

AFRICAN STUDBOOK

WESTERN DERBY ELAND

Taurotragus derbianus derbianus (GRAY, 1847)



2016

Current until the 30 June 2016
English version



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



**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE
DERBIANUS CONSERVATION**

AFRICAN STUDBOOK

WESTERN DERBY ELAND
Taurotragus derbianus derbianus
(GRAY, 1847)

Editors:

Karolína Brandlová
Pavla Jůnková Vymyslická
Anna Kubátová
Magdalena Žáčková
Markéta Grůňová
Tamara Fedorova

Czech University of Life Sciences Prague
Derbianus Conservation

under the auspices of the Western Derby Eland Conservation
Programme
&
Society for the Protection of Environment and Fauna in Senegal

Copyright © 2016 by Czech University of Life Sciences Prague

Editors

Karolína Brandlová
Pavla Jůnková Vymyslická
Anna Kubátová
Magdalena Žáčková
Markéta Grůňová
Tamara Fedorova

African Studbook. Western Derby Eland, *Taurotragus derbianus derbianus* (Gray, 1847) / by Karolína Brandlová, Pavla Jůnková Vymyslická, Anna Kubátová, Magdalena Žáčková, Markéta Grůňová, Tamara Fedorova (Eds.), volume 9, Czech University of Life Sciences Prague, 2016, 86 pp.

Photographs: Derbianus Conservation

ISBN: 978-80-213-2739-9

CONTENT

Acknowledgements.....	4
Participating organisations and institutions.....	7
Contacts.....	9
Main partners and sponsors.....	11
Preface to the volume nine	12
SECTION A: Western Derby eland conservation programme	13
Current status of Western Derby eland.....	14
Current situation within the semi-captive population of Western Derby eland.....	16
Demographic analysis.....	18
Demography – graphs.....	25
Genetic analysis.....	28
Population management goals.....	33
References.....	34
The scientific outputs from the Western Derby eland conservation programme.....	35
SECTION B: The African studbook of Western Derby eland	63
SECTION C: The identification cards of Western Derby eland (living individuals)	85

ACKNOWLEDGEMENTS

We are very pleased to express our gratitude to all those institutions and persons who supported, cooperated, and encouraged efforts directed towards the conservation of the Western Derby eland.

For the support to our association we thank to the rector of the Czech University of Life Sciences Prague, Jiří Balík, bursar Jana Vohralíková and the dean of the Faculty of Tropical AgriSciences, Jan Banout.

We are highly indebted to the Society for the Protection of Environment and Fauna in Senegal (SPEFS), represented by Lucien Haddad and Georges Rezk; the managers and staff of the Bandia reserve, namely Souhel Fourzoli, Christian Dering, Christophe Dering, Amadou Seck, Camara Al-Hassana, Moustapha Bodian, Doudou Camara, Tidian Diop, Mousa Badzi, Oumar Thiam as well as the managers and staff of the Fathala reserve, namely Willem Burger, Arnold Neethling, Christoff Marais, Alan, Claire, and Michael Dobbs, Diné Daniller, Marzanne Louw, Ricus Delpont and Pietro Bosman, Christopher Brooke, Michelle Van Sittert, Vincent Dethier, Lamine Tamba, Tigana Sakho, Mousthapa Bodian, Ousseynou Diaow, and many others.

We thank our Senegalese partners at the Ministry of the Environment and Sustainable Development namely the minister Abdoulaye Baldé and Directorate of National Parks of Senegal, namely Souleye Ndiaye, Mamadou Sidibe, Mamadou Daha Kane, Ousman Kane, Mallé Gueye and conservators and rangers in the Niokolo Koba National Park and Delta du Saloum National Park. We are grateful also for important scientific consultations and advices from Senegalese specialists from the Cheikh Anta Diop

University in Dakar (UCAD), namely the rector of UCAD Ibrahima Thioub, and Paul Ndiaye and Bienvenue Sambou.

We are very grateful for valuable consultations with veterinarians of Dvůr Králové nad Labem Zoo, particularly Jiří Váhala, and Prague Zoo, namely Roman Vodička.

Deepest gratitude belongs to the members of Derbianus Conservation, z. s. for their invaluable work both in the office and in the field, to Pavla Hejzmanová, Markéta Gloneková, Markéta Antonínová, Barbora Černá Bolfíková, Pavel Brandl, Petr Fedorov, Michala Filipová, Lucie Foltýnová, Jana Hladíková, Kateřina Hozdecká, Tom Jůnek, Iva Pavlasová, Štěpán Pokorný, Michaela Stejskalová, Jan Svitálek, Markéta Švejcarová, Petr H. Verner, Miroslav Zámečník, and others including our volunteers.

Last but not least, we thank the Government of the Czech Republic, particularly the Ministry of Foreign Affairs and the Czech Embassy in Dakar represented by Lenka Pokorná, and the Ministry of Environment, namely vice-minister Vladimír Dolejský, Michal Pastvinský, Jiří Mach, Blanka Benešová, Veronika Vilímková, Petra Ptáčková, and their colleagues. For international support and cooperation, we thank David Mallon, Edward Richard William Stanley, 19th Earl of Derby, Eveline de Wolf and Knowsley Safari Park, Jakob Bro-Jorgensen, Jens-Ove Heckel, Mark Stanley Price, Rob Ogden, Helen Senn and others.

The studbook production was financed by the Department of Animal Science and Food Processing, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague. The ecological research was supported by grants from the Czech University of Life Sciences Prague CIGA 20135010. Fieldwork was supported by Ostrava Zoo, Pilsen Zoo, Dvůr Králové nad Labem Zoo, and Vojenské lesy a statky ČR, s.p. (VLS).

CONSERVATION de l'ELAND de DERBY



COOPERATION REPUBLIQUE TCHEQUE - SENEGAL



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. (former Derbianus Czech Society for African Wildlife) 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.

PARTNER of



World Association of Zoos
and Aquariums | **WAZA**
United for Conservation[®]



CONTACTS

Society for the Protection of Environment and Fauna in Senegal

45 Boulevard de la République, BP 2975, Dakar, Senegal

Lucien Haddad: lhaddad@orange.sn

Georges Rezk: sarra@orange.sn

Derbianus Conservation, z. s.

Czech University of Life Sciences Prague

Kamýcká 129, CZ 165 21 Praha 6 – Suchbát, Czech Republic

Karolína Brandlová: karolina@derbianus.cz

For more information see

www.derbianus.cz



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



VOJENSKÉ LESY A STATKY ČR, s.p.



Ministry of Foreign Affairs
of the Czech Republic



Ministry of the Environment
of the Czech Republic



PREFACE TO THE VOLUME NINE

The ninth 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. Although the semi-captive population was predicted to grow, it maintains approximately the same size during the last three years and the number of living individuals still has not reached the expected 100. What will be our future steps?

Detailed information about Western Derby eland in the wild as well as within the conservation programme may be found in the Western Derby eland (*Taurotragus derbianus derbianus*) Conservation Strategy published under the Czech University of Life Sciences Prague in 2013.

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

Derbianus Conservation, z. s.

Czech University of Life Sciences Prague

Kamýčká 129, 165 21 Praha 6 – Suchbátov

Account number (EUR): 2700985022/2010

IBAN (EUR): CZ6220100000002700985022

Account number (CZE): 2300985015/2010

IBAN (CZE): CZ7520100000002300985015

SWIFT CODE: FIOBCZPPXXX

Bank name: Fio banka, a.s.

Bank address: Budějovická 1523/9a, 140 00 Praha 4

SECTION A:
Western Derby Eland
Conservation Programme



Adult female 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. There are three important localities: 1) the Niokolo Koba National Park (NKNP) with the only confirmed wild population, 2) the Bandia reserve and 3) the Fathala reserve, both hosting Western Derby eland's managed semi-captive population.

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. 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 2015 our research team has started an official cooperation with Chinko Protected Area in the Central African Republic, the home of Eastern Derby eland (*Taurotragus derbianus gigas*). This subspecies is still hunted in its area of distribution and listed as Least Concern by IUCN Red List. In cooperation with Chinko we provide results of unique camera trap study in this remote area.

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, although the growth slowed down in recent years.

At the beginning of 2016, 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. For 2016 no transports of animals were planned, although 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 continue with efforts of their separation, direct observation of their interactions, and an intensive DNA monitoring both of WDE and common elands.

All animals seen in 2016 in the Bandia reserve were in good health condition. Two rhinoceros kept in the Bandia reserve damaged fences of enclosures of WDE which resulted in mixing of animals of the herds Bandia 4 and Bandia 5. Using supplementary food, our colleagues managed to relocate the animals back to their enclosures.

In the Fathala reserve, both existing herds were reproducing well. Animals in both herds (Fathala 1, Fathala 2) were in a good condition. Hoof problems reported in 2014 in the herd Fathala 2 did not appear.

For the current structure of Western Derby eland herds kept in Bandia and Fathala reserves see Table 1.

Tab. 1. The actual structure of herds (June 2016) is following:
(location + numerical enclosure designation):

<i>Enclosure designation</i>	<i>Number of males</i>	<i>Number of females</i>	<i>Herd category</i>	<i>Enclosure size</i>	<i>Enclosure type</i>
Bandia 1	24	15	Reproductive	3,500 ha	Multiple species
Bandia 3	4	7	Reproductive	80 ha	Single species
Bandia 4	8	0	Bachelor	100 ha	Single species
Bandia 5	2	7	Reproductive	80 ha	Single species
Bandia total	38	29			
Fathala 1	7	7	Reproductive	160 ha	Single species
Fathala 2	15	2	Reproductive	1,800 ha	Multiple species
Fathala total	22	9			

Demographic 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). Individuals alive in June 2016 and their ancestors were included into the pedigree. “Founder” means “genetic founder” – wild-born individuals presumed to be unrelated. Regarding the exclusion of sub-adult males from breeding herds, the dominant 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.

A total of 161 offspring of the Western Derby eland were born from 2000 to 2016 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 98 living individuals bred in semi-captivity and managed in 6 herds in 2 nature reserves in Senegal in June 2016 (Tables 1 and 2). Note that only the number of males is increasing, while number of females has remained almost unchanged during the last 4 years.

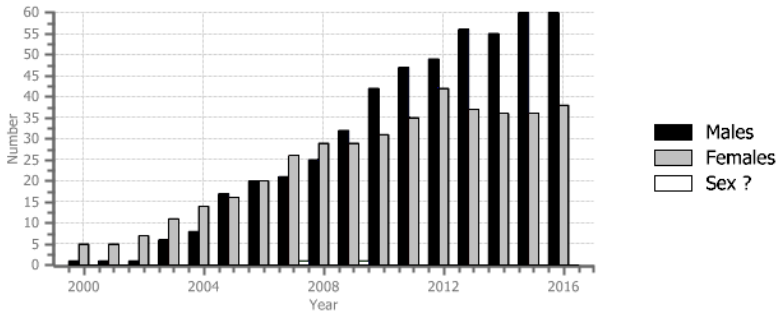


Fig. 1. Population growth rate in the semi-captive Western Derby eland population based on the real data collected between 2000 and 2016.

Tab. 2. Demographic parameters of the Western Derby eland semi-captive population in June 2016.

Variable	Males	Females	Unknown
Founders	1	5	
Present number of individuals N	60	38	
Number of pre-reproductive	15	10	
Number of adults in the population	45	28	
Number of proven breeders	26	19	
Births total	88	67	6
Deaths total	29	34	6
Generation length	5.3	5.8	
Deterministic population growth rate (λ) ^a	1.31	1.14	

^a $\lambda > 1$ 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 = 421.43, 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). Number of births should increase with increasing number of adults, but it has not been fulfilled in all years as seen from Fig. 3. The age structure (Fig. 4) shows a stagnating number of young animals as well as the increasingly biased sex ratio (1.58:1).

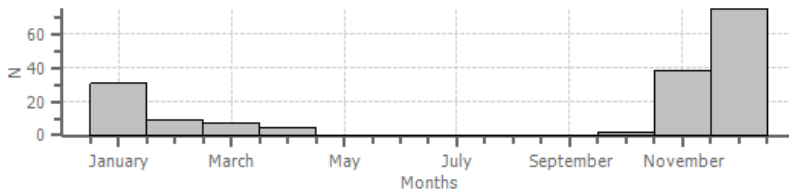


Fig. 2. Birth distributions of Western Derby elands in the Bandia reserve throughout the year in the period of 2002 - 2016.

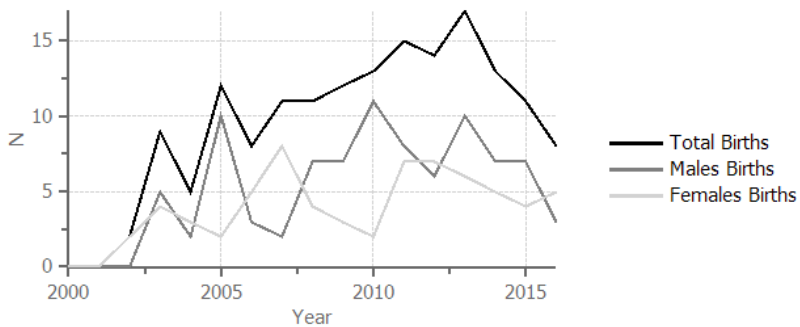


Fig. 3. Number of births of Western Derby elands in semi-captive population in respective years (2000 - 2016).

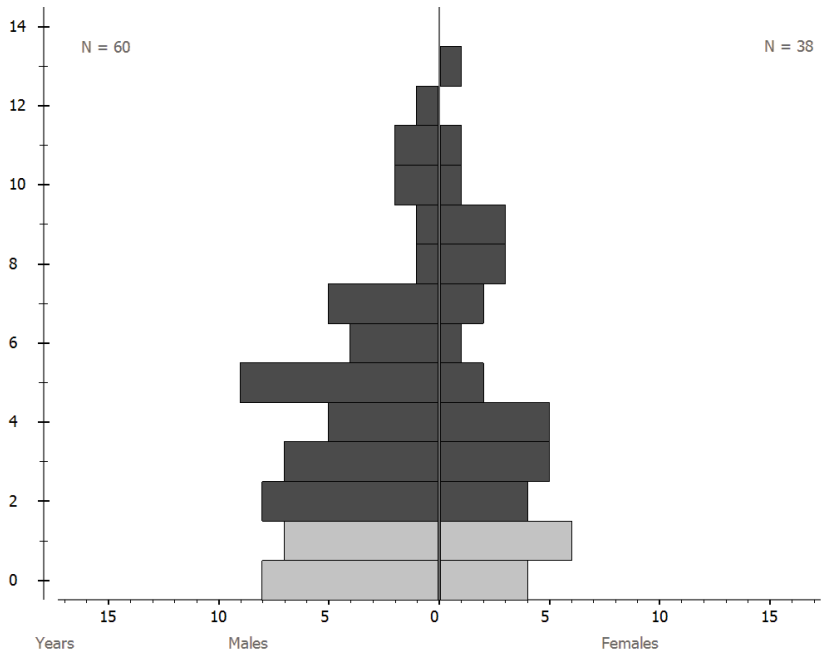


Fig. 4. Male and female age structure of the living individuals of the Western Derby elands held in semi-captivity in June 2016. The light-coloured part represents individuals in non-breeding age.

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 ($M_x = \frac{1}{2}$ number of offspring born to a parent of age x) was 0.8 for males and 0.3 for females (Fig. 5).

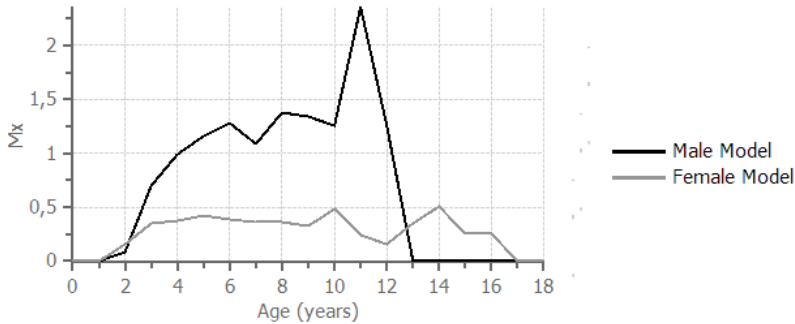


Fig. 5. Mx: Fecundity, or the $\frac{1}{2}$ average number of offspring born to individuals in that age class.

The annual mortality in 2014 reached an alarming value of 21.7 %, then it slightly decreased in 2015 and finally dropped to the long-term average in 2016 (Fig. 6). The average values of mortality (Table 3) 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 4.

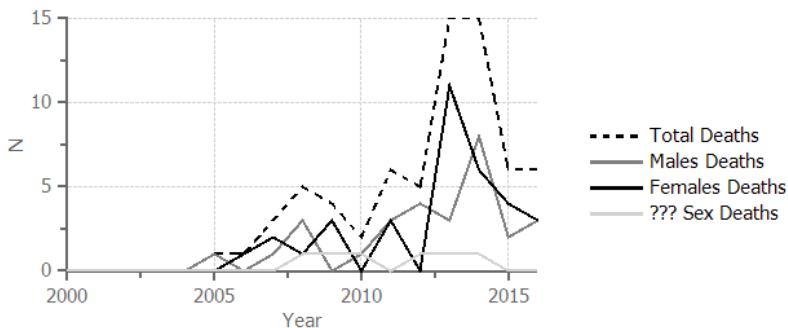


Fig. 6. Overview of deaths of Western Derby eland in semi-captive population since 2000.

Tab. 3. 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 2016.

Mortality	Total	Males	females
30 Day Mortality	0.06 (N=152)	0.05 (N=87)	0.07 (N=65)
0 Age Class Mortality	0.09 (N=142)	0.07 (N=82)	0.10 (N=60)
Avg. Pre-Repro Mort	0.07 (N=135)	0.05 (N=78)	0.09 (N=57)
Avg. Repro Mortality	0.10 (N=41)	0.09 (N=24)	0.11 (N=17)

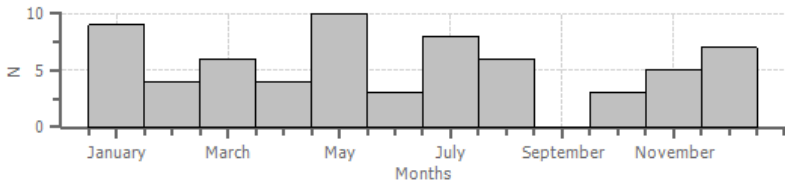


Fig. 7. Non-calf mortality in semi-captive population of Western Derby elands based on the real data collected between 2000 and 2016.

Tab. 4. 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	9.0	10.3
Lx = 0.25	13.6	13.1	14.0
Lx = 0.10	14.9	13.6	16.2
Lx = 0.05	15.2	13.8	16.5
Lx = 0.01	15.4	14.0	16.9
Life Expectancy	9.1	8.9	9.3
Oldest Living	13.4 (ID:1012)	12.6 (ID:1014)	13.4 (ID:1012)
Oldest Recorded	16.9	13.5	16.9

Analyses of the life table of the Western Derby eland indicated that the deterministic annual population growth rate was 1.223, slightly lower 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) decreased by 13 % since the last year to 3.21. The overall decrease was caused by males only, because in females the value is slightly higher than the last year (4.28 for males and 2.14 for females). Survival rates of the population also improved since the last year, especially in females, which is positive.

The projections of the population size from the last year were exactly fulfilled. According to the projections assessing the current situation, population size next year should be 111 animals (100 <> 111 <> 122). Stochastic probability of increase is 99 %, there is 1 % probability that the population remains the same. For the population estimates within 20-year horizon see Figure 8. The population size in 2036 should be 1,056 individuals.

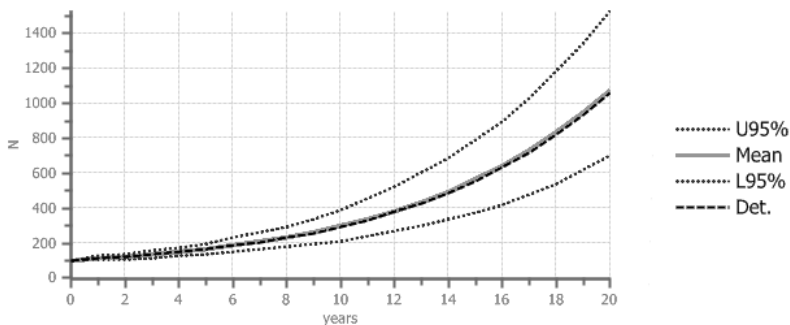


Fig. 8. Stochastic projection of the WDE population size within 20-year horizon.

Demography – graphs

To illustrate the demographic situation of the population, we decided to show following graphs, representing different views on the demographic parameters (Fig. 9 – 14).

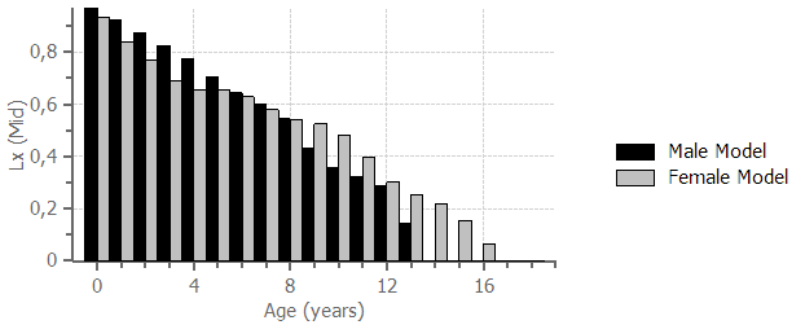


Fig. 9. L_x (mid): Survival, or the proportion of individuals surviving from birth to the mid-point of age class x .

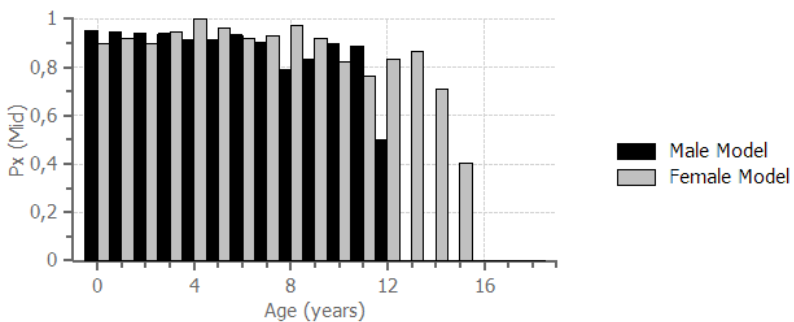


Fig. 10. P_x (mid): Survival, or the proportion of individuals which survive from the beginning of age class x to the mid-point of age class $x+1$.

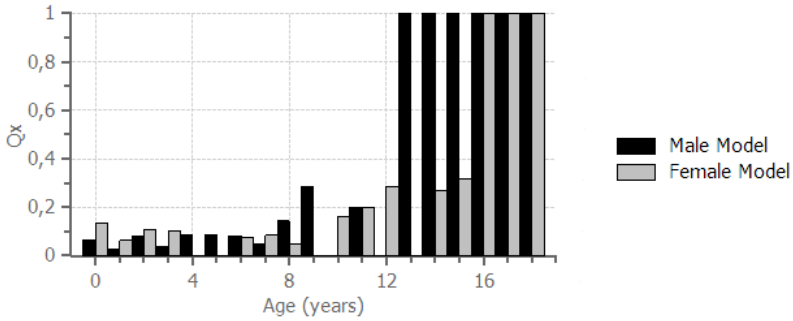


Fig. 11. Q_x : Mortality, or the probability that an individual of age x dies during age class x .

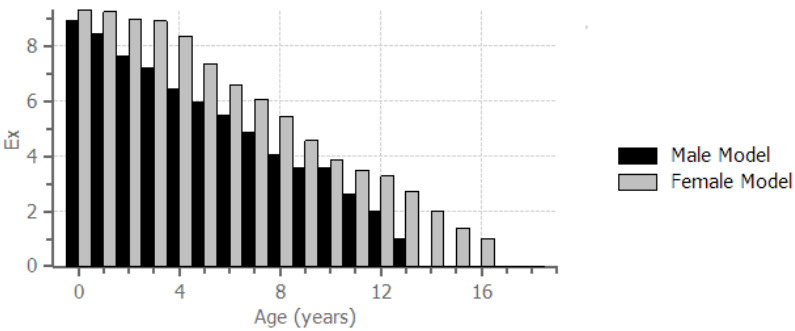


Fig. 12. E_x : Life expectancy, or the average number of additional years an individual in age class x can expect to live.

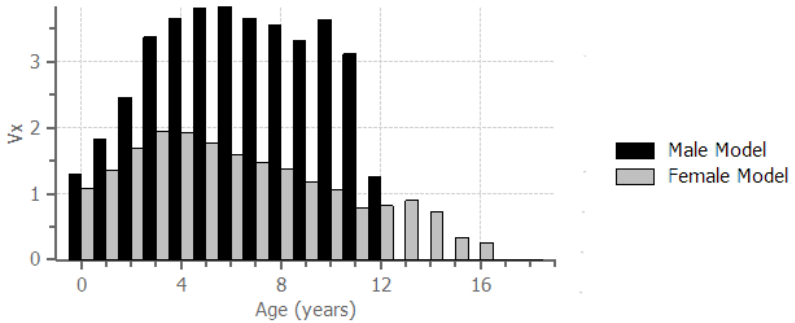


Fig. 13. V_x : Reproductive value, or the expected number of offspring produced this year and in future years by an animal of age x .

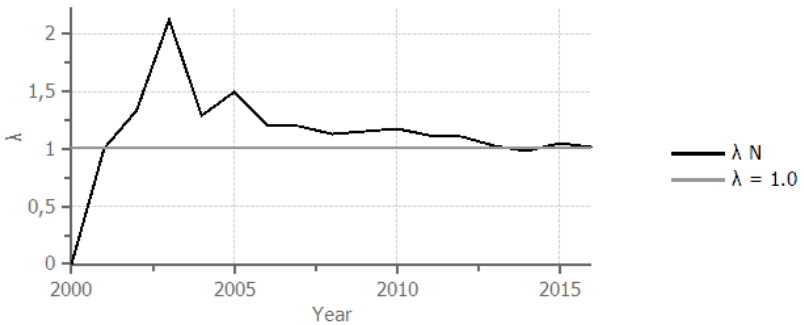


Fig. 14. Lambda: Proportional change in population size from one year to the next. Lambda N is based on observed changes in population size due to all causes.

Genetic analysis

In 2016 we used 11 microsatellites to evaluate genetic structure of the population and to add missing paternities to calves born in 2003 (Tab. 5). The parentage analysis according to most likely candidate mother was done in Cervus 3.0.7 (Kalinowski et al., 2007). We added this information into the studbook dataset and compared how the assigned paternities influenced the pedigree calculated values.

Tab. 5. 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

The actual population size of Western Derby elands in semi-captivity since the last year increased to 98 individuals and finally overcame the value from 2013 (92 ind.). The current effective population size has increased by 42 % since last year to 35.71 (based on 16.8 breeding males and 19.0 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 (10-20 %). On the contrary the number of breeding females is very realistic. The Ne/N ratio increased to 0.37. The overall (mean) effective population size has increased due to management of reproduction since 2008, from 3.71 to 8.56.

After the assignment of missing paternities of animals born in 2003, the animals in the pedigree had 99.5 % of known ancestry genotypes in the population (compared to 92 % without assignment). However, the population has only 71.4 % ancestry certain, because of multiple sires present in the pedigree with different breeding probabilities.

The population has retained 81.134 % 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. 15). 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 0.1456 and increased from 0.0648 in 2008. The level of inbreeding was also positively reflected by assigned paternities (compare to 0.1788 without assignment).

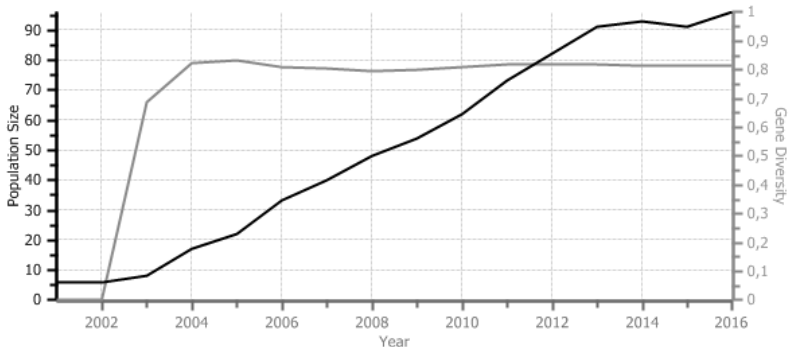


Fig. 15. Development of population size and genetic diversity of WDE in semi-captivity throughout the period 2001–2016.

Founder genome equivalents (FGE = 2.68) 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 = 5.88) 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. 16, Table 6). Contribution of female 1003 (Salémata) improved when female 1012 (Fathala) with 16 offspring was added to her descendants. The lowest contribution remains in the female 1005 (Malapa), even after addition of 1011 (Guddi) with 7 offspring to her descendants.

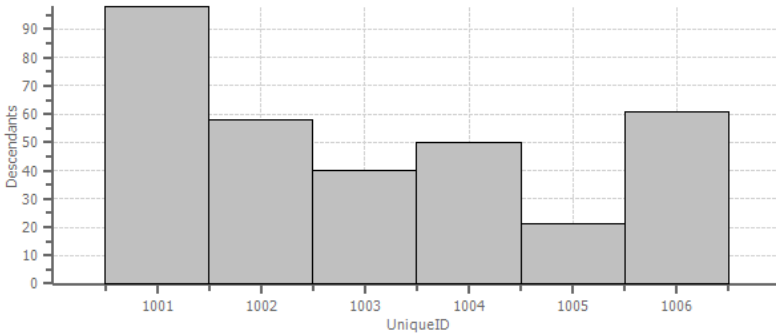


Fig. 16. Founder descendants in the semi-captive Western Derby eland population in Senegal. Unique ID the x axis indicates individuals: 1001 – male, 1002 to 1006 – females.

Tab. 6. 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	Age	Rep.	Cont.	Allele Retention	Desc.
1001	---	M	13	0.5458	53.2142	1.0000	98
1002	D	F	16	0.1320	12.8700	0.9930	58
1003	S	F	16	0.0719	7.0150	0.9605	40
1004	B	F	14	0.0930	9.0660	0.9845	50
1005	M	F	12	0.0437	4.2587	0.9540	21
1006	T	F	14	0.1136	11.0760	0.9855	61

A significant potential GD of 91.49 % 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 0.1866 (Table 7).

Tab. 7. Mean kinship (MK) distribution in the semi-captive Western Derby eland population in Senegal in June 2016. 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	79	80.1
0.2 – 0.3	19	19.9
> 0.3	0	0.0

Tab. 8. Genetic structure of breeding herds of Western Derby eland in the semi-captive Western Derby eland population in Senegal in June 2016 (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	39	6	0.987	0.654	0.802	0.802	0.198	2.526	0.138	4.792
Bandia 3	11	5	1.000	0.750	0.762	0.762	0.238	2.099	0.158	3.318
Bandia 4	8	5	1.000	0.750	0.780	0.780	0.219	2.277	0.116	3.395
Bandia 5	9	6	1.000	0.611	0.798	0.798	0.202	2.477	0.086	3.676
Fathala 1	14	6	1.000	0.750	0.709	0.709	0.290	1.723	0.189	2.864
Fathala 2	17	6	1.000	0.838	0.745	0.745	0.256	1.957	0.176	3.728

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 71.8 % of original diversity in the following 100 years. Such decrease may bring negative effects in terms of decreased population viability and decreased ability to adapt to changing conditions in the near future. After 11 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 95 years, maintain the population at 200 individuals.

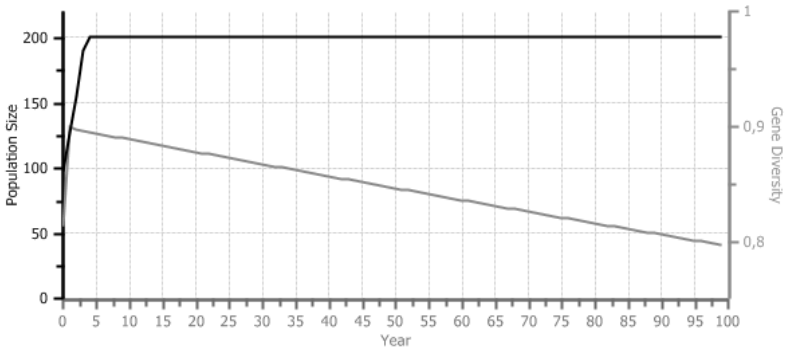


Fig. 17. Projection of genetic diversity and population size after adding 6 wild individuals from the Niokolo Koba National Park.

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.
- 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>

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.
- Hejzmanová P., Hejzman 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.
- Hejzmanová P., Homolka M., Antonínová M., Hejzman 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
- Hejzmanová P., Jůnková Vymyslická P., Žáčková M., Hejzman 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.
- Hejzmanová P., Vymyslická P., Koláčková K., Antonínová M., Havlíková B., Stejskalová M., Policht R., Hejzman M., 2009. Suckling behavior of eland antelopes (*Taurotragus* spp.) under semi-captive and farm conditions. *Journal of Ethology* 29(1): 161-168.
- Hejzmanová-Nežerková P., Hejzman M., 2006. A canonical correspondence analysis (CCA) of the vegetation-

- environment relationships in Sudanese savannah, Senegal. *South African Journal of Botany* 72: 256–262.
- Hejčmanová-Nežerková P., Hejčman 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., Hejčmanová 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., Hejčmanová, P., 2015: Feeding rank in the Derby eland: lessons for management. *African Zoology*, 50 (4): 313-320.
- Koláčková K., Hejčmanová 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., Hejčmanová P., 2008. What have the Giant eland and frogs in common? *Gazella* 35: 157-168.
- Koláčková, K., Hejčmanová 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 helminthological 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., Hejčmanová P., Verner P.H., Akakpo B.J.A., 2008. Použití kombinace etorpin/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., Hejčmanová 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., Hejčmanová P., Hejčman 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., 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., Hejzmanová 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., Hejzmanová 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, Unpublished)

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. (Unpublished).

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. (Unpublished).

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. (Unpublished).

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. (Unpublished).
- 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. (Unpublished).
- Hejčmanová 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. (Unpublished).
- Holubová Z., 2016. The influence of genealogical characteristics on Derby elands' striping. BSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague. (Unpublished)
- 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. (Unpublished)
- Karafiátová A., 2016. Diet quality of large herbivores across continents. MSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague. (Unpublished)
- Kučerová O., 2015. Dynamics of diet quality of large herbivores in Senegal. MSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague. (Unpublished)
- 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 in 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.
- 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. (Unpublished).
- 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, Unpublished).
- 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. (Unpublished)
- 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. (Unpublished)
- 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. (Unpublished)
- Swiacká M., 2015. Comparison of population characteristics of genus *Taurotragus*. BSc. Thesis, Faculty of Tropical

- AgriSciences, Czech University of Life Sciences Prague.
(Unpublished)
- Švejarová M., 2014. Derby eland (*Taurotragus derbianus*) in captivity: studbook analyses. B.Sc. thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague.
(Unpublished)
- Štochlová K., 2016. Phylogeny and population characteristics of Derby eland (*Taurotragus derbianus*). MSc. Thesis, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague. (Unpublished)
- 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
(Unpublished).
- 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
(Unpublished).
- 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.
(Unpublished)
- 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.
(Unpublished)

Conference presentations and lectures

- Brandl P., Kolářčková K., Hejčmanová 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 Commission, 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., Hejčmanová 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: Hejčmanová 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., Hejčmanová 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., Hejzmanová 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., Grůňová, M., Hejzmanová, P., 2016: Last living Western Derby elands need our attention. EAZA Annual Conference 2016, Belfast, Northern 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, Northern 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., Hejzmanová, 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., 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Hejzmanová 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
- Hejzmanová 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).
- Hejzmanová P., Antonínová M., Verner P.H., 2007. Program ochrany ohrožených druhů: management populace antilopy Derbyho v Senegal. 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.
- Hejzmanová 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
- Hejzmanová P., Kučerová O., Karafiátová A., Jůnková Vymyslická P., Brandlová K., Žáčková M., Hejzman 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

- Hejčmanová P., Vymyslická P., Žáčková M., Hejčman 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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 Senegal! Africký den held by Africký informační portál, Praha, Czech Republic.
- Jůnková Vymyslická P., 2014. Derbianus in 2014. Meeting of Antelope Breeding Commission, 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., Hejzmanová 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., Hejzmanová 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.
- Kolářková 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).
- Kolářková K., 2010. Derbians Czech Society for African Wildlife, o.s. Small African Conference, Jihlava, 10th September 2010.
- Kolářková K., 2010. Program na záchranu antilopy Derbyho (*Taurotragus derbianus derbianus*) v Senegalu - výsledky 10 let práce českého týmu. Využití výzkumu a monitoringu pro ochránářský management. UP Olomouc, 14. – 17. 9. 2010.
- Kolářková K., 2011. Derbians CSAW - Osud největší antilopy. Small African Conference, Jihlava, 9th September 2011.
- Kolářková K., Antonínová M., Hejzmanová 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.
- Kolářková K., Antonínová M., Hejzmanová 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.
- Kolářková K., Antonínová M., Hejzmanová P., Verner P.H., 2008. Po stopách antilopy Derbyho. Small African Conference, Zoo Jihlava, Czech Republic (in Czech).
- Kolářková K., Antonínová M., Hejzmanová 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.
- Kolářková K., Brandl P., 2010. 10 years of the Western Derby eland (*Taurotragus derbianus derbianus*) conservation programme. Presentation for IZW Berlin, 31th August.
- Kolářková 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
- Kolářková 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.
- Kolářková K., Brandl P., Hejcmanová P., Žáčková M., Vymyslická P., Bartůňková L. 2011. Presence and future of Western Derby Eland. EAZA Annual Conference Montpellier.
- Kolářková 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.
- Kolářková K., Hejcmanová P., 2010. Conservation and breeding of the critically endangered Western Derby eland (*Taurotragus derbianus derbianus*) in Senegal. Workshop Vétérinaires sans frontières, VSF Brno, 1st May 2010.
- Kolářková K., Hejcmanová P., 2010. Výsledky a perspektivy projektu na ochranu antilopy Derbyho (*Taurotragus derbianus derbianus*) v Senegal. Diskusní týden pro biodiverzitu, Ministry of Foreign Affairs of Czech Republic, 28. 5. 2010, Small Hall of City Library in Prague.

- Koláčková K., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Hejčmanová 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., Žáčková M., Jůnková Vymyslická P., Grůňová 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.

- 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., Kolářková K., Svitálek J., Antonínová, M. 2010. Vliv managementu na savanové ekosystémy: modelové studie v rezervacích Bandia a Fathala v Senegal. II. konference ochrany přírody ČR, UPOL, Olomouc, p. 80. ISBN 978-80-7399-994-0
- Žáčková M., Hejcmanová P., Hejcman M., Kolářková 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., Hejčmanová P., Vymyslická P., Hejčman 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., Hejčmanová P., Hejčman, M., 2010. Did the fencing change the vegetation structure of the Fathala Forest? Cheikh Anta Diop University, Dakar.

Other articles and publications

- Antonínová M., Hejčmanová P., Koláčková K., Svitálek J., 2008. Protegeon notre nature! Université Tchèque des Sciences de la Vie (Czech University of Life Sciences, Prague), 24 pp.
- Antonínová M., Hejčmanová P., Tomášová K., Verner P.H., 2007. Senegal – Saving a rare antelope. The Hearth of Europe, Vol.14 (3): 25.
- Antonínová M., Hejčmanová P., Verner P.H., 2008. Jak zachraňujeme antilopu Derbyho. Zpravodaj ČZU Praha, č.3: 19 – 20.
- Bobek M., Ptačinská Jiráťová 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.

- 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.
- Hejzmanová P., Hejzman M., Antonínová M., Verner P.H., 2008. Obnova stromové savany v západní Africe – Co slibuje obora v rezervaci Bandia? *Vesmír* 87: 242-246.
- Hejzmanová P., Renaud P.C., Antonínová M., Froment J.M. 2008. The Niokolo Koba National Park in Senegal: A case for urgent assistance. (Unpublished).
- Hejzmanová, 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.
- Kolářková K., 2009. Cesty Senegalem – Národní park Djoudj. *Journal Trojský koník*, Prague Zoo, Prague. (in Czech).
- Kolářková K., 2009. Ekologie v zoo – Zoologická zahrada hl. m. Prahy. *Nika*, časopis pro environmentální výchovu a osvětu. Vol. 30 (in Czech).
- Kolářková K., 2009. Jak se stěhují antilopy. *Journal Trojský koník*, 11/1, Prague Zoo, Prague. (in Czech).
- Kolářková K., 2009. Po stopách antilopy Derbyho. *Časopis MOPAN*. Zoological garden Jihlava, Czech Republic (in Czech).
- Kolářková K., Svitálek J., 2008. „Divoká“ Afrika. Safari pro senegalské děti. *Časopis Trojský koník*, 10/2, Prague Zoo, Prague. (in Czech).
- Kolářková K., Svitálek J., 2008. Po stopách antilopy Derbyho. *Časopis Trojský koník*, 10/2, Prague Zoo, Prague. (in Czech).

- Kolářková K., Svitálek J., 2009. Cesty Senegalem – národní park Delta du Saloum. Časopis Trojský koník, 11/1, Prague Zoo, Prague. (in Czech).
- Kolářková K., 2010. Cesty Senegalem – Národní park Niokolo Koba. Trojský koník, 12/1, p. 36-37 Prague Zoo, Prague.
- Kolářková 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 Senegal – 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
University of Third Grade, Czech University of Life Sciences
Prague
Week of Science and Technology, Ostrava Zoo

Abstract to scientific outputs published since June 2015

APPLICATION OF SPATIAL AND CLOSED CAPTURE-RECAPTURE MODELS ON KNOWN POPULATION OF THE WESTERN DERBY ELAND (TAUROTRAGUS DERBIANUS DERBIANUS) IN SENEGAL.

Tomáš Jůnek¹; Pavla Jůnková Vymyslická¹; Kateřina Hozdecká²; Pavla Hejčmanová²

¹ Department of Ecology, Faculty of Environmental Sciences, Czech University of Life Sciences Prague, Kamýcká 129, 165 21 Praha 6 – Suchdol, Czech Republic

² Department of Animal Science and Food Processing, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague, Kamýcká 129, 165 21 Praha 6 – Suchdol, Czech Republic

Camera trapping with capture-recapture analyses has provided estimates of the abundances of elusive species over the last two decades. Closed capture-recapture models (CR) based on the recognition of individuals and incorporating natural heterogeneity in capture probabilities are considered robust tools; however, closure assumption is often questionable and the use of an M_h jackknife estimator may fail in estimations of real abundance when the heterogeneity is high and data is sparse. A novel, spatially explicit capture-recapture (SECR) approach based on the location-specific capture histories of individuals overcomes the limitations of closed models. We applied both methods on a closed population of 16 critically endangered Western Derby elands in the fenced 1,060-ha Fathala reserve, Senegal. We analyzed the data from 30 cameras operating during a 66-day sampling period deployed in two densities in grid and line arrays. We captured and identified all 16 individuals in 962 trap-days. Abundances were estimated in the programs

CAPTURE (models M_0 , M_h and M_h Chao) and R, package secr (basic *Null* and *Finite mixture* models), and compared with the true population size. We specified 66 days as a threshold in which SECR provides an accurate estimate in all trapping designs within the 7-times divergent density from 0.004 to 0.028 camera trap/ha. Both SECR models showed uniform tendency to overestimate abundance when sampling lasted shorter with no major differences between their outputs. Unlike the closed models, SECR performed well in the line patterns, which indicates promising potential for linear sampling of properly defined habitats of non-territorial and identifiable herbivores in dense wooded savanna conditions. The CR models provided reliable estimates in the grid and we confirmed the advantage of M_h Chao estimator over M_h jackknife when data appeared sparse. We also demonstrated the pooling of trapping occasions with an increase in the capture probabilities, avoiding violation of results.

FEEDING RANK IN THE DERBY ELAND: LESSONS FOR MANAGEMENT

Pavla Jůnková Vymyslická, Karolína Brandlová*, Kateřina Hozdecká, Magdalena Žáčková and Pavla Hejcmanová

Department of Animal Science and Food Processing, Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague, Czech Republic

* Corresponding author, email: brandlova@ftz.czu.cz

Transfers to new breeding herds and supplementary feeding are crucial management steps for small populations of ungulates. However, the successful realisation of those steps is strongly dependent on social interactions among individuals. Agonistic encounters connected with feeding determine the quality and quantity of the food accessed, and therefore directly influence

food intake. We analysed the dominance relationships of mixed herds of critically endangered Western Derby eland with regard to access to supplementary food in the Bandia reserve, Senegal. We tested the influence of age and sex on feeding rank, the linearity and stability of hierarchies and the relationship between the position of an offspring in the hierarchy and the position of its mother. A linear hierarchy existed in all herds. Sex influenced the rank only in interaction with age. Feeding rank was significantly related to age in growing animals; in adults the effect of age was weaker. While body mass is correlated with age during the growth period and not after reaching adulthood, we concluded that the position in the hierarchy was related to the actual condition, reflecting the resource holding potential of individuals. The dominance index of a growing offspring depended on the index of its mother, but hierarchies of adult individuals were not stable. High-ranking individuals in good condition limited access to supplementary feeding to their lower-ranking herdmates. Effective supplementary feeding should therefore be provided in excess amounts to enable younger and weaker individuals in need to benefit from it, despite their lower positions in the hierarchy.

Selected posters presented at international conferences
 Fig. 17. Poster for EAZA Conference 2015

DERBIANUS CONSERVATION NGO



DERBIANUS CONSERVATION



**Brandlová Karolína^{1,2*}, Jůnková Vymyslická Pavla², Žáčková Magdalena^{1,2},
 Fedorova Tamara^{1,2}, Hejčmanová Pavla^{1,2}**

¹ Czech University of Life Sciences Prague, Faculty of Tropical Agrisciences,
 Dept. of Animal Science and Food Processing, Kamýčká 129, 165 21, Praha Suchbát, CZECH REPUBLIC;
² Derbianus Conservation, Kamýčká 129, 165 21, Praha Suchbát, CZECH REPUBLIC
 * karolina@derbianus.cz

Derbianus Conservation NGO (former Derbianus Czech Society for African Wildlife) became EAZA Associated Member in 2015! We are leading partner in conservation of critically endangered Western Derby eland (*Taurotragus derbianus derbianus*).




Western Derby eland

- critically endangered antelope
- last wild population of 170 individuals recorded in 2006 in Niokolo Koba National Park (NKNP) lives in Senegal



Conservation programme

- a semi-captive population was established in 2000
- it is led by the Directorate of National Parks in Senegal (DPN), the Society for the Protection of Environment and Fauna of Senegal (SPEFS) and the Derbianus Conservation

The semi-captive population in Bandia and Fathala reserves in Senegal currently encompasses 89 individuals, slowly recovering after demographical break-down in 2014, 13 calves were born in 2014/2015 season.

Science and research



New volume of studbook is currently available as well as the study integrating pedigree and microsatellite data (published in Mammalian biology 2015). We have no recent information about the wild population, although we placed more than 40 camera traps into the core area of NKNP in January.

Chinko project

We have started the official cooperation with Chinko project in Central African Republic (CAR), estimating the population size and density of the Eastern Derby eland (*Taurotragus derbianus gigas*) in the Chinko Project area in Eastern CAR from the camera trap data. Our current estimate for Chinko is 445 and 1760 Derby eland individuals depending on the methods used.



Cooperation

Derbianus Conservation was officially designated by the Czech Ministry of Environment to lead the Western Derby eland conservation in Senegal in the frame of Memorandum of understanding between the Czech and Senegalese Ministries.



Senegalese Minister of Environment and Sustainable development met the representatives of Derbianus Conservation during his visit in Prague in September.

PARTNER of



Ministère de l'Environnement et de la Faune
 République de Madagascar



Direction des Parcs Nationaux
 République du Sénégal



ZOO LIBEREC



KNOWSLEY SAFARI



IUCN



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



RÉSERVE de BANDIA



ZOO LIBEREC



ZOOLOGIČNÝ ÚSTAV OSTRAVA



ZOOLOGIČNÝ ÚSTAV OSTRAVA



ZOOLOGIČNÝ ÚSTAV OSTRAVA



www.derbianus.com

62

SECTION B:
The African Studbook
of Western Derby Eland



Adult male of Western Derby eland in the Fathala 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	0,50	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	--	1001
1013	Fathala 1	Popenguine	M	0,50	2003-02-23	2007-05-01	1001
1014	Fathala 2	Matam	M	1,00	2003-11-23	--	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	Sindia	F	1,00	2004-11-22	--	1001
1019	Fathala 2	Derby	M	1,00	2004-12-02	2014-03-28	1001
1020	Bandia 1	Tuuti	F	1,00	2004-12-04	2007-11-25	1001
1021	Bandia 1	Minna	F	1,00	2004-12-10	2015-01-01	1001
1022	Fathala 1	Bandia	M	1,00	2004-12-14	--	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	--	1001
1026	Fathala 2	Souleye	M	1,00	2005-12-04	2008-08-20	1001
1027	Fathala 1	Nelaw	F	0,75	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	--	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 2	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	35	2013-03-03
WILD	0,00	0,00	---	16	12	5	2012-12-28
WILD	0,00	0,00	---	16	9	4	2012-12-13
WILD	0,00	0,00	---	14	7	4	2013-04-01
WILD	0,00	0,00	---	12	8	3	2009-12-21
WILD	0,00	0,00	---	14	13	3	2013-04-01
1002	1,00	0,00	---	11	9	5	2012-11-23
1006	1,00	0,00	---	11	6	3	2013-03-03
[1002 1006]	1,00	0,00	---	12	7	5	2013-01-11
1004	1,00	0,00	---	10	8	6	2014-04-01
1005	1,00	0,00	---	10	7	2	2012-12-06
1003	1,00	0,00	6F	13	8	5	2014-12-10
[1002 1006]	1,00	0,00	---	4	0	0	--
1005	1,00	0,00	6M	12	4	4	2014-12-01
1003	1,00	0,00	---	4	0	0	--
1002	1,00	0,00	---	3	0	0	--
1006	1,00	0,00	---	9	24	21	2013-12-30
1003	1,00	0,00	5F	11	7	5	2015-11-28
1002	1,00	0,00	---	9	2	2	2013-12-10
1006	1,00	0,00	---	2	1	0	2007-11-25
1005	1,00	0,00	---	10	4	4	2013-12-30
1004	1,00	0,00	9M	11	8	6	2016-04-01
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	51M	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	35F	10	4	3	2015-03-25
1002	1,00	0,00	---	8	15	8	2014-11-11
1007	1,50	0,25	59M	10	5	5	2016-01-01
1006	1,00	0,00	---	4	0	0	--
1004	1,00	0,00	---	6	22	13	2013-03-03
1008	1,50	0,25	57M	10	5	5	2016-01-01
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	--	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	0,75	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	0,75	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	Mango 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	0,75	2008-12-10	--	1001
1061	Fathala 1	Sabar 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 2	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	0,50	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	Salut T.	M	1,00	2009-12-15	2014-05-01	1017
1071	Bandia 1	Mirabelle T.	F	1,00	2009-12-17	--	1017
1072	Bandia 5	Marabout	M	0,50	2009-12-21	--	[1001 1033 1037]
1073	Bandia 1	Fort	M	0,50	2009-12-25	--	[1001 1033 1037]
1074	Bandia 4	Demba T.	M	1,00	2009-12-27	--	1017
1075	Bandia 4	Nguekokh	M	0,25	2009-12-31	--	[1001 1033 1037]
1076	Bandia 1	Touba	F	0,50	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	0,50	2010-11-07	--	[1001 1033 1037]
1079	Bandia 4	Tamtam D.	M	1,00	2010-11-07	--	1030
1080	Bandia 1	Galope	M	0,50	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	0,50	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 1	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	0,25	2010-11-18	--	[1001 1033 1037]
1088	Bandia 1	Dodo	M	0,50	2010-12-24	--	[1001 1033 1037]
1089	Bandia 1	Sindibad T.	M	1,00	2010-12-26	--	1017
1090	Fathala 1	Fee	F	1,00	2011-01-01	--	1010
1091	Fathala 1	Neige	F	0,88	2011-01-01	--	1010
1092	Bandia 1	Titi	M	0,50	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	16F	6	4	4	2015-12-04
1005	1,40	0,00	1M	6	2	2	2015-11-12
1012	1,90	0,15	24M	6	20	17	2016-03-01
1043	2,00	0,13	33M	6	0	0	--
1009	1,90	0,15	25M	6	0	0	--
1006	1,40	0,00	---	3	0	0	--
1029	2,25	0,19	---	0	0	0	--
1003	1,40	0,00	3M	5	0	0	--
1041	2,00	0,13	13M	5	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	16M	5	14	12	2016-03-01
1043	2,00	0,13	33M	5	0	0	--
1050	2,00	0,13	32M	5	0	0	--
1009	1,90	0,15	25M	5	0	0	--
1007	1,90	0,15	38M	5	14	12	2016-03-01
1018	2,00	0,13	20M	5	14	12	2016-03-01
1044	2,25	0,19	34F	5	1	1	2014-01-01
1045	2,25	0,19	33F	5	0	0	--
1006	1,40	0,00	4M	5	14	12	2016-03-01
UNK	0,00	0,00	---	0	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1094	Bandia 3	Dawal	M	0,50	2011-11-07	--	[1001 1033 1037]
1095	Bandia 1	Bunta	F	1,00	2011-11-10	--	1017
1096	Bandia 5	Daraja	F	0,50	2011-11-11	--	[1001 1033 1037]
1097	Bandia 1	Daouda	M	1,00	2011-11-14	--	1017
1098	Bandia 3	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	Saanga	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	0,50	2012-01-17	2014-12-12	[1001 1033 1037]
1106	Bandia 1	Noname 8	U	0,50	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	0,50	2012-11-21	--	[1017 1062]
1110	Bandia 3	Diego	M	0,50	2012-11-23	--	[1001 1033 1037]
1111	Bandia 1	Felix	M	0,50	2012-11-29	2015-01-01	[1001 1033 1037]
1112	Bandia 1	Gertrude	F	0,50	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	0,50	2012-12-13	2013-05-01	[1001 1033 1037]
1115	Bandia 1	Django	M	0,50	2012-12-22	--	[1017 1062]
1116	Bandia 3	Sultana	F	0,50	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	36M	4	3	2	2016-04-01
1053	2,00	0,13	19F	4	2	2	2015-12-27
1002	1,40	0,00	2F	4	1	1	2015-11-12
1050	2,00	0,13	43M	4	14	12	2016-03-01
1041	2,00	0,13	13F	4	2	1	2016-03-01
1038	2,00	0,13	---	2	0	0	--
1018	2,00	0,13	20F	4	2	2	2015-12-15
1055	2,00	0,13	15M	4	2	2	2015-11-12
1042	2,25	0,19	53M	4	14	12	2016-03-01
1043	2,00	0,13	28F	4	2	2	2015-11-05
1044	2,25	0,19	48M	4	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	3	7	6	2016-03-01
1007	1,90	0,15	37M	3	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	32F	3	0	0	--
1003	1,40	0,00	---	0	0	0	--
1042	2,35	0,23	56M	3	7	6	2016-03-01
1018	2,10	0,15	27F	3	1	1	2016-04-01

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1117	Bandia 5	Daphne	F	0,50	2012-12-28	--	[1001 1033 1037]
1118	Bandia 1	Dine	F	0,50	2012-12-30	--	[1017 1062]
1119	Bandia 1	Desir	M	0,50	2013-01-04	--	[1017 1062]
1120	Bandia 5	Nigella	F	0,25	2013-01-11	--	[1001 1033 1037]
1121	Fathala 2	Dawie	M	1,00	2013-02-14	--	1048
1122	Bandia 1	Tangal	M	0,50	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	0,00	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	Mammouth	M	0,50	2013-11-20	--	[1017 1037 1059 1062 1073]
1127	Bandia 1	Fanfan	M	0,50	2013-11-30	--	[1017 1037 1059 1062 1073]
1128	Bandia 1	David	M	0,50	2013-11-30	--	[1017 1037 1059 1062 1073]
1129	Bandia 3	Stanley D.	M	1,00	2013-12-10	--	1030
1130	Fathala 2	Dimbal	M	0,50	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	1F	3	0	0	--
1050	2,10	0,15	30F	3	0	0	--
1043	2,10	0,15	46M	3	0	0	--
1009	1,90	0,15	22F	3	0	0	--
1063	2,00	0,13	10M	3	0	0	--
1008	1,90	0,15	21M	3	0	0	--
1040	2,25	0,19	---	1	0	0	--
[1043 1053]	2,14	0,17	---	0	0	0	--
1055	2,00	0,13	12F	2	0	0	--
1071	2,64	0,18	28M	2	0	0	--
1012	2,14	0,18	18M	2	0	0	--
1050	2,14	0,14	29M	2	0	0	--
1083	2,50	0,32	14M	2	0	0	--
1063	2,17	0,18	35M	2	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1131	Fathala 2	Damier	M	0,50	2013-12-10	--	[1014 1019 1023 1024 1025 1031 1034 1036 1039 1048 1054 1057 1060 1065]
1132	Bandia 1	Bouba	F	0,50	2013-12-30	--	[1017 1037 1059 1062 1073]
1133	Bandia 1	Marketa	F	0,50	2013-12-30	--	[1017 1037 1059 1062 1073]
1134	Fathala 1	Noname 10	F	0,50	2013-12-30	2014-01-01	[1010 1022]
1135	Fathala 1	Fuddan	M	0,50	2014-01-01	--	[1010 1022]
1136	Bandia 3	Saola D.	F	1,00	2014-01-10	--	1030
1137	Fathala 1	Falco	M	0,50	2014-04-01	--	[1010 1022]
1138	Bandia 3	Toucouleur D.	M	1,00	2014-11-11	--	1030
1139	Bandia 1	Soukeina	F	0,50	2014-11-21	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102]
1140	Bandia 1	Mario	M	0,50	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	54M	2	0	0	--
1095	2,64	0,21	26F	2	0	0	--
1021	2,14	0,14	8F	2	0	0	--
1044	2,25	0,19	---	0	0	0	--
1090	2,63	0,28	27M	2	0	0	--
1038	2,00	0,13	7F	2	0	0	--
1029	2,25	0,19	47M	2	0	0	--
1098	2,50	0,31	19M	1	0	0	--
1018	2,35	0,16	11F	1	0	0	--
1071	2,85	0,17	22M	1	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1141	Bandia 1	Docteur	M	0,50	2014-11-28	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102]
1142	Fathala 2	Demal	M	0,50	2014-12-01	--	[1014 1023 1025 1031 1034 1039 1048 1057 1060 1065]
1143	Fathala 2	Daha	M	0,50	2014-12-01	--	[1014 1023 1025 1031 1034 1039 1048 1057 1060 1065]
1144	Bandia 1	Felicia	F	0,50	2014-12-10	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102]
1145	Bandia 5	Noname 11	U	0,25	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 1	Safira	F	0,50	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	23M	1	0	0	--
1063	2,20	0,17	39M	1	0	0	--
1058	2,45	0,26	55M	1	0	0	--
1012	2,35	0,16	14F	1	0	0	--
1105	2,80	0,18	---	0	0	0	--
1103	3,00	0,22	25F	1	0	0	--
1100	2,85	0,19	23F	1	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1148	Bandia 1	Driankee	F	0,50	2015-01-04	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102]
1149	Bandia 3	Salma	F	0,50	2015-01-25	--	[1094 1110]
1150	Fathala 1	Fadel	M	0,50	2015-03-05	--	[1022 1104]
1151	Fathala 1	Fode	M	0,50	2015-03-25	--	[1022 1104]
1152	Bandia 5	Duggi	F	0,50	2015-11-05	--	[1072 1101 1108]
1153	Bandia 5	Djibril	M	0,25	2015-11-12	--	[1072 1101 1108]
1154	Bandia 1	Damaye-niane	F	0,50	2015-11-25	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102 1109 1115]
1155	Bandia 1	Sebastian	M	0,50	2015-11-28	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102 1109 1115]
1156	Bandia 1	Mohamed	M	0,50	2015-12-04	--	[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	21F	1	0	0	--
1051	2,45	0,14	10F	1	0	0	--
1044	2,50	0,28	50M	1	0	0	--
1029	2,50	0,23	49M	1	0	0	--
1103	2,96	0,16	18F	0	0	0	--
1096	2,62	0,12	5M	0	0	0	--
1050	2,42	0,17	24F	0	0	0	--
1018	2,42	0,16	17M	0	0	0	--
1071	2,92	0,19	30M	0	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1157	Bandia 1	Samson	M	0,50	2015-12-15	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102 1109 1115]
1158	Bandia 1	Benedict	M	0,50	2015-12-27	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102 1109 1115]
1159	Fathala 1	Fredy	M	0,50	2016-01-01	--	[1022 1048]
1160	Fathala 1	Neethling	F	0,38	2016-01-01	--	[1022 1048]
1161	Fathala 2	Dukku	M	0,50	2016-01-01	--	[1031 1034 1065]
1162	Bandia 3	Noname 12	F	0,50	2016-03-01	2016-03-01	[1094 1110]
1163	Bandia 1	Dayo	M	0,50	2016-02-25	--	[1059 1062 1073 1084 1088 1089 1092 1097 1102 1109 1115]
1164	Bandia 1	Noname 13	F	0,00	2016-03-01	2016-05-01	[1059 1062 1073 1084 1088 1089 1092 1097 1102 1109 1115]
1165	Bandia 3	Seyna	F	0,25	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	0,20	41M	0	0	0	--
1095	2,92	0,21	40M	0	0	0	--
1044	2,25	0,19	45M	0	0	0	--
1045	2,25	0,19	31F	0	0	0	--
1063	2,15	0,18	44M	0	0	0	--
1098	2,95	0,17	---	0	0	0	--
1043	2,42	0,16	31M	0	0	0	--
MateOf1059	2,85	???	---	0	0	0	--
1116	3,00	0,15	29F	0	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1166	Fathala 1	Noname 14	F	0,00	2016-04-01	2016-05-05	[1022 1048]
1167	Bandia 1	Chuck Noriss	M	0,00	2013-04-01	--	UNK

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
UNK	2,00	???	---	3	0	0	--
[1004 1006 1021 1071]	1,75	???	2M	3	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 pregnant female in the Bandia reserve

African studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847)

Editors: Karolína Brandlová, Pavla Jůnková Vymyslická,
Anna Kubátová, Magdalena Žáčková, Markéta Grůňová,
Tamara Fedorova

Publisher: Czech University of Life Sciences Prague

Print: Powerprint s.r.o., Prague

Pages: 86

Volume: nine

Number of copies: 80

Year: 2017

ISBN: 978-80-213-2739-9