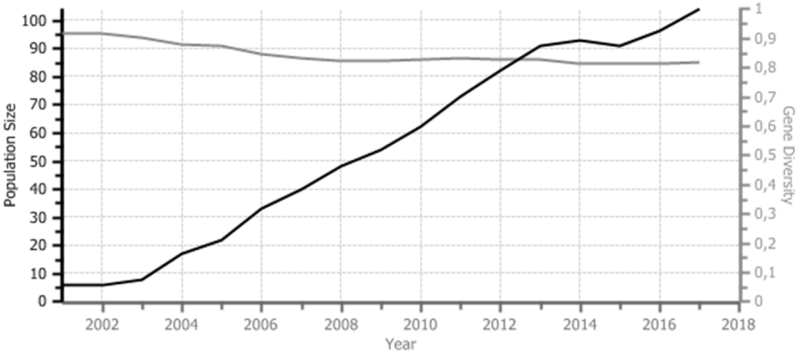


Fig. 9. Development of population size and genetic diversity of WDE in semi-captivity throughout the period 2001–2017.

Founder genome equivalents (FGE = 2.70) increased since the only bull founder died and sons of the founding females became more prominent in spreading their genes. However, founder genomes surviving (FGS = 5.74) decrease yearly because of the genetic drift (not all the genes have been passed to the next generations and are becoming lost). The apparent increase should be attributed to assigned paternities (Fig. 10, Table 7). Contribution of female 1003 (Salémata) and female 1005 (Malapa) become more balanced after checking of mother-calf relationships by molecular methods. The results showed that two female calves (Minna and Sindia) were switched during identifications, and therefore Minna and her 7 offspring was now correctly attributed to Salémata, whilst Sindia and her 8 offspring was attributed to Malapa.

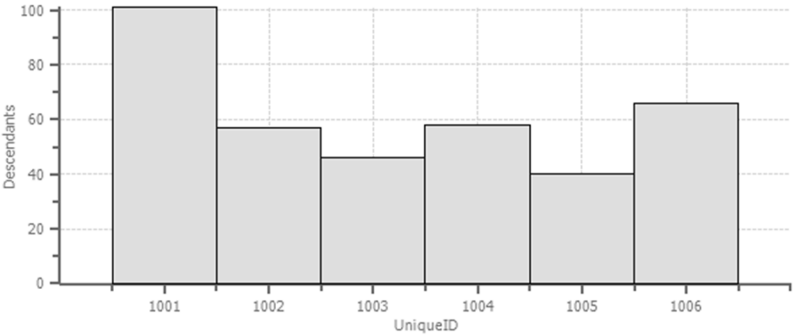


Fig. 10. Founder descendants in the semi-captive Western Derby eland population in Senegal. Unique ID the x axis indicates individuals: 1001 – male, 1002 to 1006 – females.

Tab. 7. Founder contributions (FC) for the genetic management of the pedigree in the semi-captive Western Derby eland population in Senegal (Lin. – lineage, Rep. – representation, Cont. – contribution, Desc. – descendants).

Unique ID	Lin.	Sex	Rep.	Cont.	Allele Retention	Desc.
1001	---	M	0.5388	54.1158	1.0000	101
1002	D	F	0.1292	12.9762	0.9905	57
1003	S	F	0.0524	5.2635	0.8970	46
1004	B	F	0.1015	10.1911	0.9970	58
1005	M	F	0.0530	5.3266	0.8870	40
1006	T	F	0.1250	12.5567	0.9875	68

A significant potential GD of 91.29 % still remains in the population. Furthermore, the retained amount of the original GD of founders is still present in the population and these can be evaluated by the proper management by mean kinship (MK) that slightly decreased since last year to 0.1852 (Table 8).

Tab. 8. Mean kinship (MK) distribution in the semi-captive Western Derby eland population in Senegal in June 2017. Note that the most valuable animals (MK < 0.01) died in 2014.

Mean kinship range	No of individuals	% of population
< 0.1	0	0.0
0.1 – 0.2	84	83.2
0.2 – 0.3	17	16.8
> 0.3	0	0.0

Tab. 9. Genetic structure of breeding herds of Western Derby eland in the semi-captive Western Derby eland population in Senegal in June 2017 (Fd – number of founders, Kn. – known, Cert. – certain, GD – genetic diversity, MK – mean kinship, FGE – founder genome equivalents, Mean F – inbreeding, FGS – founder genome surviving).

Herd	N	Fd	Kn.	Cert.	GD	GV	MK	FGE	Mean F	FGS
Bandia 1	36	6	0.984	0.656	0.797	0.793	0.203	2.458	0.152	4.758
Bandia 3	12	6	1.000	0.646	0.789	0.777	0.211	2.368	0.149	3.971
Bandia 4	7	4	1.000	0.928	0.723	0.742	0.257	1.944	0.129	2.694
Bandia 5	15	6	1.000	0.617	0.808	0.796	0.192	2.606	0.099	3.860
Fathala 1	14	5	1.000	0.821	0.727	0.634	0.273	1.832	0.177	3.265
Fathala 2	17	6	1.000	0.677	0.747	0.747	0.252	1.980	0.199	3.884

Population management goals

After the assignment of missing paternities, most of the population parameters improved due to overall lower uncertainty in pedigree values. However, the genetic diversity of the population is still decreasing and without addition of new founders, it would decrease to only 70.6 % of original diversity in the following 100 years (allowing for capacity of 150 individuals). Such decrease may bring negative effects in terms of decreased population viability and decreased ability to adapt to changing conditions in the near future. In 10 years, genetic diversity would decrease under the 80 %. Based on actual data, it is recommended to add at least 6 wild individuals originating from Niokolo Koba National Park to maintain the genetic diversity at the current level of 80 % of the original genetic diversity during following 100 years, allowing the population to grow to 200 individuals.

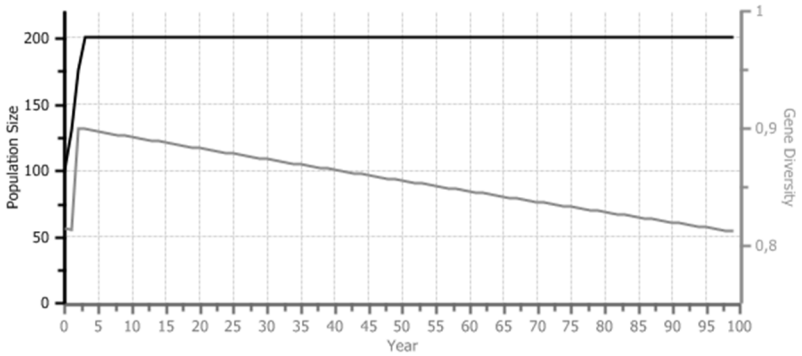


Fig. 11. Projection of genetic diversity and population size after adding 6 wild individuals from the Niokolo Koba National Park.

WDE CONSERVATION STRATEGY: ACTIONS TO CONDUCT

The WDE Conservation Strategy was formulated in 2013 (published by Brandlová et al. 2013). The key actions necessary to reverse the decreasing trend of the WDE population and to achieve the improvement of the conservation status of the WDEs were identified (see Figure 12):

1) Translocating captive-born WDEs into their natural environment of the NKNP in an acclimatisation enclosure to prove the adaptability of captive-born animals to cope with natural conditions. If successful, releasing individuals monitored by GPS collars into the wild.
2) Collaring the wild WDEs in the NKNP for long-term monitoring to improve the knowledge about the spatial use of the environment and to target direct protection of wild population in the park.
3) Capture of several WDEs from the wild to boost the genetic diversity and viability of semi-captive population in reserves which is currently very limited;
4) Managing the WDE semi-captive population, including translocations within and between reserves
5) Raising environmental awareness in local rural communities and schools and boosting eco-tourism by active work with local Tourist Guides Association and travel agencies.

Fig. 12: Scheme of Conservation Strategy for Western Derby elands

REFERENCES

Ballou, J.D., R.C. Lacy, J.P. Pollak, 2011. PMx: software for demographic and genetic analysis and management of pedigreed populations (version 1.0). Chicago Zoological Society, Brookfield, IL, USA.

Brandlová K., Mallon D., Hejcmanová P., Regnaut S., Jůnková Vymyslická P., Fedorova T., Žáčková M., Brandl P., Ndiaye S., 2013. Western Derby eland (*Taurotragus derbianus derbianus*) Conservation Strategy. Prague: Czech University of Life Sciences Prague, 2013, 111 p.

Brandlová K., Jůnková Vymyslická P., Žáčková M., Švejcarová M., Hejcmanová P., Fedorova P., 2015. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847). Praha: Czech University of Life Sciences Prague, 2015, 121 p.

Brandlová, K., Gloneková, M., Hejcmanová, P., Jůnková Vymyslická, P., Aebischer, T., Hickish, R., Mallon, D., 2017: Chinko/Mbari Drainage Basin represents a conservation hotspot for Eastern Derby Eland in Central Africa. African Journal of Ecology.

Hejcmanová, P., Hejcman, M., Camara, A. A., Antonínová, M., 2010. Exclusion of livestock grazing and wood collection in dryland savannah: an effect on long-term vegetation succession. African Journal of Ecology 48: 408-417.

ISIS, 1992. SPARKS: single population animal keeping system version 1.54. Apple Valey/Eagan, MN, International Species Information System.

Kalinowski, S.T., Taper, M.L., Marshal, T.C., 2007. Revising how the computer program CERVUS accommodates genotyping error increases success in paternity assignment. Molecular Ecology 16(5): 1099-1106.

Traylor-Holzer, K. (ed.), 2011. *PMx User's Manual, Version 1.0*. IUCN SSC Conservation Breeding Specialist Group, Apple Valley, MN, USA.

UNESCO, 2014. Niokolo-Koba National Park (online). Cit. 2014-09-11. URL: http://whc.unesco.org/en/decisions/5988

Zemanová H., Černá Bolfíková B., Brandlová K., Hejcmanová P., Hulva P. 2015 Conservation genetics of the Western Derby eland (*Taurotragus derbianus derbianus*) in Senegal: integration of pedigree and microsatellite data. Mammalian Biology 80(4): 328-332.

THE SCIENTIFIC OUTPUTS FROM THE WESTERN DERBY ELAND CONSERVATION PROGRAMME

Scientific papers

Antonínová M., Nežerková P., Vincke X., Al-Ogoumrabe N., 2004. Herd structure of the Giant eland (*Taurotragus derbianus derbianus* GRAY 1847) in the Bandia Reserve, Senegal. Agricultura Tropica et Subtropica, Vol 37(1): 1-4.

Grúňová M., Brandlová K., Svitálek J., Hejcmanová P., 2017. Environmental education supports conservation action by increasing the immediate and long-term environmental knowledge of children in West Africa, Applied Environmental Education & Communication, DOI: 10.1080/1533015X.2016.1273153

Hejcmanová P., Hejcman M., Camara A.A., Antonínová M., 2010. Exclusion of livestock grazing and wood collection in dryland savannah: an effect on long-term vegetation succession. African Journal of Ecology 48(2): 408-417.

Hejcmanová P., Homolka M., Antonínová M., Hejcman M., Podhájecká V., 2010. Diet Composition of Western Derby eland (*Taurotragus derbianus derbianus*) in the dry season in a natural and a managed habitat in Senegal using faecal analyses. South African Journal of Wildlife Research 40(1): 27-34

Hejcmanová P., Jůnková Vymyslická P., Žáčková M., Hejcman M., 2013. Does supplemental feeding affect behaviour and foraging of critically endangered western giant eland in an ex situ conservation site? African Zoology, 48 (2): 250-258. ISSN: 1562-7020.

Hejcmanová P., Vymyslická P., Koláčková K., Antonínová M., Havlíková B., Stejskalová M., Policht R., Hejcman M., 2009. Suckling behavior of eland antelopes (*Taurotragus* spp.) under semi-captive and farm conditions. Journal of Ethology 29(1): 161-168.

Hejcmanová-Nežerková P., Hejcman M., 2006. A canonical correspondence analysis (CCA) of the vegetation-environment relationships in Sudanese savannah, Senegal. South African Journal of Botany 72: 256–262.

Hejcmanová-Nežerková P., Hejcman M., Camara A.A., Antonínová M., Černý T., Pavlů V., Ba A.T. 2005. Analysis of the herbaceous underground in woody savanna in Fathala Reserve, Delta du Saloum National Park, Senegal. Belgian Journal of Botany 138(2): 119-128.

Jůnek T., Jůnková Vymyslická P., Hozdecká K., Hejcmanová P., 2015. Application of Spatial and Closed Capture-Recapture Models on Known Population of the Western Derby Eland (*Taurotragus derbianus derbianus*) in Senegal. PLoS One, 10(9): 1-16.

Jůnková Vymyslická P., Brandlová, K., Žáčková, M., Hozdecká, P., Hejcmanová, P., 2015: Feeding rank in the Derby eland: lessons for management. African Zoology, 50 (4): 313-320.

Koláčková K., Hejcmanová P., Antonínová M., Brandl P., 2011. Population management as a tool in the recovery of the critically endangered Western Derby eland *Taurotragus derbianus* in Senegal, Africa. Wildlife Biology 17(3): 299-310.

Koláčková K., Svitálek J., Antonínová M., Hejcmanová P., 2008. What have the Giant eland and frogs in common? Gazella 35: 157-168.

Koláčková, K., Hejcmanová P., Antonínová, M., Svitálek, J., Vymyslická, P., Žáčková, M., Policht, R., Brandl, P., Verner, P. H., 2010: 10 years of the Western Derby eland (*Taurotragus derbianus derbianus*) conservation programme/10 let záchranného programu pro antilopu Derbyho (*Taurotragus derbianus derbianus*). Gazella 37: 169-181.

Máca O., 2012. Description of a new species of Eimeria Schneider, 1875 (*Apicomplexa: Eimeriidae*) from the western Derby eland *Taurotragus derbianus derbianus* Gray (Artiodactyla: Bovidae) in Senegal. Systematic Parasitology 82(2): 121-123

Nápravník J., Antonínová M, 2002. The results of helmintological investigation of antelopes from the Niokolo Koba National Park in Senegal. Helmintologia 39(3):178.

Nežerková P., Hájek I., 2000. Wildlife in National Park of Niokolo Koba (Senegal) and its ecological background, with special regard to diet of Giant Eland. Agricultura Tropica et Subtropica 33: 44-51.

Rubeš J., Kubíčková S., Pajacová E., Černohorská H., Di Berardino D., Antonínová M., Váhala J., Robinson T.J., 2008. Phylogenomic study of

spiral-horned antelope by cross-species chromosome painting. Chromosome Research 16:935–947.

Šáda I., Verner P.H., Nápravník J., 1998. Antelope breeding (Eland Antelope) in select countries of sub-saharan Africa for the purpose of their economic utilization. Agricultura Tropica et Subtropica 31: 183-188.

Váhala J., Antonínová M., Hejcmanová P., Verner P.H., Akakpo B.J.A., 2008. Použití kombinace etorphin/xylazin pro imobilizaci a přesun antilopy Derbyho *(Taurotragus derbianus derbianus).* Veterinární klinika 1: 2-3 (in Czech).

Verner P.H., Havrland B., 2000. Antelope breeding and protection in selected African countries for their economic utilization. Agricultura Tropica et Subtropica, 33: 35-43.

Zemanová H., Černá Bolfíková B., Brandlová K., Hejcmanová P., Hulva P. 2015 Conservation genetics of the Western Derby eland (*Taurotragus derbianus derbianus*) in Senegal: integration of pedigree and microsatellite data. Mammalian Biology 80(4): 328-332.

Žáčková M., Hejcmanová P., Hejcman M., 2013. Does a change in land use affect woody vegetation in sub-humid sudanian savanna in Senegal? Scientia Agriculturae Bohemica, 44 (4): 209-217.

Monographs

Brandlová K., Jůnková Vymyslická P., Kubátová A., Žáčková M., Grúňová M., Fedorova T., 2016. African Studbook. Western Derby Eland, *Taurotragus derbianus derbianus* (Gray, 1847), volume 9, Praha: Czech University of Life Sciences Prague, 86 p. ISBN 978-80-213-2739-9.

Brandlová K., Jůnková Vymyslická P., Žáčková M., Švejcarová M., Hejcmanová P., Fedorova P., 2015. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847). Praha: Czech University of Life Sciences Prague, 2015, 121 p. ISBN 978-80-213-2582-1.

Brandlová, K., Jůnková Vymyslická, P., Žáčková, M., Fedorova, T., Hejcmanová, P., 2014. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847). Praha: Czech

University of Life Sciences Prague, 2014, 83 p. ISBN 978-80-213-2487-9.

Brandlová K., Mallon D., Hejcmanová P., Regnaut S., Jůnková Vymyslická P., Fedorova T., Žáčková M., Brandl P., Ndiaye S., 2013. Western Derby eland (*Taurotragus derbianus derbianus*) Conservation Strategy. Prague: Czech University of Life Sciences Prague, 2013, 111 p. ISBN 978-80-213-2397-1.

Hejcmanová P., Koláčková K., Verner P., 2008. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847). Prague: Czech University of Life Sciences Prague. 89 p. ISBN 978-80-213-1863-2.

Koláčková K., Haberová T., Vymyslická P., Žáčková M., Hejcmanová P., Brandl P., (Eds.), 2012. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847). Czech University of Life Science Prague, 5th volume, 103 p., ISBN 978-80-213-2303-2.

Koláčková K., Hejcmanová P., Antonínová M., Brandl P., Verner P., 2009. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847). Prague: Czech University of Life Sciences Prague. 150 p. ISBN 978-80-213-2000-0.

Koláčková K., Hejcmanová P., Antonínová M., Brandl P., Verner P., 2010. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847). Prague: Czech University of Life Sciences Prague. 162 p. ISBN 978-80-213-2102-1.

Koláčková K., Hejcmanová P., Brandl P., Žáčková M., Vymyslická P., 2011. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847). Prague: Czech University of Life Sciences Prague. 80 p. ISBN 978-80-213-2204-2.

B.Sc., M.Sc., Ph.D. theses

Antonínová M., 2002. Bionomie a endoparaziti vybraných druhů afrických antilop. M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 173 pp. (in Czech)

Antonínová M., 2008. The breeding and management of small animal populations: case study of Western giant eland (*Taurotragus derbianus derbianus* Gray 1847) in Senegal. Ph.D. Thesis, Institute of

Tropics and Subtropics, Czech University of Life Sciences Prague, 110 pp.

Antošová P., 2009. Impact of browsing on the savanna vegetation. M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 109 pp.

Bada D., 2008. Population dynamics and activity pattern of large herbivores in the Bandia reserve, Senegal. M.Sc. Thesis Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 72 pp.

Böhmová Z., 2013. Coat pattern of Western Derby eland (*Taurotragus derbianus derbianus*) – an evidence for heritability? M.Sc. thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Foltýnová L., 2009. Foraging activity patterns of antelopes in woody savanna. M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 84 pp.

Hejčl P., 2009: Carrying capacity on African rangelands with special focus on wildlife abundance. B.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 44 pp.

Hejcmanová P., 2005. Habitat assessment and conservation of Western giant eland (*Taurotragus derbianus derbianus* GRAY 1847) in Senegal. Ph.D. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 128 pp.

Holubová Z., 2016. The influence of genealogical characteristics on Derby elands' striping. BSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Jůnková Vymyslická P., 2012. Ecology and behaviour of ungulates in African savanna ecosystem. Ph.D. Thesis, Faculty of Environmental Sciences, Czech University of Life Sciences Prague. 90 pp.

Karafiátová A., 2016. Diet quality of large herbivores across continents. MSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Kučerová O., 2015. Dynamics of diet quality of large herbivores in Senegal. MSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Lutovská B., 2012. Taxonomic comparison of Derby eland and common eland (*Taurotragus* sp.). M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 77 pp.

Máca O., 2012. The Parasite fauna of some domestic and wild ruminant species in Bandia and Fathala reserves in Senegal. M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences in Prague, 84 pp.

Macháčková, P., 2010: Dopady environmentálních vzdělávacích programů na znalosti dětí v rozvojových zemích. Bakalářská práce, ČZU Praha.

Neštický, V., 2017: Calf sex ratio of captive eland populations. Master thesis, Czech University of Life Sciences Prague.

Podhájecká V., 2008. Foraging ecology of the giant eland in Senegal, M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 86 pp.

Rajtrová, Z., 2014: Environmental education of children in developing countries. Master thesis, CULS Prague.

Rašín M., 2009. Limity stanovení density antilop v africké stromové savaně. M.Sc.Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 68 pp. (in Czech).

Roubal J., 2016. Influence of commercial hunting and poaching to the numbers of Eastern Giant eland (*Taurotragus derbianus gigas*). BSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Sané M., 2016. Environmental knowledge and attitudes: does it differ in urban and rural areas. MSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Stoklasová L., 2016. Soils in Africa as source of mineral nutrition for large herbivores. MSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Swiacká M., 2015. Comparison of population characteristics of genus Taurotragus. BSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Švejcarová M., 2014. Derby eland (*Taurotragus derbianus*) in captivity: studbook analyses. B.Sc. thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Švejcarová M., 2017. Home range and habitat use of Eastern Derby eland (*Taurotragus derbianus gigas*) in Chinko Project area, Central African Republic. Master thesis, Czech University of Life Sciences Prague.

Štochlová K., 2016. Phylogeny and population characteristics of Derby eland (*Taurotragus derbianus*). MSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Urbánková Š., 2009. Evaluation of the touristic facilities and possibilities in Senegal. M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague.

Vavroušová S., 2009. Educational programmes focused on natural conservation in Senegal. M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague (Unpublished).

Zemanová H., 2008. Kinship determination in common eland and giant eland bred in captivity. M.Sc. Thesis, Institute of Tropics and Subtropics, Czech University of Life Sciences Prague.

Zemanová H., 2015. Genetic Diversity of Semi-captive Population of Western Derby Eland *(Taurotragus derbianus derbianus*) in Senegal and Phylogenetical Relationships between Western Derby Eland (*T. derbianus derbianus*) and Eastern Giant Eland (*T. derbianus gigas*). Ph.D. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.

Žáčková M., 2014. Impact of management on African savanna ecosystems. Ph.D. Thesis, Faculty of Environmental Sciences, Czech University of Life Sciences Prague. 153 pp.

Conference presentations and lectures

Brandl P., Koláčková K., Hejcmanová P., Žáčková M., Vymyslická P., 2011. Western Derby Eland (*Taurotragus derbianus derbianus*) Conservation Programme in Senegal, EAZA Annual Conference Montpellier.

Brandlová K., 2012. Derbianus Czech Society for African Wildlife Záchranný program pro antilopu Derbyho. Meeting of Antelope

Breeding Comission, Union of Czech and Slovak Zoological Gardens, Dvůr Králové nad Labem, Czech Republic.

Brandlová K., Böhmová Z., 2012. Coat pattern of Western Derby eland (*Taurotragus derbianus derbianus*). In Fernández Cusimami E., Banout J.: 6th Scientific Conference of Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 29. – 30. 11. 2012, s. 31. ISBN: 978-80-213-2305-6.

Brandlová K., Fedorova T., Jůnková Vymyslická P., Žáčková M., Hejcmanová P., 2013. Actual demography and genetics within the semi-captive population of the Western Derby eland (*Taurotragus derbianus derbianus*) as a part of species conservation strategy. In: Hejcmanová P., Banout J. (Eds.). 7th Scientific conference of Faculty of Tropical AgriSciences, 28th and 29th November, Book of abstracts, p. 48.

Brandlová K., Gloneková M., Hejcmanová P., Hozdecká K., Jůnková Vymyslická P., Aebischer T., Hickisch R., Mallon D. 2015. Social structure, activity and population density of the largest antelope, the Eastern Derby eland (*Taurotragus derbianus gigas*) in the Chinko/Mbari Drainage Basin, Central African Republic. 10th International Conference on Behaviour, Physiology and Genetics of Wildlife, Berlin.

Brandlová K., Gloneková M., Hejcmanová P., Hozdecká K., Jůnková Vymyslická P., Aebischer T., Hickisch R., Mallon D. 2015. Social structure, activity and population density of the largest antelope, the Eastern Derby eland (*Taurotragus derbianus gigas*) in the Chinko/Mbari Drainage Basin, Central African Republic., Tropical Biodiversity Conservation Conference, Prague, Czech Republic.

Brandlová, K., Brandl, P., 2016: Don't give it up – Stories of hopeless cases. EAZA AG TAG Midyear meeting, Zoo Dvůr Králové.

Brandlová, K., Jůnková Vymyslická P., Fedorova, T., Kubátová, A., Žáčková, M., Gloneková, M., Grúňová, M., Hejcmanová, P., 2016: Last living Western Derby elands need our attention. EAZA Annual Conference 2016, Belfast, Norther Ireland. Poster presentation.

Brandlová, K., 2016: Last living Western Derby elands need our attention. Tropical Biodiversity Conservation Conference 2016. Czech University of Life Sciences Prague.

Brandlová, K., 2016: Antelope, Giraffe, Hippo in the 21st century: Conservation action in Africa. International Conference Invitation. EAZA Annual Conference 2016, Belfast, Norther Ireland. Oral presentation at AG TAG, Conservation committee, Research committee.

Brandlová K., Haberová T., 2012. Derbianus Czech Society for African Wildlife: Western Derby Eland Conservation Programme, Mid-year meeting A&G TAG EAZA, Marwell Zoo, UK.

Brandlová, K., Hejcmanová, P. 2015. Save or sell? The fate of endangered game species. 1st International Tropical Biodiversity Conservation Conference, CULS Prague, 22th October 2014, p. 15.

Brandlová K., Hejcmanová P., Grúňová M., Gloneková M., Žáčková M., Kubátová A., Jůnková Vymyslická P., Fedorova T., 2017. Conservation breeding of Western Derby eland – history and challenges. Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa, CULS Prague, Czech Republic February 19 - 25, 2017, p. 33.Brandlová K., Hickisch R., Jůnková Vymyslická P., 2014. Derby Eland Task Force. Proceedings of EAZA Annual Conference, September 23-27, 2014, Budapest, Hungary.

Brandlová K., Jůnková Vymyslická P. 2013. Derbianus Czech Society for African Wildlife. Western Derby Eland Conservation Strategy. EAZA Antelope & Giraffe TAG Meeting, Landau in der Pfalz, Germany, 22-24 May 2013.

Brandlová K., Jůnková Vymyslická P., Haberová T., Žáčková M., Hejcmanová P., Brandl P. 2012. Western Derby Eland Conservation Programme Challenges. In Fernández Cusimami E., Banout J.: 6th Scientific Conference of Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 29. – 30. 11. 2012, s. 20. ISBN: 978-80-213-2305-6.

Brandlová K., Jůnková Vymyslická P., Hejcmanová P., Žáčková M., Fedorova T., 2013. New future for the largest antelope. 9th International Conference on Behaviour, Physiology and Genetics of

Wildlife, Berlin, Germany, 18-21 September 2013, Book of abstracts, ISSN 1865-4436, p. 34.

Brandlová K., Jůnková Vymyslická P., Hejcmanová P., Žáčková M., Fedorova T., 2013. New future for the largest antelope. EAZA Annual Conference, Edinburgh, United Kingdom, 24-28 September 2013.

Brandlová K., Jůnková Vymyslická P., Hejcmanová P., Žáčková M., Fedorova T., 2013. New future for the largest antelope. The 68th WAZA Annual Conference, Disney's Animal Kingdom, USA, 13–17 October 2013.

Brandlová K., Jůnková Vymyslická P., Žáčková M., Fedorova T., Hejcmanová P. 2015. Derbianus Conservation. Proceedings of the EAZA Annual Conference, September 15-19, 2015, Wroclaw, Poland

Brandlová K., Žáčková M., Vymyslická P., Haberová T., Brandl P., Hejcmanová P., 2012. Western Derby Eland (*Taurotragus derbianus derbianus*) coming to breakpoint: SCSP Workshop in Senegal, January 2013. EAZA Annual Conference 2012, Innsbruck.

Černá Bolfíková B., Hejcmanová P., Brandlová K. 2015. Conservation genetics of the Western Derby eland (*Taurotragus derbianus derbianus*) in Senegal: integration of pedigree and microsatellite data. The 11th International Conference on Behaviour, Physiology and Genetics of Wildlife in Berlin, Germany

Grúňová M., Sané M., Brandlová K., Svitálek J., Hejcmanová P., 2017. Conservation by Awarenes to Species Survival. As Easy as That? Evaluation of environmental education programme within Western Derby eland (*Taurotragus derbianus derbianus*) conservation in Senegal breeding of Western Derby eland – history and challenges. Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa, CULS Prague, Czech Republic February 19 - 25, 2017, p. 41.

Hejcmanová P., Antonínová M., Koláčková K., Al Hakimová N., 2008. Kojení antilopy losí a antilopy Derbyho: na čem závisí jeho délka? Proceedings of the 35th Conference of the Czech and Slovak Ethological Society, České Budějovice, p. 21 (in Czech).

Hejcmanová P., Antonínová M., Verner P.H., 2007. Program ochrany ohrožených druhů: management populace antilopy Derbyho v Senegalu. In: Barčiová L., Rajchard J., Balounová Z. & Havlíčková L.

(Eds.): Otazníky kolem CITES 2007. Proceedings of the 35th Conference of the Czech and Slovak Ethological Society, České Budějovice, p. 15-17. ISBN 978-80-7040-965-7.

Hejcmanová P., Koláčková K., Svitálek J., 2009. The Western Derby eland Conservation: How to put the science to practice? Book of abstracts, 2nd European Conference of Conservation Biology, Czech University of Life Science, Prague, p. 75. ISBN 978-80-213-1961-5

Hejcmanová P., Kučerová O., Karafiátová A., Jůnková Vymyslická P., Brandlová K., Žáčková M., Hejcman M. 2015. Seasonal dynamics of resource partitioning of large herbivores' diet in semi-arid and sub-humid African savanna. The 11th International Conference on Behaviour, Physiology and Genetics of Wildlife in Berlin, Germany

Hejcmanová P., Stoklasová L., Grúňová M., Brandlová K., Žáčková M., 2017. Preferences of Western Derby elands for macro- and microelements in the Fathala and Bandia reserves: potential key knowledge for conservation. Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa, CULS Prague, Czech Republic February 19 - 25, 2017, p. 43.

Hejcmanová P., Vymyslická P., Žáčková M., Hejcman M., Foltýnová L., 2010. Can supplementary feeding affect foraging pattern of ungulates in an ex-situ conservation programme? The case of critically endangered Western Derby eland in Senegal Proceeding of the conference Zoologické dny 2010, ČZU, Praha.

Homolka M., Hejcmanová P., Antonínová M., Heroldová M., Kamler J., 2007. Populační hustota velkých herbivorů v NP Niokolo Koba (Senegal). Proceeding of the conference Zoologické dny Brno, p. 202 (in Czech).

Jůnek T., Jůnková Vymyslická P., Hejcmanová P. 2015. Estimation of Derby eland seasonal activity levels from camera-trapping data: a novel insight into the animal ecology. The 11th International Conference on Behaviour, Physiology and Genetics of Wildlife in Berlin, Germany.

Jůnek T., Jůnková Vymyslická P., Hozdecká K., Hejcmanová P., Brandlová K., 2014. Estimating abundance of the Western Derby eland (*Taurotragus derbianus derbianus*) and evaluating capture-recapture

analyses using camera traps: case study from Fathala reserve, Senegal. Proceeding of the 42nd Annual Conference of the Australasian Society for the Study of Animal Behaviour. July 1-4, 2014, Katoomba, New South Wales, Australia.

Jůnková Vymyslická P., 2013. Étude de la hiérarchie de dominance dans les troupeaux de l'Eland de Derby occidental. Cheikh Anta Diop University, Dakar.

Jůnková Vymyslická P., 2014. Češi zachraňují antilopy Derbyho v Senegalu! Africký den held by Africký informační portál, Praha, Czech Republic.

Jůnková Vymyslická P., 2014. Derbianus in 2014. Meeting of Antelope Breeding Comission, Union of Czech and Slovak Zoological Gardens, Olomouc, Czech Republic.

Jůnková Vymyslická P., 2015. Derbianus Conservation Association. Meeting of Antelope and giraffe committee UCSZOO.

Jůnková Vymyslická P., 2015. Social behaviour of ungulates in different environments. Meeting of Antelope and giraffe committee UCSZOO.

Jůnková Vymyslická P., Brandlová K., 2013. Objectives de la conservation d'Eland de Derby occidental. Résultats d'atelier sur l'Eland de Derby occidental, Saly, 28. - 31. Janvier, 2013. Cheikh Anta Diop University, Dakar.

Jůnková Vymyslická P., Brandlová K., Hejcmanová P. 2013. Do high ranking mothers produce high ranking babies? Dominance hierarchy in the mixed herd of Western Derby eland. Behaviour 2013. Joint meeting of the 33rd International Ethological Conference (IEC) & the Association for the Study of Animal Behaviour (ASAB), The Sage, Newcastle-Gateshead, United Kingdom, 4th - 8th August 2013, Book of abstracts, p. 218.

Jůnková Vymyslická P., Brandlová K., Hejcmanová P., 2012. Souvisí postavení potomků ve stádě s postavením jejich matek? Studie sociální hierarchie u západního poddruhu antilopy Derbyho. 39. Conference of Czech and Slovak Ethological Society, Nové město na Moravě 7. - 10. 11. 2012, s. 72.

Jůnková Vymyslická P., Brandlová K., Hozdecká K., 2014. Conservation programme of Western Derby eland: Is there any hierarchy in mixed

herds of this critically endangered antelope? Proceedings of the Student Conference on Conservation Science, September 25-28, 2014, Bangalore, India.

Jůnková Vymyslická P., Brandlová K., Jůnek T., Hejzlarová M., 2013. Social distances of semi-captive ungulates: consequences for social behaviour. 87th Annual Meeting of the German Society of Mammalogy, Faculty of Forestry and Wood Sciences, Czech University of Life Sciences, Prague, Czech Republic, 8-12 September 2013.

Koláčková K., 2008. Co má antilopa Derbyho společného se žábami? Projekt spolupráce českých a senegalských škol na kampani EAZA. Proceedings of the conference Asociace vzdělávacích pracovníků při UCSZ, Zoo Ústí nad Labem (in Czech).

Koláčková K., 2010. Derbianus Czech Society for African Wildlife, o.s. Small African Conference, Jihlava, 10th September 2010.

Koláčková K., 2010. Program na záchranu antilopy Derbyho (*Taurotragus derbianus derbianus*) v Senegalu - výsledky 10 let práce českého týmu. Využití výzkumu a monitoringu pro ochranářský management. UP Olomouc, 14. – 17. 9. 2010.

Koláčková K., 2011. Derbianus CSAW - Osud největší antilopy. Small African Conference, Jihlava, 9th September 2011.

Koláčková K., Antonínová M., Hejcmanová P., Tomášová K., 2008. Jak samice antilop Derbyho (*Taurotragus derbianus derbianus*) kojí svá mláďata? Proceedings of the conference Zoologické dny 2008, České Budějovice, Czech Republic.

Koláčková K., Antonínová M., Hejcmanová P., Verner P.H., 2007. The Western Giant Eland (*Taurotragus derbianus derbianus*) Conservation and captive breeding programme. Antelope and giraffe TAG Minutes, EAZA Conference, Warszawa.

Koláčková K., Antonínová M., Hejcmanová P., Verner P.H., 2008. Po stopách antilopy Derbyho. Small African Conference, Zoo Jihlava, Czech Republic (in Czech).

Koláčková K., Antonínová M., Hejcmanová P., Verner P.H., 2008. Support to natural reserves and national parks of Senegal – conservation of

the Western giant eland (*Taurotragus derbianus derbianus*). Antelope and giraffe TAG Minutes, EAZA Conference, Antwerps.

Koláčková K., Brandl P., 2010. 10 years of the Western Derby eland (*Taurotragus derbianus derbianus*) conservation programme. Presentation for IZW Berlin, 31th August.

Koláčková K., Brandl P., Antonínová M., Hejcmanová P., Verner P.H., 2009. Conservation of the Western giant eland (*Taurotragus derbianus derbianus*) in Senegal. Proceeding of the EAZA Annual Conference 2009, Copenhagen

Koláčková K., Brandl P., Hejcmanová P., Antonínová M., Vymyslická P., Žáčková M. 2010. Ten years of the Western Derby eland (*Taurotragus derbianus derbianus*) conservation programme. EAZA 17th annual conference, Bussolengo, Italy, September 2010.

Koláčková K., Brandl P., Hejcmanová P., Žáčková M., Vymyslická P., Bartůňková L. 2011. Presence and future of Western Derby Eland. EAZA Annual Conference Montpellier.

Koláčková K., Brandl P., Svitálek J., Hejcmanová P., Antonínová M., 2009. Environmental education within the Western Derby eland conservation programme in Senegal. Proceedings of the 3rd conference of the Institute of Tropics and Subtropics, Czech University of Life Sciences Prague.

Koláčková K., Hejcmanová P., 2010. Conservation and breeding of the critically endangered Western Derby eland (*Taurotragus derbianus derbianus*) in Senegal. Workshop Vétérinaires sans frontiers, VSF Brno, 1st May 2010.

Koláčková K., Hejcmanová P., 2010. Výsledky a perspektivy projektu na ochranu antilopy Derbyho (*Taurotragus derbianus derbianus*) v Senegalu. Diskusní týden pro biodiverzitu, Ministry of Foreign Affairs of Czech Republic, 28. 5. 2010, Small Hall of City Library in Prague.

Koláčková K., Hejcmanová P., 2010. Výsledky a perspektivy projektu na ochranu antilopy Derbyho (*Taurotragus derbianus derbianus*) v Senegalu. Study and Information Centre, Czech University of Life Sciences Prague, 4. 3. 2010.

Koláčková K., Hejcmanová P., Antonínová M., 2010. Les résultats et perspectives du projet de conservation de l'éland de Derby

(*Taurotragus derbianus derbianus*) au Sénégal. 23. 3. 2010, Cheikh Anta Diop University, Dakar.

Koláčková K., Hejcmanová P., Antonínová M., Brandl P., 2010. Zachráníme antilopu Derbyho? Dlouhodobé perspektivy chovu v rezervacích. Proceeding of the conference Zoologické dny 2010, ČZU, Praha.

Koláčková K., Hejcmanová P., Svitálek J., Antonínová M., 2009. One way or return ticket? Perspectives of the Western giant eland conservation programme. Proceedings of the conference Back to the Wild.

Koláčková K., Hejcmanová P., Žáčková M., Vymyslická P., Brandl P., 2011. Presence and future of Western Derby Eland. Antelope conservation in the 21st century: from diagnosis to action. London Zoological Society, 17-19th November 2011.

Koláčková K., Svitálek J., Hejcmanová P., Antonínová M., 2009. Environmental education within the Western Derby eland conservation programme in Senegal. Book of abstracts, 2nd European Conference of Conservation Biology, Czech University of Life Science, Prague, pp. 84. ISBN 978-80-213-1961-5

Koláčková K., Svitálek J., Hejcmanová P., Antonínová M., 2009. Environmental education within the Western Derby eland conservation programme in Senegal. 2nd European Conference of Conservation Biology; Prague: Czech University of Life Sciences Prague; p. 84.

Kubátová A., Štochlová K., Brandlová K., Černá Bolfíková B., 2017. Western Derby Eland – Small Population with Big Aims. Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa, CULS Prague, Czech Republic February 19 - 25, 2017, p. 49.

Kubátová A, Štochlová K, Brandlová K, Černá Bolfíková B. 2017. Malá populace s velkými cíli: záchranný program pro západní antilopu Derbyho. Abstract in: Bryja J, Horsák M, Horsáková V, Řehák Z, Zukal J. (eds.): Zoologické dny Brno 2017, Sborník abstraktů z konference 9.-10. Februady 2017, p. 113. (in Czech)

Kubátová A., Štochlová K., Žáčková M., Jůnková Vymyslická P., Grúňová M., Gloneková M., Švejcarová M., Brandlová K., Černá Bolfíková B.,

2016. Zasahovat či nezasahovat do reprodukce malých populací? Případová studie zaměřená na dva druhy antilop rodu Taurotragus v rezervaci Bandia v Senegalu. Proceeding of the conference Zoologické dny 2016, JČU, České Budějovice.

Ndiaye S., Brandlová K., 2013. Conservation of Western Derby eland in Senegal: History, Evolution and Perspectives. 87th Annual Meeting of the German Society of Mammalogy, Prague, 8th-12th September 2013, Mamm. biol. Special issue to volume 78, p. 18.

Nežerková P., Antonínová M., Hejcman M., Verner P.H., 2004. The Conservation programme of the Western Giant eland (*Taurotragus derbianus derbianus*) in Senegal. In: La faune sauvage: une ressource naturelle. 6th Int. Wildlif. Ranching Symp. Paris, Resumes and posters, p.77-78.

Nežerková P., Hejcman M., 2004. Vegetation structure of area proposed for creation of an Enclosure for breeding of giant eland (*Taurotragus derbianus derbianus*) in Senegal. Proceedings of the conference Zoologické dny Brno, p. 193- 194.

Podhájecká V., Hejcmanová P., 2008. Potravní ekologie antilopy Derbyho (*Taurotragus derbianus derbianus*) v Senegalu. Proceedings of the conference Environmental Sciences 2008, Faculty of Environmental Sciences, Czech University of Life Sciences Prague. (in Czech)

Štochlová K., Kubátová A., Brandlová K., Černá Bolfíková B., 2016. Phylogeny and population characteristics of Derby eland (*Taurotragus derbianus*). Proceeding of the Tropical Biodiversity Conservation Conference 2016, ČZU, Praha.

Štochlová K., Kubátová A., Brandlová K., Černá Bolfíková B., 2017. Phylogeny and population characteristics of Derby eland (*Taurotragus derbianus*). Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa, CULS Prague, Czech Republic February 19 - 25, 2017, p. 70.Vymyslická P., Foltýnová L., Žáčková M., Stejskalová M., Hejcmanová P., 2009. Foraging activity patterns of antelopes in woody savannas. 3rd Scientific Conference of Institute of Tropics and Subtropics, Czech University of Life Sciences Prague.

Vymyslická P., Hejcmanová P., Žáčková M., Hejcman M., Foltýnová L., 2010. Can supplementary feeding affect foraging pattern of ungulates

in an ex-situ conservation programme? The case of critically endangered Western Derby eland in Senegal. Cheikh Anta Diop University, Dakar.

Zemanová H., Antonínová M., Bryja J., Martínková N., 2008. Polymorphic microsatellite markers for determination of kinship relations in Common eland (*Taurotragus oryx*) and Giant eland (*Taurotragus derbianus*), Kostelecké inspirování 2008, Kostelec nad Černými lesy, Faculty of Environmental Sciences, Czech University of Life Sciences Prague.

Zemanová H., Bolfíková B., Hejcmanová P., Koláčková K. 2011: Genetic diversity and phylogeny of the Western Derby eland (*Taurotragus derbianus derbianus*). ECM 2011 - 6th European Congress of Mammalogy. Paris, 19-23 July 2011, p. 108.

Zemanová H., Bolfíková B., Hejcmanová P., Koláčková K. 2012. Genetická diverzita a fylogeneze Západního poddruhu antilopy Derbyho (*Taurotragus derbianus derbianus*). In Bryja, J., Albrechtová, J., Tkadlec, E. (Eds.), Zoologické dny Olomouc 2012, s. 216.

Žáčková M., Foltýnová L., Hejcmanová P., Hejcman M. 2009. Analysis of Woody Vegetation of the Savanna in the Delta du Saloum National Park in Senegal. 3rd Scientific Conference of Institut of Tropics and Subtropics, p. 79-80.

Žáčková M., Hejcmanová P., Hejcman M., 2010 Vliv managementu na vegetaci savan v západní Africe. UCOLIS 2010, Kostelec nad Černými Lesy.

Žáčková M., Hejcmanová P., Hejcman M., Jůnková Vymyslická P., Homolka P., 2013. Qu´est-ce qu'ils cherchent? Sélection alimentaire des élands de Derby occidental dans la réserve de Fathala. Cheikh Anta Diop University, Dakar.

Žáčková M., Hejcmanová P., Hejcman M., Koláčková K., Svitálek J., Antonínová, M. 2010. Vliv managementu na savanové ekosystémy: modelové studie v rezervacích Bandia a Fathala v Senegalu. II. konference ochrany přírody ČR, UPOL, Olomouc, p. 80. ISBN 978-80-7399-994-0

Žáčková M., Hejcmanová P., Hejcman M., Koláčková K., Svitálek J., Antonínová M., 2010. Impact of management measures on savana

ecosystems: case studies in Bandia Reserve and Fathala Reserve in Senegal. 4th Scientific Conference of Institute of Tropics and Subtropics, p. 29. ISBN 978-80-213-2125-0

Žáčková M., Hejcmanová P., Hejcman M., Vymyslická P., 2012. What are they browsing for? Driving force behind the diet selection of semi-captive population of the critically endangered Western Derby elands (*Taurotragus derbianus derbianus*). In Fernández Cusimami E., Banout J.: 6th Scientific Conference of Institute of Tropics and Subtropics, Czech University of Life Sciences Prague, 29. – 30. 11. 2012, ps. 55. ISBN: 978-80-213-2305-6.

Žáčková M., Hejcmanová P., Hejcman M., Vymyslická P., 2012. What are they browsing for? Driving force behind the diet selection of semi-captive population of the critically endangered Western Derby elands (*Taurotragus derbianus derbianus*). EAZA Annual Conference 2012, Innsbruck.

Žáčková M., Hejcmanová P., Vymyslická P., Hejcman M., 2011. Determinants of diet selection of the critically endangered Western Derby elands in the conservation breeding enclosure in the Fathala Reserve, Senegal. Antelope conservation in the 21st century: from diagnosis to action – ZSL symposium, London.

Žáčková M., Hejcmanová P., Vymyslická P., Hejcman M., 2011. Po čem a na čem se pasou? aneb Rozhodující činitelé v potravní selekci antilopy Derbyho. 38th conference of Czech nad Slovak Ethological Society, Kostelec nad Černými lesy, p. 117.

Žáčková M., Hejcmanová, P., Hejcman, M., 2010. Did the fencing change the vegetation structure of the Fathala Forest? Cheikh Anta Diop University, Dakar.

Other articles and publications

Antonínová M., Hejcmanová P., Koláčková K., Svitálek J., 2008. Protegeon notre nature! Université Tchéque des Sciences de la Vie (Czech University of Life Sciences, Prague), 24 pp.

Antonínová M., Hejcmanová P., Tomášová K., Verner P.H., 2007. Senegal – Saving a rare antelope. The Hearth of Europe, Vol.14 (3): 25.

Antonínová M., Hejcmanová P., Verner P.H., 2008. Jak zachraňujeme antilopu Derbyho. Zpravodaj ČZU Praha, č.3: 19 – 20.

Bobek M., Ptačinská Jirátová J., Brandl P., Koláčková K., Kůs E., Šimek J., Vaidl A., Velenský P., 2011. Pomáháme jim přežít - We help them to survive. Zoologická zahrada hl. m. Prahy, 254s. ISBN 978-80-85126-16-7. p. 173 - 217.

Brandl P., 2009. Záchrana západoafrických obrů. Časopis Xantypa. Kovohutě Příbram nástupnická a.s., Příbram. (in Czech).

Brandlová K., 2013. New future for the largest antelope. Zooquaria, issue 82, p. 6.

Brandlová K., 2015. Záchrana antilopy Derbyho bude pokračovat. Newsletter of the Czech university of Life Sciences Prague, 2/2015.

Brandlová K., Gloneková M., Mallon D., Fedorova T., Hejcmanová P., Žáčková M., Kubátová A., Jůnková Vymyslická P., Pluháček J. (Eds.) 2017: Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa. Book of Abstracts. Czech University of Life Sciences Prague. 79 p. ISBN 978-80-213-2744-3.

Derbianus CSAW, 2012. The Western Derby Eland Conservation Programme in Senegal. In: Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague 2012: Projects in Developing Countries and in the Czech Republic 2011 - 2012. Information booklet.

Hejcmanová P., Hejcman M., Antonínová M., Verner P.H., 2008. Obnova stromové savany v západní Africe – Co slibuje obora v rezervaci Bandia? Vesmír 87: 242-246.

Hejcmanová P., Renaud P.C., Antonínová M., Froment J.M. 2008. The Niokolo Koba National Park in Senegal: A case for urgent assistance. (Unpublished).

Hejcmanová, P., Jůnková Vymyslická, P., Brandlová, K., Dolejský, V., 2015: Západní poddruh antilopy Derbyho má díky pomoci z České republiky větší naději na přežití. Ochrana přírody 5/12, p. 44-45.

Jůnek T., 2015. 6500 kilometrů do cíle. Newsletter of the Czech university of Life Sciences Prague, 2/2015.

Koláčková K., 2009. Cesty Senegalem – Národní park Djoudj. Journal Trojský koník, Prague Zoo, Prague. (in Czech).

Koláčková K., 2009. Ekologie v zoo – Zoologická zahrada hl. m. Prahy. Nika, časopis pro environmentální výchovu a osvětu. Vol. 30 (in Czech).

Koláčková K., 2009. Jak se stěhují antilopy. Journal Trojský koník, 11/1, Prague Zoo, Prague. (in Czech).

Koláčková K., 2009. Po stopách antilopy Derbyho. Časopis MOPAN. Zoological garden Jihlava, Czech Republic (in Czech).

Koláčková K., Svitálek J., 2008. „Divoká" Afrika. Safari pro senegalské děti. Časopis Trojský koník, 10/2, Prague Zoo, Prague. (in Czech).

Koláčková K., Svitálek J., 2008. Po stopách antilopy Derbyho. Časopis Trojský koník, 10/2, Prague Zoo, Prague. (in Czech).

Koláčková K., Svitálek J., 2009. Cesty Senegalem – národní park Delta du Saloum. Časopis Trojský koník, 11/1, Prague Zoo, Prague. (in Czech).

Koláčková K., 2010. Cesty Senegalem – Národní park Niokolo Koba. Trojský koník, 12/1, p. 36-37 Prague Zoo, Prague.

Koláčková K., Hejcmanová P., Žáčková M., 2010. Antilopa Derbyho – záchranný program po 10 letech. Živa, 6/2010, p. 285-287.

Nežerková P., Hejcman M., 2005. Jak rozdílné mohou být národní parky. Krkonoše 41(6): 43-45 (in Czech)

Nežerková P., Hejcman M., Antonínová M., 2004. Záchrana antilopy Derbyho v Senegalu – přežije kriticky ohrožený druh v oborách? Vesmír 83 (6): 334–337. (in Czech)

Renaud P.C., Gueye M.B., Hejcmanová P., Antonínová M., Samb M., 2006. Inventaire aérien et terrestre de la faune et relevé des pressions au Parc National du Niokolo Koba. Plan d'Urgence, Rapport Annexe A, Aout 2006, 74pp.

Zelený V., Nežerková P., 2002. NP Niokolo Koba – poslední útočiště antilopy Derbyho. Živa, 88 (2): 94. (in Czech).

List of schools and other institutions where conservation programme was presented

Agency of Nature Conservation, Czech Republic
Café Lajka
Endowment Fund Microfinance
Faculty of Environmental Sciences, J. E. Purkyně University, Ústí nad Labem
Forestry Technical School Žlutice
Galerie Café Loket
Grammar School Karlín
Grammar School Na Zatlance
Grammar School Roudnice nad Labem
Grammar School Říčany
Grammar School Turnov
J. A. Komenský Primary School, Kly
Kindergarten and Primary School Radnice
Lady Club Břasy
Mikoláš Aleš Primary School
National Technical Library (cooperation with Home Senior, s.r.o.)
Night of Universities (joint meeting of University of Life Sciences Prague, Czech Technical University in Prague and Institute of Chemical Technology in Prague)
Primary school Běchovice
Primary School Kříše
Primary School Lysolaje
Primary School Třebotov
Primary School Sunny Canadian, Jesenice
Primary School Strž
Roztoč Association, Roztoky u Prahy
Secondary Special School Čakovice
Travel Club Jihlava
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CONSERVATION BREEDING OF WESTERN DERBY ELAND – HISTORY AND CHALLENGES

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Western Derby eland *Taurotragus derbianus derbianus* (WDE) is a critically endangered antelope with less than 200 wild individuals in the Niokolo Koba National Park (NKNP) in Senegal. Its only captive population was established in 2000 by the Directorate of National Parks of Senegal and Society for the Protection of Environment and Fauna in Senegal from 6 founding individuals translocated from the NKNP to fenced Bandia reserve. The original setting was not optimal, as 1) the environment in Bandia differ from the original habitat, 2) closely related introduced Cape elands *Taurotragus oryx* were present in the reserve, and 3) there was only founding male in the WDE herd. Our team was invited to cooperate on the management of this captive population while studying the ecology of wild elands in NKNP. During the first years the environment proved to be suitable for WDE breeding, all females reproduced. We therefore focused mostly on the breeding management, aiming to 1) establish another breeding population in the WDE original habitat, 2) prevent the contact with Cape eland, 3) balance use of genetic potential of all founders and monitoring of genetic structure of the population. We fulfilled the 1) aim already in 2006, when we translocated 9 WDEs to fenced Fathala reserve. The 2) aim was fulfilled in Fathala but only partly in Bandia, where one of the breeding herds was mixed with Cape elands in 2012. The 3) aim is being successfully fulfilled by regular monitoring of the population by direct observations and

genetic assessments, using of pedigree data for creation of studbook and regular transfers of individuals between 5 breeding and 1 bachelor herd with the mean kinship minimization. Thanks to the close Senegalese-Czech cooperation the current population reached more than 100 specimens and it is still growing.

BY AWARENES TO SPECIES SURVIVAL. AS EASY AS THAT? EVALUATION OF ENVIRONMENTAL EDUCATION PROGRAMME WITHIN WESTERN DERBY ELAND (*TAUROTRAGUS DERBIANUS DERBIANUS*) CONSERVATION IN SENEGAL

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The most necessary condition to be fulfilled for Western Derby eland (*Taurotragus derbianus derbianus*) successful conservation is sustainable protection of its natural habitat. However, there has been increasing pressure on natural vegetation in Senegal as the country's population increases. As a result, contemporary way the Senegalese approach the environment have become unsustainable and should be changed. However, influencing future attitudes towards nature conservation requires mapping the current attitudes. One of most widely used measures to assess environmental attitudes is the New Environmental Paradigm (NEP) scale. We used its modified version for children. Average age of our population sample was 13 years (ranging from 10-16). Although Principal Component Analysis (PCA) revealed three principal components explaining 43% of variance, we failed to approve internal consistency of the scale as a single measure as well as of its individual subscales (Cronbach alfa < 0.7). This can be caused by

differing motivation behind the answers involving a big role of religious thoughts in Senegalese children that are not present in western population samples where the scale was originally validated. In the second phase of our research we subjected the same children to a two-day environmental education programme and applied the NEP scale again after three weeks. 765 children from 19 schools were divided into three proportional groups, where one group served as a control group, a second group was subjected to a two-day education programme in schools, and a third group received a one-day programme in school and a one-day outdoor excursion in a natural reserve. Based on internal inconsistency of the NEP scale, we assessed the scale item by item to compare shift in children´s environmental attitudes after two-day education programme. Awareness testing revealed that only 0.5 % of respondents named Derby eland within Senegalese wild animals. This number increased up to 40 % three weeks after our environmental education programme.

PREFERENCES OF WESTERN DERBY ELANDS FOR MACRO- AND MICROELEMENTS IN THE FATHALA AND BANDIA RESERVES: POTENTIAL KEY KNOWLEDGE FOR CONSERVATION

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Western Derby eland (*Taurotragus derbianus derbianus,* WDE), the iconic species of West African savannah, declared critically endangered by extinction (IUCN 2016), has estimated population size to 170 individuals in the wild, i.e. Niokolo Koba NP in Senegal. WDEs low numbers has been reported since wildlife counts in 1960s and 1970s. WDEs' low numbers could be related, among other reasons, to reproduction constraints associated with a deficiency of essential minerals in the animals' diet and the environment. Knowledge about mineral status and possible deficiencies is missing. Based on the analyses of plant biomass of principal browse species in the Fathala reserve, there is rather low content of phosphorus in plants, which might have links to reproductive biology. Based on nutritional wisdom of animals, we have launched an investigation of WDE preferences for macro- and microelements in mineral blocks with different chemical composition in the Fathala and Bandia reserves in Senegal with the aim to estimate mineral deficiencies in the diet on the basis of these preferences. Emphasis will be given to phosphorus, calcium, iodine, selenium, cobalt, copper, manganese, and zinc. The ultimate goal of the proposed investigation is to contribute to WDE conservation by enhancing animal health not only in the conservation breeding facilities, but also in the wild.

WESTERN DERBY ELAND – SMALL POPULATION WITH BIG AIMS

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Genetic drift, inbreeding and founder effect are the main threats to maintain genetic diversity in small populations. Examples of such small populations are eland species – Western Derby eland (WDE, *Tauroragus derbianus derbianus*) and Cape eland (CE, *Taurotragus oryx oryx*) living in Bandia reserve, Senegal, Western Africa. Although they live in the same conditions, approach to the breeding management is quite different in them. The population of WDE, critically endangered native fauna, was founded in 2000 by the import of one male and five females from the Senegalese National Park Niokolo Koba. Since then, the development of the population is monitored, identifications of newborns are running and the information is recorded in the studbook. On the basis of the studbook, breeding herds are made up, in June 2016 consisting of 98 individuals. The population of CE was founded by the introduction of 3 males and 5 females from South Africa in 1996 and has never been monitored, even in terms of quantity (estimated around 400 specimens). Breeding was not managed in terms of genetic parameters, all animals were kept together in one herd and part of the males was periodically randomly culled. The study analyzed basic parameters of genetic diversity obtained using 12 microsatellite markers in the last generation of WDE and randomly selected CE. The results indicated lower genetic diversity in WDE compared with CE, probably due to already existing founders' kinship. Both populations have reached higher heterozygosity than expected and displayed similarly low inbreeding level. In WDE, this could be caused by the positive effect of population management, which despite the loss of genetic diversity minimized inbreeding.

PHYLOGENY AND POPULATION CHARACTERISTICS OF DERBY ELAND (*TAUROTRAGUS DERBIANUS*)

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Derby eland (*Taurotragus derbianus*) occurs in two lineages, usually recognized as subspecies, Eastern Giant eland (*Taurotragus derbianus gigas*) and Western Derby eland (*Taurotragus derbianus derbianus*). Eastern subspecies is currently listed as Least Concern and population seem to be stable. Nevertheless, the western subspecies is claimed as Critically Endangered. We assessed 11 new polymorphic microsatellite markers and presented their usage in particular population genetic analyses. Using this panel, it was possible to categorize each individual according to its origin into respective population. Despite low genetic variance, internal structure of Western Derby eland was detected, probably correlating with maternal lineages. It was confirmed that inbreeding coefficient is increasing with each generation in captive population of Western Derby eland. Comparison of last generation of Western Derby eland and populations from the Zoological gardens provided evidence of strong effect of genetic drift. Each of these populations is also highly influenced by founder effect. Our results confirmed the potential of genetic approach, which is essential for effective long term conservation and management.

SECTION B:

The African Studbook of Western Derby Eland

Adult male of Western Derby eland in the Bandia reserve

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1001	Bandia 1	Niokolo	M	1,00	1999-01-01	2012-07-01	WILD
1002	Bandia 1	Dalaba	F	1,00	1997-01-01	2013-07-30	WILD
1003	Bandia 1	Salemata	F	1,00	1997-01-01	2013-12-01	WILD
1004	Bandia 1	Bembou	F	1,00	1999-01-01	2013-12-01	WILD
1005	Bandia 1	Malapa	F	1,00	1999-01-01	2011-08-01	WILD
1006	Bandia 1	Tamba	F	1,00	1999-01-01	2013-01-01	WILD
1007	Bandia 1	Dagana	F	1,00	2002-03-01	2013-10-01	1001
1008	Bandia 1	Thelma	F	1,00	2002-04-01	2013-07-14	1001
1009	Bandia 1	Ndiogoye	F	1,00	2003-01-01	2015-01-01	1001
1010	Fathala 1	Karang	M	1,00	2003-01-03	2014-01-01	1001
1011	Bandia 1	Guddi	F	1,00	2003-01-05	2013-11-01	1001
1012	Bandia 1	Fathala	F	1,00	2003-02-12	2017-03-01	1001
1013	Fathala 1	Popenguine	M	1,00	2003-02-23	2007-05-01	1001
1014	Fathala 2	Matam	M	1,00	2003-11-23	2016-03-01	1001
1015	Fathala 2	Sokone	M	1,00	2003-11-29	2008-08-20	1001
1016	Bandia 2	Bayane	F	1,00	2003-12-10	2006-12-15	1001
1017	Bandia 2	Toubab	M	1,00	2003-12-31	2013-07-01	1001
1018	Bandia 1	Msindia	F	1,00	2004-11-22	2017-03-01	1001
1019	Fathala 2	Tderby	M	1,00	2004-12-02	2014-03-28	1001
1020	Bandia 1	Dtuuti	F	1,00	2004-12-04	2007-11-25	1001
1021	Bandia 1	Sminna	F	1,00	2004-12-10	2015-01-01	1001
1022	Fathala 1	Bandia	M	1,00	2004-12-14	2017-01-15	1001
1023	Fathala 2	Taiba	M	1,00	2005-01-05	2015-01-01	1001
1024	Fathala 2	Doole	M	1,00	2005-01-11	2013-04-24	1001
1025	Fathala 2	Gaaw	M	1,00	2005-01-25	2016-03-01	1001
1026	Fathala 2	Souleye	M	1,00	2005-12-04	2008-08-20	1001
1027	Fathala 1	Nelaw	F	1,00	2005-12-12	2009-08-11	1001
1028	Bandia 1	Noname 1	M	1,00	2005-12-18	2005-12-25	1001
1029	Fathala 1	Foog	F	1,00	2005-12-19	--	1001
1030	Bandia 3	Dering	M	1,00	2005-12-21	2014-05-01	1001
1031	Fathala 2	Deedet	M	1,00	2005-12-22	2017-03-01	1001
1032	Fathala 2	Tukki	M	1,00	2005-12-23	2010-01-01	1001
1033	Bandia 1	Baax	M	1,00	2005-12-24	2012-07-01	1001
1034	Fathala 1	Tidian	M	1,00	2005-12-28	--	1001
1035	Fathala 1	Georgina	F	1,00	2006-02-07	2008-07-01	1001

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
WILD	0,00	0,00	---	13	81	26	2013-03-03
WILD	0,00	0,00	---	16	10	5	2012-12-28
WILD	0,00	0,00	---	16	9	1	2012-12-13
WILD	0,00	0,00	---	14	8	3	2013-04-01
WILD	0,00	0,00	---	12	8	2	2009-12-21
WILD	0,00	0,00	---	14	12	3	2013-04-01
1002	1,00	0,00	---	11	9	4	2012-11-23
1006	1,00	0,00	---	11	6	3	2013-03-03
1006	1,00	0,00	---	12	7	4	2013-01-11
1004	1,00	0,00	---	10	8	6	2014-04-01
1005	1,00	0,00	---	10	7	0	2012-12-06
1003	1,00	0,00	---	14	8	5	2014-12-10
1002	1,00	0,00	---	4	0	0	--
1005	1,00	0,00	---	12	4	4	2014-12-01
1003	1,00	0,00	---	4	0	0	--
1004	1,00	0,00	---	3	0	0	--
1006	1,00	0,00	---	9	24	21	2013-12-30
1005	1,00	0,00	---	12	7	4	2015-11-28
1006	1,00	0,00	---	9	2	2	2013-12-10
1002	1,00	0,00	---	2	1	0	2007-11-25
1003	1,00	0,00	---	10	4	4	2013-12-30
1004	1,00	0,00	---	12	12	10	2017-03-01
1008	1,50	0,25	---	9	4	4	2014-12-01
1007	1,50	0,25	---	8	2	2	2013-12-10
1011	1,50	0,25	---	11	4	4	2014-12-01
1003	1,00	0,00	---	2	0	0	--
1009	1,50	0,25	---	3	0	0	--
1005	1,00	0,00	---	0	0	0	--
1012	1,50	0,25	42F	11	5	4	2017-03-01
1002	1,00	0,00	---	8	15	8	2014-11-11
1007	1,50	0,25	---	11	6	6	2016-12-24
1006	1,00	0,00	---	4	0	0	--
1004	1,00	0,00	---	6	22	11	2013-03-03
1008	1,50	0,25	55M	11	6	6	2016-12-24
1011	1,50	0,25	---	2	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1036	Fathala 2	Mike	M	1,00	2006-12-16	2014-01-04	1001
1037	Bandia 1	Bonheur	M	1,00	2006-12-18	2013-04-05	1001
1038	Bandia 3	Sao	F	1,00	2006-12-20	2014-05-01	1001
1039	Fathala 2	Georges	M	1,00	2006-12-22	2017-03-01	1001
1040	Bandia 3	Tagat	F	1,00	2006-12-24	2014-05-01	1001
1041	Bandia 3	Tendresse	F	1,00	2006-12-26	2013-08-01	1001
1042	Bandia 1	Dagou	F	1,00	2006-12-29	2015-01-01	1001
1043	Bandia 1	Dewene	F	1,00	2007-01-06	--	1001
1044	Fathala 1	Foulamousou	F	1,00	2007-01-09	--	1001
1045	Fathala 1	Nane	F	1,00	2007-01-20	--	1001
1046	Bandia 1	Noname 2	F	1,00	2007-11-25	2007-11-26	1001
1047	Bandia 1	Noname 3	M	1,00	2007-12-03	2008-02-06	1001
1048	Fathala 1	Mansarinku	M	1,00	2007-12-04	--	1001
1049	Fathala 1	Nature	F	1,00	2007-12-11	2009-06-30	1001
1050	Bandia 1	Didi	F	1,00	2007-12-18	--	1001
1051	Bandia 3	Saroudia	F	1,00	2007-12-19	--	1001
1052	Bandia 1	Noname 4	U	1,00	2007-12-20	2008-03-15	1001
1053	Bandia 5	Bandiagara	F	1,00	2007-12-21	--	1001
1054	Fathala 2	Galago	M	1,00	2008-02-15	2014-01-13	1001
1055	Bandia 3	Toubacouta	F	1,00	2008-02-16	2014-05-01	1001
1056	Fathala 1	Fatou	F	1,00	2008-02-18	2009-06-30	1001
1057	Fathala 2	Smango T.	M	1,00	2008-12-04	--	1017
1058	Fathala 2	Dara	F	1,00	2008-12-08	--	1001
1059	Bandia 1	Bisaab	M	1,00	2008-12-09	--	1001
1060	Fathala 2	Nanuk	M	1,00	2008-12-10	--	1001
1061	Fathala 1	Msabar T.	M	1,00	2008-12-12	2011-12-31	1017
1062	Bandia 1	Toko	M	1,00	2008-12-24	--	1001
1063	Fathala 2	Donma	F	1,00	2008-12-28	--	1001
1064	Fathala 3	Soleil	M	1,00	2008-12-31	2011-04-01	1001
1065	Fathala 1	Teranga	M	1,00	2009-01-03	--	1001
1066	Fathala 3	Gaanga	F	1,00	2009-01-05	2011-08-01	1001
1067	Bandia 1	Mbalax	F	1,00	2009-01-10	2011-02-19	1001
1068	Bandia 1	Noname 5	U	1,00	2009-12-01	2009-12-23	[1001|1033|1037]
1069	Bandia 4	Triomphe D.	M	1,00	2009-12-04	2012-07-01	1030

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1005	1,00	0,00	---	7	2	2	2013-12-10
1004	1,00	0,00	---	6	28	18	2013-12-30
1003	1,00	0,00	---	7	3	1	2014-01-10
1011	1,50	0,25	51M	9	4	4	2014-12-01
1008	1,50	0,25	---	7	3	0	2013-10-30
1006	1,00	0,00	---	6	4	2	2012-11-05
1007	1,50	0,25	---	8	2	2	2012-12-22
1002	1,00	0,00	17F	9	7	6	2016-02-25
1012	1,50	0,25	37F	9	5	4	2016-01-01
1009	1,50	0,25	36F	9	2	2	2016-01-01
1020	1,50	0,25	---	0	0	0	--
1007	1,50	0,25	---	0	0	0	--
1005	1,00	0,00	7M	8	8	7	2016-04-01
1009	1,50	0,25	---	1	0	0	--
1002	1,00	0,00	15F	8	6	6	2015-11-25
1003	1,00	0,00	3F	8	1	1	2015-01-25
1008	1,50	0,25	---	0	0	0	--
1004	1,00	0,00	4F	8	3	2	2013-10-31
1011	1,50	0,25	---	5	2	2	2013-12-10
1006	1,00	0,00	---	6	3	3	2013-11-15
1012	1,50	0,25	---	1	0	0	--
1021	2,00	0,13	12M	7	4	4	2014-12-01
1007	1,50	0,25	38F	7	2	2	2014-12-01
1004	1,00	0,00	8M	7	20	17	2016-03-01
1009	1,50	0,25	58M	7	4	4	2014-12-01
1018	2,00	0,13	---	3	0	0	--
1008	1,50	0,25	60M	7	25	22	2016-03-01
1002	1,00	0,00	9F	7	4	4	2016-01-01
1003	1,00	0,00	---	2	0	0	--
1006	1,00	0,00	11M	7	5	5	2016-01-01
1011	1,50	0,25	---	2	0	0	--
1005	1,00	0,00	---	2	0	0	--
1007	1,90	0,15	---	0	0	0	--
1041	2,00	0,13	---	2	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1070	Bandia 5	Msalut T.	M	1,00	2009-12-15	2014-05-01	1017
1071	Bandia 1	Smirabelle T.	F	1,00	2009-12-17	--	1017
1072	Bandia 5	Marabout	M	1,00	2009-12-21	--	[1001|1033|1037]
1073	Bandia 1	Fort	M	1,00	2009-12-25	--	[1001|1033|1037]
1074	Bandia 4	Demba T.	M	1,00	2009-12-27	--	1017
1075	Bandia 4	Nguekokh	M	1,00	2009-12-31	2017-01-01	[1001|1033|1037]
1076	Bandia 1	Touba	F	1,00	2010-01-08	2013-10-01	[1001|1033|1037]
1077	Fathala 1	Noname 6	U	1,00	2009-12-15	2010-01-15	1010
1078	Bandia 4	Souhel	M	1,00	2010-11-07	2017-01-01	[1001|1033|1037]
1079	Bandia 4	Tamtam D.	M	1,00	2010-11-07	--	1030
1080	Bandia 1	Galope	M	1,00	2010-11-08	2012-03-09	[1001|1033|1037]
1081	Bandia 4	Timbre D.	M	1,00	2010-11-09	2016-04-01	1030
1082	Bandia 4	Droit	M	1,00	2010-11-11	2016-03-01	[1001|1033|1037]
1083	Bandia 3	Savanne D.	F	1,00	2010-11-21	2014-05-01	1030
1084	Bandia 4	Tamarin D.	M	1,00	2010-11-25	--	1030
1085	Bandia 4	Destin T.	M	1,00	2010-12-07	--	1017
1086	Bandia 4	Dada T.	M	1,00	2010-12-14	--	1017
1087	Bandia 4	Nemo	M	1,00	2010-11-18	--	[1001|1033|1037]
1088	Bandia 1	Dodo	M	1,00	2010-12-24	--	[1001|1033|1037]
1089	Bandia 1	Msindibad T.	M	1,00	2010-12-26	--	1017
1090	Fathala 1	Fee	F	1,00	2011-01-01	--	1010
1091	Fathala 1	Neige	F	1,00	2011-01-01	--	1010
1092	Bandia 1	Titi	M	1,00	2011-03-01	--	[1001|1033|1037]
1093	Bandia 1	Noname 7	M	0,00	2011-11-04	2011-11-06	UNK

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1018	2,00	0,13	---	4	1	1	2014-12-17
1021	2,00	0,13	18F	7	5	4	2016-11-20
1005	1,40	0,00	2M	7	6	6	2017-01-07
1012	1,90	0,15	18M	7	26	21	2017-02-01
1043	2,00	0,13	35M	7	0	0	--
1009	1,90	0,15	---	7	0	0	--
1006	1,40	0,00	---	3	0	0	--
1029	2,25	0,19	---	0	0	0	--
1003	1,40	0,00	---	6	0	0	--
1041	2,00	0,13	11M	6	0	0	--
1011	1,90	0,15	---	1	0	0	--
1040	2,25	0,19	---	5	0	0	--
1002	1,40	0,00	---	5	0	0	--
1038	2,00	0,13	---	3	1	1	2013-12-10
1055	2,00	0,13	15M	6	20	16	2017-02-01
1043	2,00	0,13	35M	6	0	0	--
1050	2,00	0,13	37M	6	0	0	--
1009	1,90	0,15	20M	6	0	0	--
1007	1,90	0,15	33M	6	20	16	2017-02-01
1018	2,00	0,13	16M	6	20	16	2017-02-01
1044	2,25	0,19	39F	6	1	1	2014-01-01
1045	2,25	0,19	40F	6	1	1	2017-02-05
1006	1,40	0,00	3M	6	20	16	2017-02-01
UNK	0,00	0,00	---	0	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1094	Bandia 3	Dawal	M	1,00	2011-11-07	--	[1001|1033|1037]
1095	Bandia 1	Bunta	F	1,00	2011-11-10	--	1017
1096	Bandia 5	Daraja	F	1,00	2011-11-11	--	[1001|1033|1037]
1097	Bandia 1	Daouda	M	1,00	2011-11-14	--	1017
1098	Bandia 1	Talaata	F	1,00	2011-11-15	--	1030
1099	Bandia 5	Seraphine	M	1,00	2011-11-17	2014-07-01	1030
1100	Bandia 1	Msaanga	F	1,00	2011-11-19	--	1017
1101	Bandia 4	Tuur	M	1,00	2011-11-27	--	1030
1102	Bandia 1	Dakar	M	1,00	2011-12-02	--	1017
1103	Bandia 5	Donja	F	1,00	2011-12-03	--	1017
1104	Fathala 2	Fasoo	M	1,00	2011-12-20	--	1010
1105	Bandia 5	Farata	F	1,00	2012-01-17	2014-12-12	[1001|1033|1037]
1106	Bandia 1	Noname 8	U	1,00	2012-02-08	2012-02-09	[1001|1033|1037]
1107	Bandia 4	Ted	M	1,00	2012-11-05	2014-06-30	1030
1108	Bandia 5	Tembo	M	1,00	2012-11-10	2016-03-01	1030
1109	Bandia 1	Buy	M	1,00	2012-11-21	--	[1017|1062]
1110	Bandia 1	Diego	M	1,00	2012-11-23	--	[1001|1033|1037]
1111	Bandia 1	Felix	M	1,00	2012-11-29	2015-01-01	[1001|1033|1037]
1112	Bandia 1	Gertrude	F	1,00	2012-12-06	2013-10-01	[1001|1033|1037]
1113	Fathala 1	Fadzai	F	1,00	2012-12-08	--	1010
1114	Bandia 1	Sabali	F	1,00	2012-12-13	2013-05-01	[1001|1033|1037]
1115	Bandia 1	Django	M	1,00	2012-12-22	--	[1017|1062]
1116	Bandia 3	Msultana	F	1,00	2012-12-26	--	[1017|1062]

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1007	1,90	0,15	31M	5	3	2	2016-04-01
1053	2,00	0,13	30F	5	3	3	2016-11-17
1002	1,40	0,00	4F	5	2	2	2016-11-18
1050	2,00	0,13	40M	5	20	16	2017-02-01
1041	2,00	0,13	15F	5	3	1	2016-11-15
1038	2,00	0,13	---	2	0	0	--
1018	2,00	0,13	20F	5	3	3	2016-11-27
1055	2,00	0,13	13M	5	2	2	2015-11-12
1042	2,25	0,19	51M	5	19	15	2017-02-01
1043	2,00	0,13	33F	5	3	3	2016-11-04
1044	2,25	0,19	47M	5	2	2	2015-03-25
1012	1,90	0,15	---	2	1	0	2014-12-12
1006	1,40	0,00	---	0	0	0	--
1041	2,00	0,13	---	1	0	0	--
1040	2,25	0,19	---	3	2	2	2015-11-12
1053	2,10	0,15	42M	4	12	9	2017-02-01
1007	1,90	0,15	32M	4	3	2	2016-04-01
1012	1,90	0,15	---	2	0	0	--
1011	1,90	0,15	---	0	0	0	--
1029	2,25	0,19	38F	4	1	1	2017-01-11
1003	1,40	0,00	---	0	0	0	--
1042	2,35	0,23	53M	4	12	9	2017-02-01
1018	2,10	0,15	26F	4	1	1	2016-04-01

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1117	Bandia 5	Daphne	F	1,00	2012-12-28	--	[1001|1033|1037]
1118	Bandia 1	Dine	F	1,00	2012-12-30	--	[1017|1062]
1119	Bandia 1	Desir	M	1,00	2013-01-04	--	[1017|1062]
1120	Bandia 5	Nigella	F	1,00	2013-01-11	--	[1001|1033|1037]
1121	Fathala 2	Dawie	M	1,00	2013-02-14	--	1048
1122	Bandia 1	Tangal	M	1,00	2013-03-03	--	[1001|1033|1037]
1123	Bandia 3	Tana D.	F	1,00	2013-10-30	2015-02-01	1030
1124	Bandia 1	Noname 9	U	1,00	2013-10-31	2013-11-14	[1017|1037|1059|1062|1073]
1125	Bandia 3	Tatiana D.	F	1,00	2013-11-15	--	1030
1126	Bandia 1	Smammouth	M	1,00	2013-11-20	--	[1017|1037|1059|1062|1073]
1127	Bandia 1	Fanfan	M	1,00	2013-11-30	--	[1017|1037|1059|1062|1073]
1128	Bandia 1	David	M	1,00	2013-11-30	--	[1017|1037|1059|1062|1073]
1129	Bandia 1	Stanley D.	M	1,00	2013-12-10	--	1030
1130	Fathala 2	Dimbal	M	1,00	2013-12-10	--	[1014|1019|1023|1024|1025|1031|1034|1036|1039|1048|1054|1057|1060|1065]

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1002	1,40	0,00	3F	4	1	1	2017-01-07
1050	2,10	0,15	37F	4	1	0	2016-11-15
1043	2,10	0,15	45M	4	5	5	2017-02-01
1009	1,90	0,15	24F	4	0	0	--
1063	2,00	0,13	8M	4	1	1	2016-12-24
1008	1,90	0,15	21M	4	4	4	2016-12-07
1040	2,25	0,19	---	1	0	0	--
[1043|1053]	2,14	0,17	---	0	0	0	--
1055	2,00	0,13	14F	3	0	0	--
1071	2,64	0,19	29M	3	0	0	--
1012	2,14	0,18	12M	3	0	0	--
1050	2,14	0,14	25M	3	0	0	--
1083	2,50	0,31	10M	3	0	0	--
1063	2,17	0,17	26M	3	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1131	Fathala 2	Damier	M	1,00	2013-12-10	--	[1014|1019|1023|1024|1025|1031|1034|1036|1039|1048|1054|1057|1060|1065]
1132	Bandia 1	Bouba	F	1,00	2013-12-30	--	[1017|1037|1059|1062|1073]
1133	Bandia 1	Smarketa	F	1,00	2013-12-30	--	[1017|1037|1059|1062|1073]
1134	Fathala 1	Noname 10	F	1,00	2013-12-30	2014-01-01	[1010|1022]
1135	Fathala 2	Fuddan	M	1,00	2014-01-01	--	[1010|1022]
1136	Bandia 3	Saola D.	F	1,00	2014-01-10	--	1030
1137	Fathala 2	Falco	M	1,00	2014-04-01	--	[1010|1022]
1138	Bandia 3	Toucouleur D.	M	1,00	2014-11-11	--	1030
1139	Bandia 3	Msoukeina	F	1,00	2014-11-21	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1140	Bandia 1	Smario	M	1,00	2014-11-24	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1058	2,42	0,26	50M	3	0	0	--
1095	2,64	0,21	32F	3	2	1	2017-02-01
1021	2,14	0,15	11F	3	1	0	2016-11-15
1044	2,25	0,19	---	0	0	0	--
1090	2,63	0,28	24M	3	0	0	--
1038	2,00	0,13	7F	3	0	0	--
1029	2,25	0,19	46M	3	0	0	--
1098	2,50	0,31	17M	2	0	0	--
1018	2,35	0,15	10F	2	0	0	--
1071	2,85	0,18	22M	2	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1141	Bandia 3	Docteur	M	1,00	2014-11-28	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1142	Fathala 2	Demal	M	1,00	2014-12-01	--	[1014|1023|1025|1031|1034|1039|1048|1057|1060|1065]
1143	Fathala 2	Daha	M	1,00	2014-12-01	--	[1014|1023|1025|1031|1034|1039|1048|1057|1060|1065]
1144	Bandia 3	Felicia	F	1,00	2014-12-10	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1145	Bandia 5	Noname 11	U	1,00	2014-12-12	2014-12-31	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1146	Bandia 5	Diola	F	1,00	2014-12-17	--	1070
1147	Bandia 3	Safira	F	1,00	2014-12-21	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1043	2,35	0,15	19M	2	0	0	--
1063	2,20	0,17	30M	2	0	0	--
1058	2,45	0,25	52M	2	0	0	--
1012	2,35	0,15	13F	2	0	0	--
1105	2,80	0,18	---	0	0	0	--
1103	3,00	0,22	29F	2	0	0	--
1100	2,85	0,18	25F	2	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1148	Bandia 5	Driankee	F	1,00	2015-01-04	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1149	Bandia 3	Salma	F	1,00	2015-01-25	--	[1094|1110]
1150	Fathala 2	Fadel	M	1,00	2015-03-05	--	[1022|1104]
1151	Fathala 2	Fode	M	1,00	2015-03-25	--	[1022|1104]
1152	Bandia 5	Duggi	F	1,00	2015-11-05	--	[1072|1101|1108]
1153	Bandia 5	Djibril	M	1,00	2015-11-12	--	[1072|1101|1108]
1154	Bandia 5	Damaye-Niane	F	1,00	2015-11-25	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1155	Bandia 1	Msebastian	M	1,00	2015-11-28	2017-03-01	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1156	Bandia 1	Smohamed	M	1,00	2015-12-04	2017-03-01	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1050	2,35	0,17	22F	2	0	0	--
1051	2,45	0,14	9F	2	0	0	--
1044	2,50	0,28	49M	2	0	0	--
1029	2,50	0,23	48M	2	0	0	--
1103	2,96	0,16	23F	1	0	0	--
1096	2,62	0,12	4M	1	0	0	--
1050	2,42	0,17	28F	1	0	0	--
1018	2,42	0,15	---	1	0	0	--
1071	2,92	0,19	---	1	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1157	Bandia 1	Samson	M	1,00	2015-12-15	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1158	Bandia 1	Benedict	M	1,00	2015-12-27	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1159	Fathala 2	Fredy	M	1,00	2016-01-01	--	[1022|1048]
1160	Fathala 1	Neethling	F	1,00	2016-01-01	--	[1022|1048]
1161	Fathala 2	Dukku	M	1,00	2016-01-01	--	[1031|1034|1065]
1162	Bandia 3	Noname 12	F	1,00	2016-03-01	2016-03-01	[1094|1110]
1163	Bandia 1	Dayo	M	1,00	2016-02-25	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1164	Bandia 1	Noname 13	F	0,50	2016-03-01	2016-05-01	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1165	Bandia 3	Mseyna	F	1,00	2016-04-01	--	[1094|1110]

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1100	2,92	0,19	34M	1	0	0	--
1095	2,92	0,20	41M	1	0	0	--
1044	2,25	0,19	44M	1	0	0	--
1045	2,25	0,19	36F	1	0	0	--
1063	2,15	0,18	38M	1	0	0	--
1098	2,95	0,17	---	0	0	0	--
1043	2,42	0,16	27M	1	0	0	--
MATE OF 1059	2,85	???	---	0	0	0	--
1116	3,00	0,15	31F	1	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1166	Fathala 1	Noname 14	F	0,50	2016-04-01	2016-05-05	[1022|1048]
1167	Bandia 1	Chuck Noriss	M	0,50	2013-04-01	--	MATE OF 1004
1168	Bandia 5	Dudek	M	1,00	2016-11-04	--	1072
1169	Bandia 5	Barbora	F	1,00	2016-11-08	--	1072
1170	Bandia 1	Noname15	F	0,50	2016-11-15	2016-12-20	MATE OF 1043
1171	Bandia 1	Bala	M	0,98	2016-11-17	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115|1119|1122|1167]
1172	Bandia 5	Dana	F	1,00	2016-11-18	--	1072

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
MATE OF 1022	2,00	???	---	0	0	0	--
[1004|1006|1021|1071]	1,75	???	1M	4	4	4	2016-12-07
1103	2,70	0,08	6M	0	0	0	--
1053	2,20	0,13	5F	0	0	0	--
[1043|1098|1118|1132|1133]	2,98	???	---	0	0	0	--
1095	2,93	0,20	39M	0	0	0	--
1096	2,40	0,09	2F	0	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1173	Bandia 1	Sierra	F	0,98	2016-11-20	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115|1119|1122|1167]
1174	Bandia 1	Manfred	M	0,98	2016-11-27	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115|1119|1122|1167]
1175	Bandia 1	Daniel	M	0,98	2016-12-07	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115|1119|1122|1167]
1176	Fathala 2	Donnee	F	1,00	2016-12-24	--	[1031|1034|1039|1057|1060|1065|1121]
1177	Fathala 1	Faleme	F	1,00	2017-01-06	--	[1022|1048]
1178	Bandia 5	Dori	F	1,00	2017-01-07	--	1072
1179	Fathala 1	Frederique	F	1,00	2017-01-11	--	[1022|1048]

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1071	2,93	0,19	27F	0	0	0	--
1100	2,93	0,19	28M	0	0	0	--
1050	2,42	0,17	23M	0	0	0	--
1058	2,54	0,26	41F	0	0	0	--
1044	2,25	0,19	35F	0	0	0	--
1117	2,40	0,09	1F	0	0	0	--
1113	2,63	0,19	19F	0	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1180	Bandia 1	Boubacar	M	1,00	2017-02-01	--	[1059|1062| 1062|1073| 1073|1084| 1084|1088| 1088|1089| 1089|1092| 1092|1097| 1097|1102| 1109|1115| 1119]
1181	Fathala 1	Nikola	F	1,00	2017-02-05	--	[1022|1048]
1182	Fathala 1	Fiona	F	1,00	2017-03-01	--	[1022|1048]

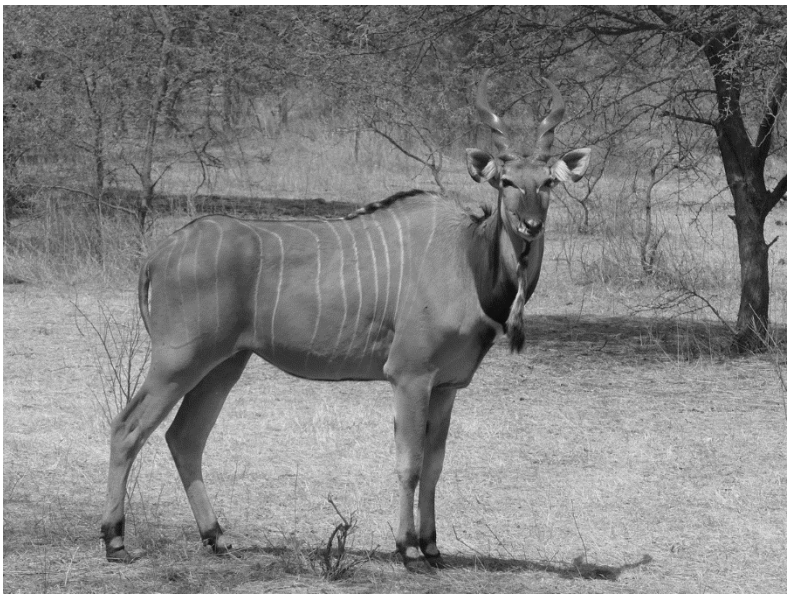
Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1132	3,22	0,21	43M	0	0	0	--
1091	2,63	0,19	21F	0	0	0	--
1029	2,25	0,19	34F	0	0	0	--

Explanatory note:

ID:	the studbook unique number given to the animal within the semi-captive population
Location:	location within the conservation programme
Sex:	F – female, M – male
Known:	percentage of known kinship
Sire/Dam:	identification of parents of the animal (the unique ID number)
Gen:	generation
F:	inbreeding coefficient
MK Rank:	mean kinship
N of offspring:	total number of offspring
N of living offspring:	number of living offspring
Last Repro Date:	last reproduction date

SECTION C:
The Identification Cards of Western Derby Eland (living individuals)

This section is available on request.
Contact: info@derbianus.cz



Adult female in the Bandia reserve

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