AFRICAN STUDBOOK

WESTERN DERBY ELAND

Taurotragus derbianus derbianus (GRAY, 1847)

2018

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DERBIANUS CONSERVATION

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

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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WESTERN DERBY ELAND
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Editors:

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

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CONTENT

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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.

The work of Senegalese conservation authorities stands at the first place because they fulfil their mission and actively support the survival of the Western Derby eland population in the wild, in their natural environment in the Niokolo Koba National Park in south-east Senegal by ensuring and providing their protection. We therefore value the work of Senegalese partners at the Ministry of the Environment and Sustainable Development, the former minister Abdoulaye Baldé and the acting minister Mame Thierno Dieng; the Directorate of National Parks of Senegal, namely Abdoulaye Diop, Mallé Gueye, Amar Fall, Mamadou Daha Kane, and all other committed rangers at the DPN Headquater in Dakar as well as in the Niokolo Koba National Park and Delta du Saloum National Park. We also recognize and appreciate the significant role of the former Director of national Parks in Senegal, Souleye Ndiaye who stood at the beginning of the active conservation actions for WDEs. We are also grateful for important collaboration with Senegalese specialists from the Cheikh Anta Diop University in Dakar (UCAD), namely the Rector of UCAD Ibrahima Thioub, prof. Paul Ndiaye, prof. Bienvenu Sambou, prof. Kandioura Noba, and other colleagues. We must not forget the concern of the deputies from Réseau des Parlementaires pour la Protection de l'Environnement au Sénégal. Last, but not least, we express our respect that even the highest representatives of the Republic of Senegal of the Presidential office are concerned by the environment and are actively interested in the conservation of the Western Derby eland.

The success of the Western Derby eland population management would not be possible without the continuous care for animals in the Bandia and Fathala reserves by the Society for the Protection of Environment and Fauna in Senegal (SPEFS), represented by Lucien Haddad, Jacques Rezk and Georges Rezk; the managers of Bandia and Fathala reserves, namely Souheil Fourzoli, Willem Burger,

Arnold Neethling, Christophe Dering and Christoff Marais; and the staff of Bandia and Fathala reserves.

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RÉSUMÉ EN FRANÇAIS - SUMMARY IN FRENCH

La population connue de l'éland de Derby occidental (*Taurotragus derbianus derbianus*) est actuellement limitée au seul pays du monde, le Sénégal, et classée en danger critique d'extinction par la Liste rouge de l'UICN. Il existe trois localités importantes accueillant l'éland de Derby occidental: 1) le Parc National de Niokolo Koba (PNNK) avec la seule population sauvage confirmée, 2) la réserve de Bandia et 3) la réserve de Fathala.

En février 2018, la DPN a organisé une évaluation globale de la faune dans le PNNK en appliquant trois méthodes complémentaires de dénombrement de la faune, à savoir un recensement aérien, un recensement terrestre à pied et un recensement terrestre par véhicules. En ce qui concerne les élands de Derby, ils n'ont pas été repérés directement lors de ces dénombrements, de sorte que toute évaluation fiable de la population d'éland de Derby est toujours manquante. Cependant, il y avait des signes indirects de présence d'élands - leurs crottes ont été observées. En plus, les élands de Derby ont été enregistrés par les pièges camera. On peut donc confirmer que les élands de Derby sont toujours présentes dans le parc. On peut attendre plus d'informations sur la population des élands une fois que les résultats de la surveillance par les pièges camera sont analysés.

Le 11ème volume du stud-book africain de l'éland de Derby occidental présente les caractéristiques démographiques et génétiques actuelles de la population semi-captive des réserves de Bandia et Fathala, au Sénégal. Un total de 193 élands de Derby sont nés de 2000 à 2018 dans les réserves à partir de 6 fondateurs dans des zones clôturées, initialement dans la réserve de Bandia et plus tard dans la réserve de Fathala. En Juin 2018, les élands de Derby forment une population de 115 individus vivants élevés en semi-captivité et gérés en 6 troupeaux dans 2 réserves naturelles au Sénégal. Pour la structure actuelle des troupeaux d'élands du Derby dans les réserves de Bandia et de Fathala, voir Tab. 1.

Au cours de la saison de reproduction 2017/2018, 14 veaux sont nés, 5 mâles, 7 femelles et 2 autres sont nés après la fin de la période d'identification et le sexe n'est donc pas encore déterminé. Le sex-ratio (mâles : femelles) s'est rapproché à l'équilibre, passant de 1,58 : 1 en 2016 à 1,17 : 1 en 2018, le nombre de femelles pré-reproductrices et adultes ayant augmenté (Fig. 3). Le nombre de femelles reproductrices

est passé de 19 à 27 sur 36 femelles adultes, mais cela signifie qu'il reste toujours 25% des femelles adultes qui ne se reproduisent pas. Au cours de la dernière saison, nous n'avons signalé que trois mortalités, dont deux étaient des veaux (un perdu pour une raison inconnue et un prédaté par un python) et un mâle adulte a été éliminé à la suite d'une blessure grave au cou (causée probablement par une clôture).

La croissance réelle de la population correspondait aux prévisions (114 individus prévus, 115 individus enregistrés). Selon les projections évaluant la situation actuelle, la taille de la population l'année prochaine (30 Juin 2019) devrait être de 131 animaux (min. 119, max. 143).

Après l'attribution des paternités manquantes des animaux nés en 2003, le pedigree compte 96,6% des génotypes d'ascendance connus dans la population (comparé à 92% sans attribution). Cependant, la population n'a que 67% d'ascendance certaines, en raison des mâles géniteurs multiples présents dans le pedigree avec des probabilités de reproduction différentes. La surveillance à long terme de la diversité génétique dans l'ensemble de la population semi-captive est en cours. Nous essayons d'échantillonner tous les individus pendant les transports, mais l'actualisation doit être effectuée régulièrement et par les méthodes les moins nuisibles et exposer les animaux à une situation moins stressante (des fléchettes de biopsie doivent être utilisées lorsqu'aucune autre manipulation n'est réalisée). Au total, 35 échantillons (11 de sous-adultes et d'adultes, 15 de veaux nés au cours de la saison 2016/2017 et 14 de veaux nés au cours de la saison 2017/2018) sont encore manquants pour obtenir un aperçu complet de la population.

En mars 2018, il était prévu de transporter dix animaux sub-adultes entre les réserves de Bandia et de Fathala afin de réduire le risque de croisement et d'améliorer la qualité génétique des troupeaux reproducteurs. Ces transports n'ont finalement pas été réalisés pour des raisons politiques. Les animaux qui n'auraient pas pu être transportés peuvent présenter un risque pour le développement futur de la santé génétique et démographique et de la qualité des troupeaux d'élevage lorsqu'ils atteignent la maturité sexuelle. Pour éviter ces risques, le transport d'animaux pleinement développés serait plus exigeant sur le plan logistique et notamment plus cher.

La qualité génétique des troupeaux reproducteurs Bandia (1, 3 et 5) est encore considérablement supérieure à celle des troupeaux Fathala (diversité génétique plus élevée, parenté moyenne inférieure,

plus grande quantité de génomes fondateurs survivant) (Tab. 6). Cette situation met en évidence la nécessité de transferts supplémentaires de Bandia à Fathala, comme prévu en 2018 (et finalement non réalisé).

Dans 14 ans, la diversité génétique de la population captive diminuerait sous les 80%. D'après les données réelles, il est recommandé d'ajouter au moins 6 individus sauvages originaires du PNNK afin de maintenir la diversité génétique au niveau actuel de 80% de la diversité génétique d'origine au cours des 100 prochaines années, permettant à la population de croître jusqu'à 200 individus (voir Fig. 11).

La stratégie de conservation des élands de Derby a été formulée en 2013 (publiée par Brandlová et al. 2013) et est désormais reconnue à l'échelle internationale. Une partie importante des actions envisagées par la stratégie a été lancée et les principaux acteurs se sont mobilisés pour atteindre les objectifs de la stratégie de conservation de l'éland de Derby au Sénégal. Nous insistons particulièrement sur le fait que Derbianus Conservation et DPN ont noué une coopération étroite en vue de l'élaboration du plan de réalisation de l'opération Back-Home, c'est-à-dire du transfert d'individus sélectionnés issus de la population d'éland de Derby originaires de la réserve de Fathala vers leur environnement naturel dans le PNNK. Cependant, une partie importante des actions formulées dans le cadre de la stratégie pour accomplir la vision qui reste à accomplir est restante. Après 5 années très dynamiques, le Ministère de l'Environnement et du Développement durable du Sénégal a demandé la révision de la stratégie de conservation de l'éland de Derby et l'état actuel de sa population, ainsi que l'évaluation de tous les transferts passés d'espèces sauvages au Sénégal avant la révision et toute révision ultérieure l'action de conservation sera réalisée. Pour cela, des experts indépendants de l'Université Cheikh Anta Diop ont été contactés pour mener les évaluations et celles-ci sont en cours. La révision de la stratégie suivra immédiatement après la présentation des résultats des évaluations respectives au Mr. le Ministre.

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VISION

Healthy populations of Derby eland in its native habitat. The Derby eland is valued as a flagship species for conservation of the savannah ecosystems of Western and Central Africa.

Des populations saines d'éland de Derby dans leur habitat d'origine. L'éland de Derby est valorisé en tant qu'espèce phare pour la conservation des écosystèmes de savane en Afrique centrale et occidentale.

SAUVONS LES ÉLANDS DE DERBY

PARTICIPATING ORGANISATIONS AND INSTITUTIONS

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

Society for the Protection of Environment and Fauna in Senegal (SPEFS) co-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.

Derbianus Conservation, z. s. is a non-governmental organization founded at Czech University of Life Sciences Prague (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 support research activities necessary for the management decisions. **Mission** of the NGO Derbianus Conservation stands on providing scientific expertise to relevant conservation management entities, supporting activities relevant to Derby eland conservation and raising awareness of the importance of healthy, functioning ecosystems.

CULS Prague, mostly Faculty of Tropical AgriSciences, provides the Western Derby eland conservation programme with scientific expertise in the domains of ecology, behaviour, and genetic management.

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, an expert 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.

In August 2017, Minister of Environment and Sustainable Development of Senegal sealed by his signature Tripartite agreement between Derbianus Conservation (DC), Society for the Protection of Environment and Fauna in Senegal (SPEFS) and Directorate of National Parks in Senegal (DPN).

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EAZA

Antelope Specialist Group

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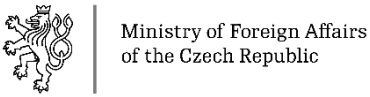
MAIN PARTNERS AND SPONSORS OF WESTERN DERBY ELAND CONSERVATION PROGRAMME AND COOPERATING ORGANISATIONS:



PREFACE TO THE VOLUME ELEVEN

The eleventh 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.

The past year was marked by dynamic changes and evaluations. After the change of the conservation status of Giant eland (*Taurotragus Derbianus*) from Near Threatned to Vulnerable in the IUCN Red List in 2017, we turned our full focus on the Back-Home operation, i.e. the translocation of captive-born animals back to their natural environment in the Niokolo Koba National Park. We, Derbianus Conservation, as well as national conservation authorities in Senegal consider the Back-Home operation as the first and critical step for the connection of the Western Derby eland ex situ and in situ conservation. Aware of the complexity of the whole operation – high requirements on human efforts, professional knowledge, logistics and communication at all levels, from internation to national – the year 2018 was the year of inevitable evaluations of the current state of WDE populations, their environmental conditions and management options, both in the wild and in the reserves. Outcomes of these evaluations will open the doors for informed preparation for all next activities leading to the return of WDEs to the Niokolo Koba national park. 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 forwards to the goal to help them survive.

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SECTION A:

Western Derby Eland

Conservation Programme

Western Derby eland

CURRENT STATUS OF WESTERN DERBY ELAND

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

The NKNP in south-eastern Senegal covers 913,000 ha and it is the Senegalese largest and oldest national park. Its importance as a well-preserved ecosystem of Sudanese and Sudano-Guinean savanna with extraordinary rich biodiversity concerns the entire region of the West Africa. The area of NKNP supports high diversity of plant and animal species. Since 1981, NKNP is listed as World Heritage and since 2007 as World Heritage in Danger by UNESCO (UNESCO, 2014). NKNP and its neighbouring areas are probably the only place in the world where the last wild population of Western Derby eland can be found, however it suffers by poaching, cattle grazing and other antropogenic activities. The Senegalese conservation authorities, i.e. Ministry of the Environment and Sustainable Development and Directorate of National Parks of Senegal, together with international assistance, namely of UNESCO World Herritage, have made a lot of efforts and changes in management since 2015 to save the park from overall degradation of biodiversity richness. In regard to WDE conservation, the most important change was the substantial improvement in law enforcement and environmental monitoring, specifically by organising regular patrols in the park and by long-term monitoring using a set of cameratraps all over the park. In February 2018, the DPN organised an overall assessment of wildlife in the NKNP by three complementary methods for wildlife counts, i.e. aerial census, ground census by foot, and ground census by vehicles. Concerning the WDEs, they were not spotted during these counts directly, therefore any reliable assessment of WDE population is still missing. However, there were indirect signs of WDE presence - their faeces observed, and the WDEs have been recorded by cameratraps, we can therefore confirm that WDEs are still present in the park (Rabeil et

al., 2018). The outcomes from wildlife count conducted in the NKNP in February 2018 are generally promising in regard to the evaluation of the state of the biodiversity in the park, which makes a very positive sign also towards WDEs, even though they were not directly observed. We expect more information on WDE population once the outcomes from cameratrap monitoring are analysed.

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 Wildlife 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*), western red colobus (*Procolobus badius*), 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 Wildlife Reserve also hosts two herds of Western Derby eland in enclosures of approximately 160 ha and 1,800 ha.

In 2018 our research team joined local and international colleagues and published a study of Eastern Derby eland (*Taurotragus derbianus gigas*) population in Chinko Protected Area in the Central African Republic. This subspecies is still hunted in most of the area of its distribution. According to the new assessment published by IUCN Red List it has been uplisted from Least Concern to Vulnerable. In cooperation with Chinko the results of unique camera trap study in this remote area are provided (Brandlová et al., 2018).

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 (only one male and five females out of eight transported form NKNP reproduced), this population has been continuously growing.

At the beginning of 2018, 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.

Together with Fathala reserve management, we also tested the possibilities of WDE translocations for the short distances using baits (mostly kaad – the preferred pods of *Faidherbia albida*). Selected individuals were trained to follow the car with pods. It should make future transfers between herds in Fathala Wildlife Reserve easier. Despite of gradual progress, this method prooved not effective in the area in the proximity of lion enclosure and limited opening area of the intended enclosure fence. However, it was proven that in case of need it can be used as an alternative method to transfer the elands for shorter distances.

We noticed several females with mastitis in the Bandia 3. Lack of surviving calves could be related to this issue in this breeding herd this season. The two related species inhabit the enclosure Bandia 3 together with WDE, greater kudu (*Tragelaphus strepsiceros*) and lowland nyalas (*Tragelaphus angasii*). Presence of related species in a limited area carries a risk of potential interbreeding, which may irreversibly destroy the gene pool of the critically endangered WDE. However, by that time there is no evidence of crossbreeding.

The largest herd of WDE in the Bandia Reserve still shares the enclosure with common elands (*Taurotragus oryx oryx*). Presence of both species in a limited area also carries a risk of potential interbreeding. Therefore, we aimed to separate most of the breeding

females from this herd. An intensive monitoring of their interactions by direct observation and by DNA survey via biopsy darts of both common elands and WDE is recommended.

On March 2018 were planned to transport ten sub-adult animals between reserves Bandia and Fathala to decrease the risk of interbreeding and improve the genetic quality of breeding herds. Those transports were not finally realized. The animals which couldn't have been transported may present a risk for the future development of genetic and demographic health and quality of breeding herds when they reach the sexual maturity. To avoid those risks, the transport of fully-grown animals would be more logistically demanding as well as more expensive.

One male was transferred from herd Bandia 3 to Bandia 1 without immobilization. The male was led to the new location by keepers using kaad, *Acacia albida* seed pods.

One male had escaped from bachelor herd Bandia 4 to breeding herd Bandia 5 in December 2017. The male was transferred back to Bandia 4 without immobilization in January 2018. He was led on foot by using baits (peanut hay and pellets).

In the breeding season 2017/2018 totally 14 calves were born, 5 males, 7 females and 2 others born after the end of identification period and therefore not yet determined sex. For the current structure of Western Derby eland herds kept in Bandia and Fathala reserves see Tab. 1.

Tab. 1. The actual structure of herds (June 2018) is following: (location + numerical enclosure designation, +2 means two animals of undetermined sex):

Enclosure designation	***Number of males***	***Number of females***	***Herd category***	***Enclosure size***	***Enclosure type***
Bandia 1+2	27	13	Reproductive	3,500 ha	Multiple species
Bandia 3	5	9	Reproductive	80 ha	Multiple species
Bandia 4	7	0	Bachelor	100 ha	Single species
Bandia 5	3	13	Reproductive	80 ha	Single species
Bandia total	**42**	**35**		**Totally 77**	
Fathala 1	4	13(+2)	Reproductive	160 ha	Single species
Fathala 2	15	4	Reproductive	1,800 ha	Multiple species
Fathala total	**19**	**17 (+2)**		**Totally 38**	

Pedigree analysis

Western Derby eland pedigree data were processed in SPARKS 1.66 (ISIS, 1992) and further corroborated in PMx software for pedigree analyses (Ballou et al., 2011; Traylor-Holzer, 2011). All individuals born until June 2018 were included into the pedigree. "Founders" mean the original six wild-born individuals translocated in 2000 from Niokolo Koba National Park to Bandia Reserve. Founders were presumed to be unrelated for the purpose of the pedigree analysis, however our results based on DNA analysis have shown considerable similarity among them (Zemanová et al., 2015). Identity of each individual is recorded according to unique stripe pattern that remains the same throughout the life of an individual. Mother-calf relationships are determined from ground observations based on repeated photo documentation of nursing bouts. Regarding the exclusion of sub-adult males from breeding herds, the only adult male was assumed to be the sire of all the descendants in the main breeding herd (Bandia 1) until 2009. In 2010, we left more males in this herd to replace the old one and later we used this approach also in other breeding herds. We aimed that all the males were from the same genetic lineage (same mother-founder) but later it was not always fulfilled due to logistic reasons. Calves from those herds were then recorded as "multiple sired" with probabilities added to each potential sire.

In 2016 we used 11 microsatellites to evaluate genetic structure of the population and we refined missing paternities to calves born in 2003 (Tab. 2). The parentage analysis according to most likely candidate mother was done in Cervus 3.0.7 (Kalinowski et al., 2007). We also checked the mother-calf relationships assigned by observations and corrected two misidentifications from the season 2005/2006 when two mother-calf pairs were switched due to missing photodocumentation. We added this information into the studbook dataset.

The long-term monitoring of genetic diversity in whole semi-captive population is ongoing. We try to sample all individuals during transports, but the actualization has to be made regularly and by the least harmful methods and exposing the animals to less stressful situation (biopsy darts should be used when no other handling is

realized). Totally 35 samples (11 of sub-adults and adults, 15 of calves born in the season 2016/2017 and 14 of newborn calves born in the season 2017/2018) are still missing to have complete overview of the population.

Tab. 2. Demographic parameters of the Western Derby eland semi-captive population in June 2018.

Variable	Males	Females	Unknown
Founders	1	5	
Present number of individuals *N*	61	52	2
Number of pre-reproductive	11	16	2
Number of adults in the population	50	36	
Number of proven breeders	25	27	
Births total	97	82	10
Deaths total	39	34	9
Generation length	6.6	5.9	
Deterministic population growth rate (λ) [a]	1.41	1.15	

[a] λ >1 indicates population increase

Demographic analysis

A total of 193 offspring of the Western Derby eland were born from 2000 to 2018 in the herds with 6 founders in fenced areas, initially in the Bandia Reserve and later in the Fathala Wlidlife Reserve (Fig. 1). Thereby, the Western Derby eland formed a population of 115 living individuals bred in semi-captivity and managed in 6 herds in 2 nature reserves in Senegal in June 2018 (Tab. 1 and 2). The number of unidentificated sex increased with extension of the breeding period.

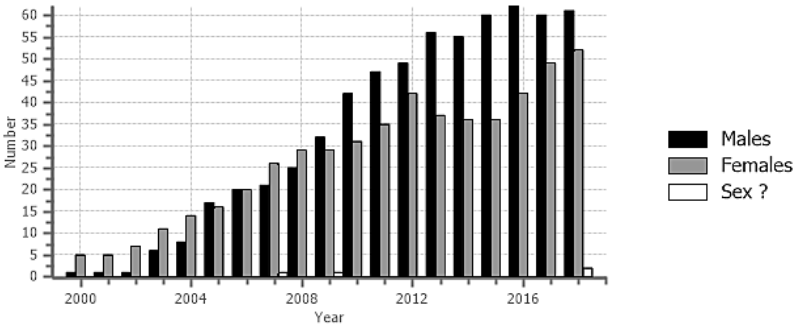

Fig. 1. Population growth rate in the semi-captive Western Derby eland population based on the real data collected between 2000 and 2018.

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 = 440,50, df = 11, $p < 0.05$), considering that most calves were born from November to January (84 %) and the rest in October and from February to April (Fig. 2).

The sex ratio (male:female) got closer to balance, from 1.58:1 in 2016 to 1.17:1 in 2018 as number of both pre-reproductive and adult females has increased (Fig. 3). The age structure (also Fig. 3) also shows a slight improvement of sex ratio towards females.

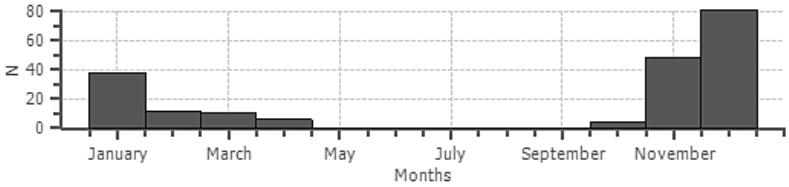

Fig. 2. Birth distributions of Western Derby elands in the reserves throughout the year in the period of 2002 – 2018.

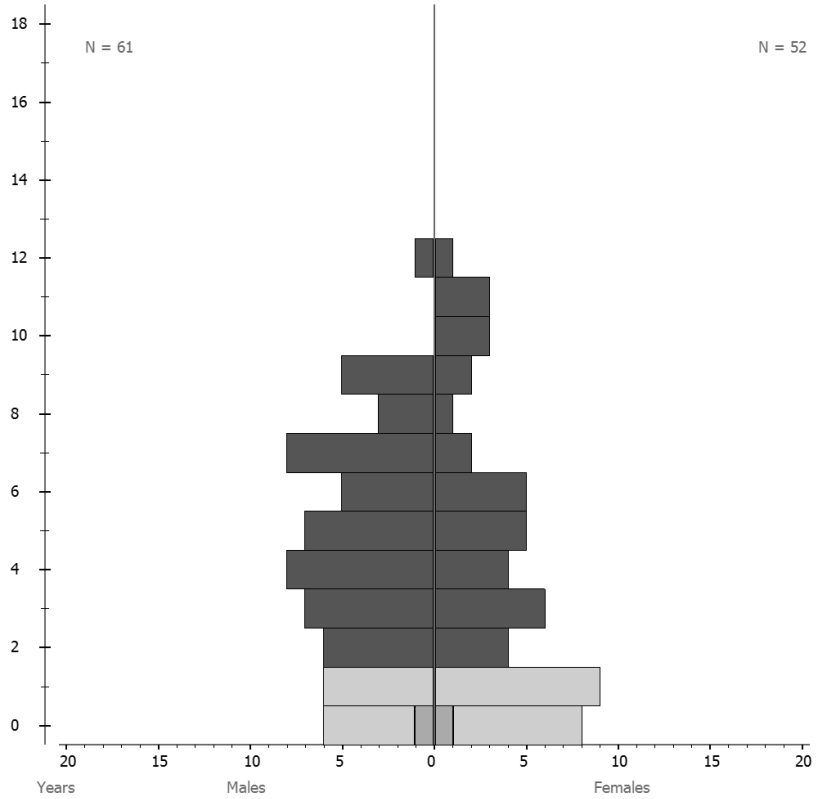

Fig. 3. Male and female age structure of the living individuals of the Western Derby elands held in semi-captivity in June 2018. The light-coloured part represents individuals in non-breeding age.

The changes in sex ratio during the whole history of population are shown on Fig. 4. Number of breeding females has increased from 19 to 27 out of 36 adult females, however this means that there are still 25% of adult females not reproducing. The earliest reproduction occurred at the age of 2 years in both males and females, the latest recorded reproduction at the age of 16 years (female) and 13 years (male). Average fecundity (M_x = ½ number of offspring born to a parent of age x) was 1.1 for males and 0.3 for females.

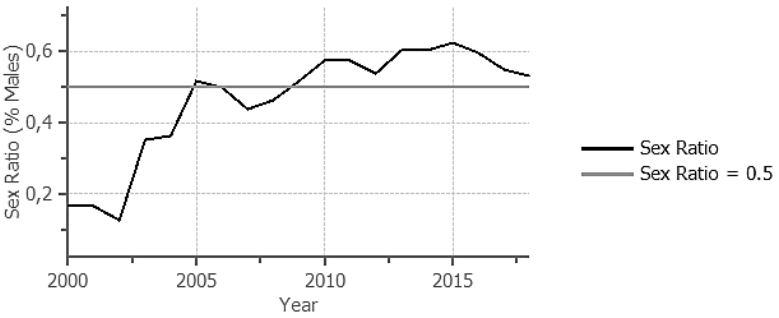

Fig. 4. Development of the sex ratio in the population from 2000 to 2018.

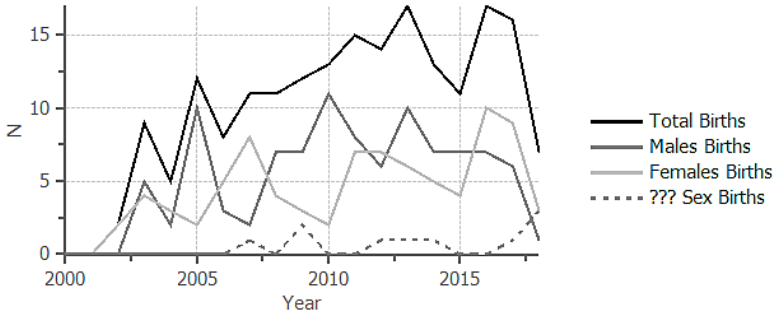

Fig. 5. Number of births of Western Derby elands in semi-captive population in respective years (2000 – 2018).

The annual mortality in 2014 reached an alarming value of 21.7 %, then continually dropped to the long-term average in 2016. During the last season we reported three mortalities only, two of them were calves (one lost from unknown reason and one predated by a python) and one adult male was culled because of severe injury on his neck (caused presumably by fence) (Fig. 6). The average values of mortality (Tab. 3) have not significantly changed, but the population remains sensitive to changes in mortality rates. Mortality was not seasonally distributed (Fig. 7).

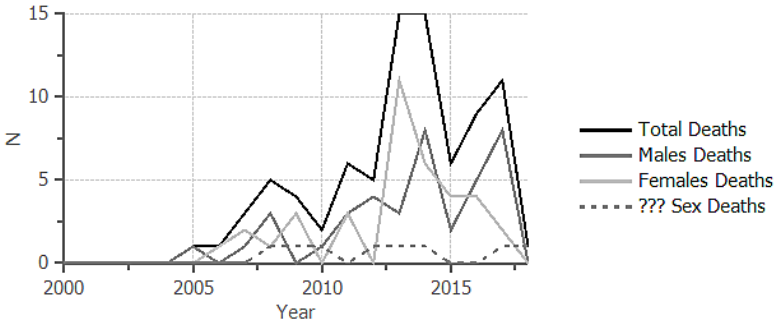

Fig. 6. Overview of deaths of Western Derby eland in semi-captive population since 2000.

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 2018.

Mortality	Total	Males	Females
30 Day Mortality	0.06 (N=182)	0.05 (N=99)	0.07 (N=83)
0 Age Class Mortality	0.10 (N=170)	0.07 (N=94)	0.14 (N=75)
Avg. Pre-Repro Mort	0.07 (N=160)	0.06 (N=90)	0.09 (N=70)
Avg. Repro Mortality	0.12 (N=49)	0.12 (N=27)	0.11 (N=22)

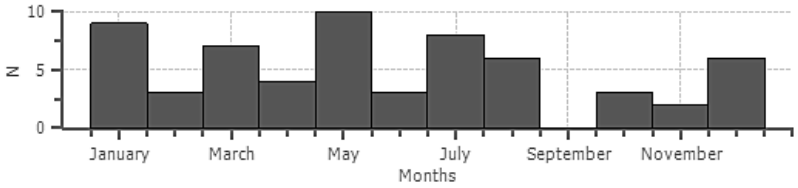

Fig. 7. Non-calf mortality in semi-captive population of Western Derby elands based on the real data collected between 2000 and 2018.

Analyses of the life table of the Western Derby eland indicated that the annual population growth rate was 1.27, similar to 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) was 5.94 (9.64 for males and 2.24 for females).

The actual population growth corresponded with prediction (114 individuals predicted, 115 individuals recorded). According to the projections assessing the current situation, population size next year should be 131 animals (119 <> 131 <> 143). Stochastic probability of increase is 100 %, there is 0 % probability that the population remains the same. For the population estimates within 20-year horizon see Fig. 8. The population size in 2038 should be 1,644 individuals.

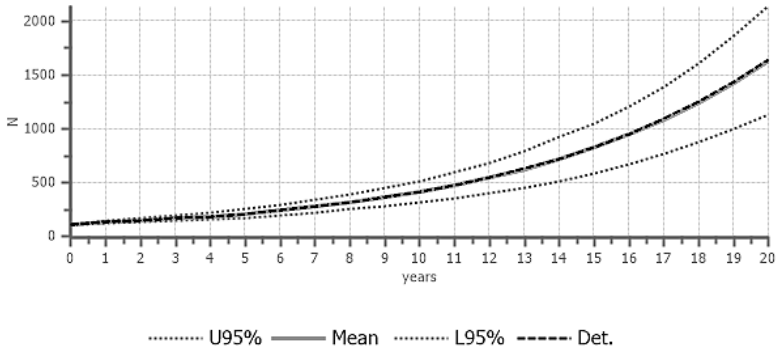

Fig. 8. Stochastic projection of the WDE population size within 20-year horizon.

Genetic analysis

The actual population size of Western Derby elands in semi-captivity since the last year increased to 115. The current effective population size has increased since last year to 40.44 (based on 16.7 breeding males and 26.7 breeding females) which is mostly due to more females involved in reproduction. The *Ne/N* ratio remained at 0.36. The overall (mean) effective population size has increased due to management of reproduction since 2008, from 3.71 to 9.48.

After the assignment of missing paternities of animals born in 2003, the animals in the pedigree has 96.6 % of known ancestry genotypes in the population (compared to 92 % without assignment). However, the population has only 67 % ancestry certain, because of multiple sires present in the pedigree with different breeding probabilities.

The population has retained 81.40 % of genetic diversity (GD) from the founders. This number has been almost stable since 2008 showing that the breeding management has slowed down the decrease of GD (Fig. 9). Note that the assignment of missing paternities increased the overall level of genetic diversity and in the graph the values were also corrected for the whole history of the population (compare to Brandlová et. al., 2015 - Volume 8). The overall mean level of inbreeding in the population was 0.1569 and increased from 0.0648 in 2008. The level of inbreeding was also positively reflected by assigned paternities (compare to 0.1788 without assignment).

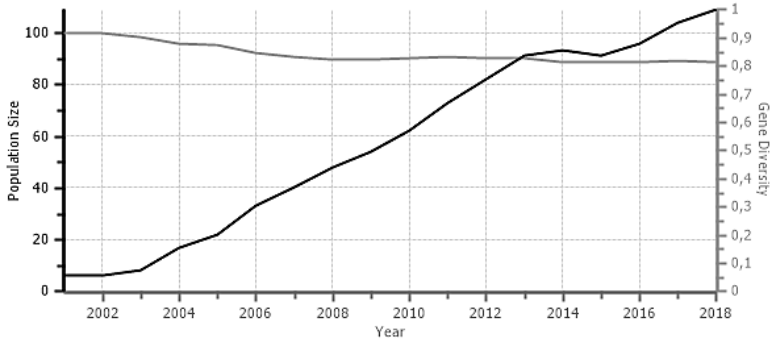

Fig. 9. Development of population size and genetic diversity of WDE in semi-captivity throughout the period 2001–2018.

Founder genome equivalents (FGE = 2.69) remains the same as well as founder genomes surviving (FGS = 5.76). The apparent increase should be attributed to assigned paternities (Fig. 10, Tab. 4). Contribution of female 1003 (Salémata) and female 1005 (Malapa) become more balanced after checking of mother-calf relationships by molecular methods.

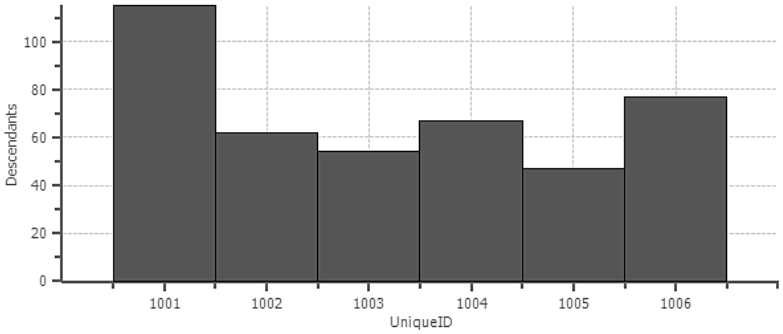

Fig. 10. Number of founder living descendants in the semi-captive Western Derby eland population in Senegal. Unique ID the x axis indicates individuals: 1001 – male, 1002 to 1006 – females.

Tab. 4. Founder contributions (FC) for the genetic management of the pedigree in the semi-captive Western Derby eland population in Senegal (Lin. – lineage, Rep. – representation, Cont. – contribution, Desc. – descendants).

Unique ID	Lin.	Sex	Rep.	Cont.	Allele Retention	Desc.
1001	---	M	0.5411	60.02	1.0000	115
1002	D	F	0.1240	13.76	0.9890	62
1003	S	F	0.0529	5.86	0.9050	54
1004	B	F	0.1003	11.13	0.9805	67
1005	M	F	0.0598	6.64	0.8930	47
1006	T	F	0.1219	13.52	0.9880	77

A significant potential GD of 91.32 % still remains in the population. Furthermore, the retained amount of the original GD of founders is still present in the population and these can be evaluated by the proper management by mean kinship (MK) that remained comparable to last year at 0.186 (Tab. 5).

The genetic quality of Bandia breeding herds (1, 3 and 5) is still considerably higher then in Fathala herds (higher genetic diversity, lower mean kinship, higher amount of founder genoms surviving) (Tab. 6). This situation highlights the need of further transfers form Bandia to Fathala reserve, as planned in 2018 (and finally not realized).

Tab. 5. Mean kinship (MK) distribution in the semi-captive Western Derby eland population in Senegal in June 2018.

Mean kinship range	No of individuals	% of population
< 0.15	9	7.8
0.15 – 0.2	87	75.7
0.2 – 0.3	19	16.5

Tab. 6. Genetic structure of breeding herds of Western Derby eland in the semi-captive Western Derby eland population in Senegal in June 2018 (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	40	6	0.92	0.62	0.79	0.79	0.21	2.42	0.15	4.76
Bandia 3	14	6	1.00	0.61	0.79	0.78	0.21	2.36	0.15	4.07
Bandia 4	7	4	1.00	0.93	0.74	0.74	0.26	1.94	0.13	2.69
Bandia 5	16	6	1.00	0.63	0.81	0.80	0.19	2.59	0.10	3.86
Fathala 1	19	5	0.94	0.75	0.72	0.51	0.21	1.76	0.20	2.99
Fathala 2	19	6	1.00	0.66	0.75	0.75	0.26	1.96	0.20	3.87

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 72.8 % of original diversity in the following 100 years (allowing for capacity of 200 individuals). Such decrease may bring negative effects in terms of decreased population viability and decreased ability to adapt to changing conditions in the near future. In 14 years, genetic diversity would decrease under the 80 %. Based on actual data, it is recommended to add at least 6 wild individuals originating from Niokolo Koba National Park to maintain the genetic diversity at the current level of 80 % of the original genetic diversity during following 100 years, allowing the population to grow to 200 individuals (see Fig. 11).

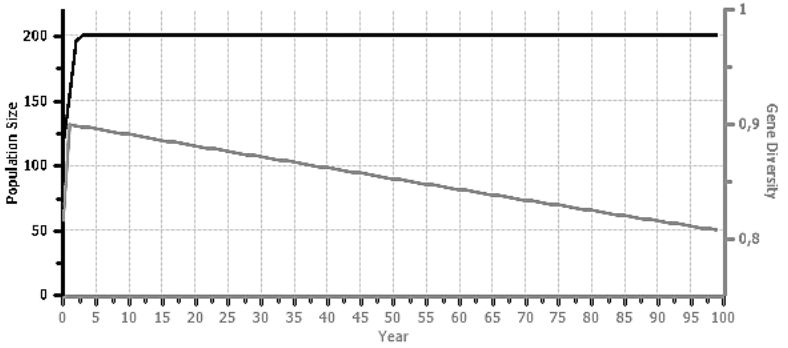

Fig. 11. Projection of genetic diversity and population size after adding 6 wild individuals from the Niokolo Koba National Park.

WDE CONSERVATION STRATEGY: ACTIONS TO CONDUCT

The WDE Conservation Strategy was formulated in 2013 (published by Brandlová et al. 2013) and has become internationally recognized. Important part of actions envisaged by the Strategy has been launched and principal actors have been working with efforts to fulfil goals of the WDE Conservation Strategy. We enhance particularly that Derbianus Conservation and DPN launched close cooperation in regard to formulate the plan for realisation of the Back-Home operation, i.e. transfers of selected individuals from WDEs population born in the Fathala Wildlife Reserve to their natural environment in the Niokolo Koba National Park. There has been, however, also a significant part of actions formulated within the Strategy to achieve the vision which are remaining. After 5 very dynamic years, the Ministry of the Environment and Sustainable Development of Senegal requested the revision of the WDE Conservation Strategy and the current state of the WDE population, and the evaluation of all past transfers of wildlife within Senegal before the revision and any further conservation action will be realised. For that, independent experts from Université Cheikh Anta Diop have been approached to conduct the evaluations and these are currently running. The revision of the strategy will follow immediately after presentation of results of the respective evaluations to the Minister. The role of Derbianus Conservation in these evaluations consists in providing all existing materials, documents, and scientific outputs regarding WDEs, and in providing the overall support to evaluators. Derbianus Conservation also actively revises actions and achievements of last 5 years formulated within the WDE Conservation Strategy in 2013 as a preparation for active revision and update of the strategy soon.

REFERENCES

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

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

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

Brandlová K., Gloneková M., Hejcmanová P., Jůnková Vymyslická P., Aebischer T., Hickish R., Mallon D., 2018. Chinko/Mbari Drainage Basin represents a conservation hotspot for Eastern Derby Eland in Central Africa. African Journal of Ecology 58(2): 194-201.

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 Valley/Eagan, MN, International Species Information System.

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

Rabeil T., Hejcmanová P., Gueye M., Greffrath R., Cornut D., 2018. Inventaire combiné terrestre et aérien Parc National du Niokolo-Koba, Sénégal. Randgold Resources & Direction des Parcs Nationaux Sénégal, 73 p.

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

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

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

THE SCIENTIFIC OUTPUTS FROM THE WESTERN DERBY ELAND CONSERVATION PROGRAMME

Scientific papers

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

Brandlová K., Gloneková M., Hejcmanová P., Jůnková Vymyslická P., Aebischer T., Hickisch R., Mallon D., 2017. Chinko/Mbari drainage basin represents a conservation hotspot for Eastern Derby eland in Central Africa. African Journal of Ecology. 58(2):194-201.

Grúňová M., Sané M., Cincera J., Kroufek R., Hejcmanová P., 2018. Reliability of the new environmental paradigm for analysing the environmental attitudes of Senegalese pupils in the context of conservation education projects. Environmental Education Research. 24(1):1-11.

Grúňová M., Brandlová K., Svitálek J., Hejcmanová P., 2017. Environmental education supports conservation action by increasing the immediate and long-term environmental knowledge of children in West Africa, Applied Environmental Education & Communication. 1 (16): 3-16. DOI: 10.1080/1533015X.2016.1273153

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Rubeš J., Kubíčková S., Pajacová E., Černohorská H., Di Berardino D., Antonínová M., Váhala J., Robinson T.J., 2008. Phylogenomic study of spiral-horned antelope by cross-species chromosome painting. Chromosome Research. 16:935–947.

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

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

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

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

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

Monographs

Brandlová K., Fedorova T., Grúňová M., Hejcmanová P., Kubátová A., Štochlová K. (Eds.). 2017. African Studbook. Western Derby Eland, *Taurotragus derbianus derbianus* (Gray, 1847), volume 10, Prague: Czech University of Life Sciences Prague, 90 pp. ISBN: 978-80-213-2836-5.

Brandlová K., Fedorova T., Kubátová A., Štochlová K. (Eds.). 2017. Conservation strategy – revision in 2017, Unpublished, 12pp.

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

Brandlová K., Jůnková Vymyslická P., Žáčková M., Švejcarová M., Hejcmanová P., Fedorova P., 2015. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847), volume 8. Prague: 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), volume 7. Prague: 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.

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

Koláčková K., Hejcmanová P., Brandl P., Žáčková M., Vymyslická P., 2011. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847), volume 4. Prague: Czech University of Life Sciences Prague. 80 p. ISBN 978-80-213-2204-2.

Koláčková K., Hejcmanová P., Antonínová M., Brandl P., Verner P., 2010. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847), volume 3. Prague: Czech University of Life Sciences Prague. 162 p. ISBN 978-80-213-2102-1.

Koláčková K., Hejcmanová P., Antonínová M., Brandl P., Verner P., 2009. African Studbook. Western Derby eland, *Taurotragus derbianus derbianus* (Gray, 1847), volume 2. Prague: Czech University of Life Sciences Prague. 150 p. ISBN 978-80-213-2000-0.

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.

B.Sc., M.Sc., Ph.D. theses since 2017

Brandlová K., 2017. Allonursing in ungulates. Habilitation Thesis, Faculty of tropical AgriSciences, Czech University of Life Sciences Prague.

Neštický V., 2017. Calf sex ratio of captive eland populations. M.Sc. Thesis, Czech University of Life Sciences Prague, 46 pp.

Švejcarová M., 2017. Home range and habitat use of Eastern Derby eland (*Taurotragus derbianus gigas*) in Chinko Project area, Central African Republic. MSc. Thesis, Czech University of Life Sciences Prague. 39 pp.

Conference presentations and lectures since 2017

Brandlová K., Hejcmanová P., Grúňová M., Fedorova T., Kubátová A., Gloneková M., Miřejovská M., Štochlová K. 2018. The Western Derby Eland Conservation Programme. 18th Annual Sahelo-Saharan Interest Group Meeting, Paris, France. 2 – 5 May 2018.

Brandlová K., Černá Bolfíková B., Štochlová K. 2018. The Western Derby Eland Conservation Programme. 18th Annual Sahelo-Saharan Interest Group Meeting, Paris, France. 2 – 5 May 2018.

Brandlová K. 2017. Derbianus Conservation, z. s., Annual member meeting of Derbianus Conservation, Klub cestovatelů. Praha, Czech Republic. 28th November 2017.

Brandlová K. 2017. Antilopa Derbyho a jiné perly Senegalu. XIV. ročník cestovatelského festivalu Okolo světa., Vysoké Mýto, Czech Republic. 23rd November 2017.

Brandlová K. 2017. Ozvěny konference Antelope, Giraffe, Hippo 2017, Commission for Antelope and Giraffe UCSZOO meeting, Hrubá Voda u Olomouce, Czech Republic. 30th May – 1st June 2017. (in Czech)

Brandlová K., Hejcmanová P., Grúňová M., Gloneková M., Žáčková M., Kubátová A., Jůnková Vymyslická P., Fedorova T. 2017. Conservation breeding of Western Derby eland – history and challenges. Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa, Praha, Czech Republic. Book of Abstracts, p. 33. 19 – 25 February 2017.

Brandlová K., Fedorova T., Gloneková M., Grúňová M., Hejcmanová P., Kubátová A., Pluháček J., Štochlová K., Žáčková M. 2017. Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa. EAZA Annual Conference, Emmen, Netherlands. Poster presentation.

Černá Bolfíková, B. 2017. Využití metod molekulární genetiky v chovech antilop. Commission for Antelope and Giraffe UCSZOO meeting, Hrubá Voda u Olomouce, Czech Republic. 30th May – 1st June 2017. (in Czech)

Černá Bolfíková, B., Štochlová, K., Brandlová, K. 2017. Small Tragelaphini populations: genetics of captive breeding. EAZA AG TAG Midyear meeting, Prague, Czech Republic. 17 – 18 February 2017.

Čulík L. 2017. Převozy antilop Derbyho v Senegalu. Commission for Antelope and Giraffe UCSZOO meeting, Hrubá Voda u Olomouce, Czech Republic. 30th May – 1st June 2017. (in Czech)

Grúňová M. 2017. Prezentace Derbianus Conservation a vzdělávacích programů. UCSZOO meeting and Conference Zvířata v ohrožení, Liberec, Czech Republic. 8 – 9 November 2017. (in Czech)

Grúňová M., Kratochvílová I. 2017. Prezentace Zoo Dvůr Králové. Education and Marketing Commission UCSZOO meeting, Bojnice, Slovakia. 10 – 12 October 2017. (in Czech)

Grúňová, M., Hejcmanová, P., Brandlová, K., Gloneková, M., Fedorova, T., Žáčková, M., Kubátová, A., Štochlová, K. 2017. Senegalese children are getting to know Western Derby eland… And to value it? New concept

of evaluation of education programs within Derby eland conservation program in Senegal. EAZA Annual Conference, Emmen, Netherlands. Poster presentation.

Grúňová, M., Sané, M., Svitálek, J., Brandlová, K., Hejcmanová, P. 2017. By awareness to successful conservation? International Wildlife Symposium 2017, Srí Lanka.

Grúňová M., Hejcmanová P. 2017. Positive effects of direct experience with critically endangered Western Derby elands within environmental education programmes: new concept of evaluation of education programs in Senegal. 17th Annual Sahelo-Saharan Interest Group Meeting. Saint Louis, Sénégal.

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

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

Hejcmanová, P., Brandlová, K., Fedorova, T., Gloneková, M., Grúňová, M., Kubátová, A., Štochlová, K., Žáčková, M. 2017. Let's Save the Derby Elands in Senegal Western Derby Eland (Taurotragus derbianus derbianus) Conservation Strategy Implementation. EAZA Annual Conference, Emmen, Netherlands. Poster presentation.

Kubátová A., Štochlová K., Brandlová K., Černá Bolfíková B. 2017. Western Derby Eland – Small Population with Big Aims. Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa,

Czech University of Life Sciences Prague, Prague, Czech Republic. Book of Abstracts, p. 49. 19 – 25 February 2017.

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

Stoklasová L., Hejcmanová P. 2017. Biochemical and mineral blood profile of Western Derby eland in the conservation breeding population in Senegal. 11th International Conference on Behaviour, Physiology and Genetics of Wildlife of Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany. Book of abstracts, p. 123. 4 - 7 October 2017. Poster presentation.

Štochlová K., Brandlová K., Ogden R., Kubátová A., Černá Bolfíková B. 2018. Spiral-Horned Antelope Conservation Genetics Project. 3rd Annual Meeting in Conservation Genetics, Natural History Museum, Vienna, Austria. Book of abstracts, p. 76. 26 – 28 February 2018. Poster presentation.

Štochlová K. 2017. Záchranný program západní antilopy Derbyho. Conference Nebuď mimo! Karlínské gymnázium. Prague, Czech Republic. 14th December 2017. (in Czech)

Štochlová K., Bernáthová I. 2017. Prezentace aktivit Derbianus Conservation. 4th International Fair Party. Prague, Czech Republic. 6th December 2017.

Štochlová K., Kubátová A., Brandlová K., Černá Bolfíková B. 2017. Phylogeny and population characteristics of Derby eland (*Taurotragus derbianus*). Antelope, Giraffe, Hippo in the 21st Century: Conservation Action in Africa, Czech University of Life Sciences Prague, Czech Republic. Book of abstracts, p. 70. 19 - 25 February 2017. Poster presentation.

Other articles and publications since 2017

Brandlová K. (Eds.). 2018. Gerenuk - Proceedings of the UCSZOO antelope and giraffe comittees, volume 4. 54 pp.

Brandlová K., 2018. Inspirace ze Sahary. In: Beránek et al. (Eds.): Živá univerzita, volume 2, p. 29.

Brandlová K., Hejcmanová P., 2018. Češi jsou špičkoví v ochraně a výzkumu antilop a žiraf. In: Beránek et al. (Eds.): Živá univerzita, volume 2, p. 36.

Brandlová K. (Eds.). 2017. Gerenuk - Proceedings of the UCSZOO antelope and giraffe comittees, volume 3. 54 pp.

Brandlová K., 2018. Populace antilop Derbyho vzkvétá. In: Beránek et al. (Eds.): Živá univerzita, volume 2, p. 40.

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

Grúňová M., 2017. Antilopy, věda a výhody analfabetismu. In: Beránek et al. (Eds.): Živá univerzita, volume 4, p. 36.

Hejcmanová P., 2017. Svěžest dešťů přináší i nový směr spolupráce v Senegalu. In: Beránek et al. (Eds.): Živá univerzita, volume 3, p. 28.

Hejcmanová P., 2017. Ochrana antilop, žiraf a hrochů na ČZU. In: Beránek et al. (Eds.): Živá univerzita, volume 1, pp. 36 - 37.

Ptačinská Jirátová J. 2018. Senegalské milníky. In: Beránek et al. (Eds.): Živá univerzita, volume 1, pp. 30 - 31.

List of schools and other institutions where conservation programme was presented

Agency of Nature Conservation, Czech Republic
Café Lajka, Czech Republic
Collège Al IRCHAAD de Ouest Foire/Yoff, Senegal
Collège De la Cathédrale de Dakar, Senegal
Collège de la cathédrale, Senegal
Collège de la Cité Alia DIENE (Ouest Foire), Senegal
Collège Notre Dame du Liban, Senegal
Czech Union for Nature Conservation, Prague, Czech Republic
École Les dauphins, Senegal
Endowment Fund Microfinance, Czech Republic
Faculty of Agrobiology, Food and Natural Resources, Czech University of Life Sciences Prague, Czech Republic
Faculty of Environmental Sciences, J. E. Purkyně University, Ústí nad Labem, Czech Republic
Faculty of Tropical Agrisciences, Czech University of Life Sciences Prague, Czech Republic
Forestry Technical School Žlutice, Czech Republic
Galerie Café Loket, Czech Republic
Grammar School Karlín, Prague, Czech Republic
Grammar School Na Zatlance, Prague, Czech Republic
Grammar School Říčany, Czech Republic
Grammar School Roudnice nad Labem, Czech Republic
Grammar School Turnov, Czech Republic
Groupe scolaire AL IRCHAAD de Yoff, Senegal
J. A. Komenský Primary School, Kly, Czech Republic
Jihlava Zoo, Czech Republic
Johannes Kepler Grammar School, Prague, Czech Republic
Kindergarten and Primary School Radnice, Czech Republic
Lady Club Břasy, Czech Republic
Liberec Zoo, Czech Republic
Lycée de Yoff, Senegal
Mikoláš Aleš Primary School, Czech Republic

National Technical Library (cooperation with Home Senior, s.r.o.), Czech Republic
Natur Expo, Brno, Czech Republic
Night of Universities (joint meeting of University of Life Sciences Prague, Czech Technical University in Prague and Institute of Chemical Technology in Prague), Czech Republic
Ostrava Zoo, Czech Republic
Pilsen Zoo, Czech Republic
Primary school Běchovice, Czech Republic
Primary school Bozena Nemcova, Jaroměř, Czech Republic
Primary school Břidličná, Czech Republic
Primary school Jižní IV. Prague 4 – Spořilov, Czech Republic
Primary School Kříše, Czech Republic
Primary School Lysolaje, Czech Republic
Primary School Strž, Czech Republic
Primary School Sunny Canadian, Jesenice, Czech Republic
Primary School Třebotov, Czech Republic
Roztoč Association, Roztoky u Prahy, Czech Republic
Secondary Medical School and College of Higher Medical Education in Pilsen, Czech Republic
Secondary Special School Čakovice, Czech Republic
Travel Club Jihlava, Czech Republic
University of Third Grade, Czech University of Life Sciences Prague, Czech Republic
Vysoké Mýto Regional Museum, Czech Republic

Abstract to scientific outputs published since June 2017

CHINKO/MBARI DRAINAGE BASIN REPRESENTS A CONSERVATION HOTSPOT FOR EASTERN DERBY ELAND IN CENTRAL AFRICA

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One of the largest of antelopes, Derby eland (Taurotragus derbianus), is an important ecosystem component of African savannah. While the western subspecies is Critically Endangered, the eastern subspecies is classified as least concern. Our study presents the first investigation of population dynamics of the Derby eland in the Chinko/Mbari Drainage Basin, Central African Republic, and assesses the conservation role of this population. We analysed data from 63 camera traps installed in 2012. The number of individuals captured within a single camera event ranged from one to 41. Herds were mostly mixed by age and sex, mean group size was 5.61, larger during the dry season. Adult (AD) males constituted only 20% of solitary individuals. The overall sex ratio (M:F) was 1:1.33, while the AD sex ratio shifted to 1:1.52, reflecting selective hunting pressure. Mean density ranged from 0.04 to 0.16 individuals/km2, giving an estimated population size of 445–1,760 individuals. Chinko harbours one of the largest documented populations of Derby eland in Central Africa, making Chinko one of its potential conservation hotspots.

Citation: Brandlová K., Gloneková M., Hejcmanová P., Jůnková Vymyslická P., Aebischer T., Hickisch R., Mallon D., 2017. Chinko/Mbari drainage basin represents a conservation hotspot for Eastern Derby eland in Central Africa. African Journal of Ecology. 58(2):194-201.

RELIABILITY OF THE NEW ENVIRONMENTAL PARADIGM FOR ANALYSING THE ENVIRONMENTAL ATTITUDES OF SENEGALESE PUPILS IN THE CONTEXT OF CONSERVATION EDUCATION PROJECTS

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The New Environmental Paradigm scale for children was developed and validated in Western nations but has seldom been applied in non-western countries. The aim of the current study is to examine the scale's validity for schoolchildren in Senegal. The study was conducted in three regions of Senegal in November and December 2015, and a total 782 schoolchildren with an average age of 13 years participated. We used Cronbach's alpha and confirmatory factor analysis to assess the consistency of the scale. The principal component analysis was used to reveal the different potential dimensions of our data-set. Given the low internal consistency of the scale and the unexpected responses to certain items, the scale seems to be rather unreliable for the investigated population. This difference could be caused by specific cultural features encompassing strong religious beliefs, different understandings of the place of humankind in nature, and weak awareness of humans' impact on the natural world.

Citation: Grúňová M., Sané M., Cincera J., Kroufek R., Hejcmanová P., 2018. Reliability of the new environmental paradigm for analysing the environmental attitudes of Senegalese pupils in the context of conservation education projects. Environmental Education Research. 24(1):1-11.

ENVIRONMENTAL EDUCATION SUPPORTS CONSERVATION ACTION BY INCREASING THE IMMEDIATE AND LONG-TERM ENVIRONMENTAL KNOWLEDGE OF CHILDREN IN WEST AFRICA

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Local communities play a key role in the sustainability of any conservation program. We evaluated the impact of an environmental education program for school children in the surroundings of the Delta du Saloum Biosphere reserve (Senegal) dedicated to the conservation of African charismatic fauna with the critically endangered Western Derby eland as a conservation flagship. Questionnaires evaluating knowledge and attitudes were filled in by children before and after the program in 2008 and 2009. We found a significant increase in knowledge that carries the potential to support conservation activities of protected area management. This knowledge alone is, however, not enough to change behavior and attitudes, proving the need to approach the problem in context of a complex, targeted awareness campaign.

Citation: Grúňová M., Brandlová K., Svitálek J., Hejcmanová P., 2017. Environmental education supports conservation action by increasing the immediate and long-term environmental knowledge of children in West Africa, Applied Environmental Education & Communication. 1 (16): 3-16. DOI: 10.1080/1533015X.2016.1273153

SECTION B:

The African Studbook of Western Derby Eland

Western Derby eland calf

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

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
WILD	0,00	0,00	---	---	81	25	2013-03-03
WILD	0,00	0,00	---	---	10	5	2012-12-28
WILD	0,00	0,00	---	---	9	1	2012-12-13
WILD	0,00	0,00	---	---	8	3	2013-04-01
WILD	0,00	0,00	---	---	8	1	2009-12-21
WILD	0,00	0,00	---	---	12	3	2013-04-01
1002	1,00	0,00	---	---	9	4	2012-11-23
1006	1,00	0,00	---	---	6	3	2013-03-03
1006	1,00	0,00	---	---	7	4	2013-01-11
1004	1,00	0,00	---	---	8	6	2014-04-01
1005	1,00	0,00	---	---	7	0	2012-12-06
1003	1,00	0,00	---	---	8	5	2014-12-10
1002	1,00	0,00	---	---	0	0	--
1005	1,00	0,00	---	---	4	4	2014-12-01
1003	1,00	0,00	---	---	0	0	--
1004	1,00	0,00	---	---	0	0	--
1006	1,00	0,00	---	---	24	21	2013-12-30
1005	1,00	0,00	---	---	7	4	2015-11-28
1006	1,00	0,00	---	---	2	2	2013-12-10
1002	1,00	0,00	---	---	1	0	2007-11-25
1003	1,00	0,00	---	---	4	4	2013-12-30
1004	1,00	0,00	---	---	13	11	2017-04-01
1008	1,50	0,25	---	---	4	4	2014-12-01
1007	1,50	0,25	---	---	2	2	2013-12-10
1011	1,50	0,25	---	---	4	4	2014-12-01
1003	1,00	0,00	---	---	0	0	--
1009	1,50	0,25	---	---	0	0	--
1005	1,00	0,00	---	---	0	0	--
1012	1,50	0,25	48F	12	7	6	2018-03-19
1002	1,00	0,00	---	---	15	8	2014-11-11
1007	1,50	0,25	---	---	6	6	2016-12-24
1006	1,00	0,00	---	---	0	0	--
1004	1,00	0,00	---	---	22	11	2013-03-03
1008	1,50	0,25	60M	12	6	6	2016-12-24
1011	1,50	0,25	---	---	0	0	--

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

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1005	1,00	0,00	---	---	2	2	2013-12-10
1004	1,00	0,00	---	---	28	16	2013-12-30
1003	1,00	0,00	---	---	3	1	2014-01-10
1011	1,50	0,25	---	---	5	5	2016-12-24
1008	1,50	0,25	---	---	3	0	2013-10-30
1006	1,00	0,00	---	---	4	2	2012-11-05
1007	1,50	0,25	---	---	2	2	2012-12-22
1002	1,00	0,00	17F	11	8	6	2016-11-15
1012	1,50	0,25	49F	11	7	6	2018-01-10
1009	1,50	0,25	50F	11	5	5	2018-03-19
1020	1,50	0,25	---	---	0	0	--
1007	1,50	0,25	---	---	0	0	--
1005	1,00	0,00	---	---	18	17	2018-03-19
1009	1,50	0,25	---	---	0	0	--
1002	1,00	0,00	18F	10	7	7	2016-12-07
1003	1,00	0,00	6F	10	2	1	2017-11-01
1008	1,50	0,25	---	---	0	0	--
1004	1,00	0,00	9F	10	4	3	2016-11-08
1011	1,50	0,25	---	---	2	2	2013-12-10
1006	1,00	0,00	---	---	3	3	2013-11-15
1012	1,50	0,25	---	---	0	0	--
1021	2,00	0,13	15M	9	5	5	2016-12-24
1007	1,50	0,25	51F	9	4	4	2017-12-17
1004	1,00	0,00	6M	9	25	20	2017-02-01
1009	1,50	0,25	59M	9	5	5	2016-12-24
1018	2,00	0,13	---	---	0	0	--
1008	1,50	0,25	61M	9	31	26	2017-02-01
1002	1,00	0,00	11F	9	5	5	2017-12-17
1003	1,00	0,00	---	---	0	0	--
1006	1,00	0,00	7M	9	6	6	2016-12-24
1011	1,50	0,25	---	---	0	0	--
1005	1,00	0,00	---	---	0	0	--
1007	1,90	0,15	---	---	0	0	--
1041	2,00	0,13	---	---	0	0	--

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

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1018	2,00	0,13	---	---	1	1	2014-12-17
1021	2,00	0,13	19F	8	6	5	2017-10-11
1005	1,40	0,00	2M	8	7	7	2018-01-18
1012	1,90	0,15	19M	8	26	21	2017-02-01
1043	2,00	0,13	36M	8	0	0	--
1009	1,90	0,15	---	---	0	0	--
1006	1,40	0,00	---	---	0	0	--
1029	2,25	0,19	---	---	0	0	--
1003	1,40	0,00	---	---	0	0	--
1041	2,00	0,13	10M	7	0	0	--
1011	1,90	0,15	---	---	0	0	--
1040	2,25	0,19	---	---	0	0	--
1002	1,40	0,00	---	---	0	0	--
1038	2,00	0,13	---	---	1	1	2013-12-10
1055	2,00	0,13	13M	7	20	16	2017-02-01
1043	2,00	0,13	36M	7	0	0	--
1050	2,00	0,13	38M	7	0	0	--
1009	1,90	0,15	22M	7	0	0	--
1007	1,90	0,15	34M	7	20	16	2017-02-01
1018	2,00	0,13	17M	7	20	16	2017-02-01
1044	2,25	0,19	45F	7	4	4	2018-03-19
1045	2,25	0,19	46F	7	2	2	2018-01-10
1006	1,40	0,00	3M	7	20	16	2017-02-01
UNK	0,00	0,00	---	---	0	0	--

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

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1007	1,90	0,15	35M	6	5	3	2018-02-16
1053	2,00	0,13	34F	6	4	4	2017-12-12
1002	1,40	0,00	4F	6	2	2	2016-11-18
1050	2,00	0,13	41M	6	20	16	2017-02-01
1041	2,00	0,13	16F	6	3	1	2016-11-15
1038	2,00	0,13	---	---	0	0	--
1018	2,00	0,13	24F	6	4	4	2017-11-07
1055	2,00	0,13	12M	6	2	2	2015-11-12
1042	2,25	0,19	55M	6	20	16	2017-02-01
1043	2,00	0,13	37F	6	3	3	2016-11-04
1044	2,25	0,19	52M	6	2	2	2015-03-25
1012	1,90	0,15	---	---	1	0	2014-12-12
1006	1,40	0,00	---	---	0	0	--
1041	2,00	0,13	---	---	0	0	--
1040	2,25	0,19	---	---	2	2	2015-11-12
1053	2,10	0,15	44M	5	13	10	2017-02-01
1007	1,90	0,15	32M	5	3	2	2016-04-01
1012	1,90	0,15	---	---	0	0	--
1011	1,90	0,15	---	---	0	0	--
1029	2,25	0,19	44F	5	2	2	2017-12-20
1003	1,40	0,00	---	---	0	0	--
1042	2,35	0,23	58M	5	13	10	2017-02-01
1018	2,10	0,15	32F	5	1	1	2016-04-01

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

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1002	1,40	0,00	3F	5	1	1	2017-01-07
1050	2,10	0,15	41F	5	2	1	2017-10-22
1043	2,10	0,15	47M	5	6	6	2017-02-01
1009	1,90	0,15	23F	5	0	0	--
1063	2,00	0,13	8M	5	1	1	2016-12-24
1008	1,90	0,15	24M	5	5	5	2017-02-01
1040	2,25	0,19	---	---	0	0	--
[1043|1053]	2,14	0,17	---	---	0	0	--
1055	2,00	0,13	15F	4	0	0	--
1071	2,64	0,19	30M	4	0	0	--
1012	2,14	0,18	14M	4	0	0	--
1050	2,14	0,14	26M	4	0	0	--
1083	2,50	0,31	9M	4	0	0	--
1063	2,17	0,17	29M	4	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1131	Fathala 2	Damier	M	1,00	2013-12-10	--	[1014|1019|1023|1024|1025|1031|1034|1036|1039|1048|1054|1057|1060|1065]
1132	Bandia 1	Bouba	F	1,00	2013-12-30	--	[1017|1037|1059|1062|1073]
1133	Bandia 1	Smarketa	F	1,00	2013-12-30	--	[1017|1037|1059|1062|1073]
1134	Fathala 1	Noname 10	F	1,00	2013-12-30	2014-01-01	[1010|1022]
1135	Fathala 2	Fuddan	M	1,00	2014-01-01	--	[1010|1022]
1136	Bandia 3	Saola D.	F	1,00	2014-01-10	--	1030
1137	Fathala 2	Falco	M	1,00	2014-04-01	--	[1010|1022]
1138	Bandia 3	Toucouleur D.	M	1,00	2014-11-11	--	1030
1139	Bandia 3	Msoukeina	F	1,00	2014-11-21	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1140	Bandia 1	Smario	M	1,00	2014-11-24	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1141	Bandia 3	Docteur	M	1,00	2014-11-28	--	[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	56M	4	0	0	--
1095	2,64	0,21	38F	4	3	2	2017-11-25
1021	2,14	0,15	13F	4	2	0	2018-01-25
1044	2,25	0,19	---	---	0	0	--
1090	2,63	0,28	28M	4	0	0	--
1038	2,00	0,13	8F	4	1	0	2017-11-01
1029	2,25	0,19	50M	4	0	0	--
1098	2,50	0,31	16M	3	2	1	2018-02-16
1018	2,35	0,15	10F	3	1	0	2017-11-01
1071	2,85	0,18	25M	3	0	0	--
1043	2,35	0,15	20M	3	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1142	Fathala 2	Demal	M	1,00	2014-12-01	--	[1014|1023|1025|1031|1034|1039|1048|1057|1060|1065]
1143	Fathala 2	Daha	M	1,00	2014-12-01	--	[1014|1023|1025|1031|1034|1039|1048|1057|1060|1065]
1144	Bandia 3	Felicia	F	1,00	2014-12-10	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1145	Bandia 5	Noname 11	U	1,00	2014-12-12	2014-12-31	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1146	Bandia 5	Diola	F	1,00	2014-12-17	--	1070
1147	Bandia 3	Msafira	F	1,00	2014-12-21	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102]
1148	Bandia 5	Driankee	F	1,00	2015-01-04	--	[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
1063	2,20	0,17	33M	3	0	0	--
1058	2,45	0,25	57M	3	0	0	--
1012	2,35	0,15	14F	3	0	0	--
1105	2,80	0,18	---	---	0	0	--
1103	3,00	0,22	33F	3	1	1	2018-01-18
1100	2,85	0,18	29F	3	0	0	--
1050	2,35	0,17	20F	3	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1149	Bandia 3	Salma	F	1,00	2015-01-25	--	[1094|1110]
1150	Fathala 2	Fadel	M	1,00	2015-03-05	--	[1022|1104]
1151	Fathala 2	Fode	M	1,00	2015-03-25	--	[1022|1104]
1152	Bandia 5	Duggi	F	1,00	2015-11-05	--	[1072|1101|1108]
1153	Bandia 5	Djibril	M	1,00	2015-11-12	--	[1072|1101|1108]
1154	Bandia 5	Damaye-Niane	F	1,00	2015-11-25	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1155	Bandia 1	Msebastian	M	1,00	2015-11-28	2017-03-01	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1156	Bandia 1	Smohamed	M	1,00	2015-12-04	2017-03-01	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1157	Bandia 1	Msamson	M	1,00	2015-12-15	--	[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
1051	2,45	0,14	12F	3	1	1	2018-02-16
1044	2,50	0,28	54M	3	0	0	--
1029	2,50	0,23	53M	3	0	0	--
1103	2,96	0,16	21F	2	0	0	--
1096	2,62	0,12	4M	2	0	0	--
1050	2,42	0,17	28F	2	0	0	--
1018	2,42	0,15	---	---	0	0	--
1071	2,92	0,19	---	---	0	0	--
1100	2,92	0,19	39M	2	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1158	Bandia 1	Benedict	M	1,00	2015-12-27	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1159	Fathala 2	Fredy	M	1,00	2016-01-01	--	[1022|1048]
1160	Fathala 1	Neethling	F	1,00	2016-01-01	--	[1022|1048]
1161	Fathala 2	Dukku	M	1,00	2016-01-01	--	[1031|1034|1065]
1162	Bandia 3	Noname 12	F	1,00	2016-03-01	2016-03-01	[1094|1110]
1163	Bandia 3	Dayo	M	1,00	2016-02-25	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1164	Bandia 1	Noname 13	F	0,50	2016-03-01	2016-05-01	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115]
1165	Bandia 3	Mseyna	F	1,00	2016-04-01	--	[1094|1110]
1166	Fathala 1	Noname 14	F	0,50	2016-04-01	2016-05-05	[1022|1048]
1167	Bandia 1	Chuck Noriss	M	0,50	2013-04-01	--	MateOf1004
1168	Bandia 5	Dudek	M	1,00	2016-11-04	--	1072
1169	Bandia 5	Barbora	F	1,00	2016-11-08	--	1072
1170	Bandia 1	Noname15	F	0,50	2016-11-15	2016-12-20	MateOf1043

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1095	2,92	0,20	45M	2	0	0	--
1044	2,25	0,19	49M	2	0	0	--
1045	2,25	0,19	43F	2	0	0	--
1063	2,15	0,18	40M	2	0	0	--
1098	2,95	0,17	---	---	0	0	--
1043	2,42	0,16	27M	2	0	0	--
MateOf1059	2,85	???	---	---	0	0	--
1116	3,00	0,15	35F	2	0	0	--
MateOf1022	2,00	???	---	---	0	0	--
[1004|1006|1021|1071]	1,75	???	1M	5	5	5	2017-02-01
1103	2,70	0,08	5M	1	0	0	--
1053	2,20	0,13	5F	1	0	0	--
[1043|1098|1118|1132|1133]	2,98	???	---	---	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1171	Bandia 1	Bala	M	0,98	2016-11-17	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115|1119|1122|1167]
1172	Bandia 5	Dana	F	1,00	2016-11-18	--	1072
1173	Bandia 1	Sierra	F	0,98	2016-11-20	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115|1119|1122|1167]
1174	Bandia 1	Mserere	M	0,98	2016-11-27	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115|1119|1122|1167]
1175	Bandia 1	Daniel	M	0,98	2016-12-07	--	[1059|1062|1073|1084|1088|1089|1092|1097|1102|1109|1115|1119|1122|1167]
1176	Fathala 2	Donnee	F	1,00	2016-12-24	--	[1031|1034|1039|1057|1060|1065|1121]
1177	Fathala 1	Faleme	F	1,00	2017-01-06	--	[1022|1048]
1178	Bandia 5	Dori	F	1,00	2017-01-07	--	1072
1179	Fathala 1	Frederique	F	1,00	2017-01-11	--	[1022|1048]

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1095	2,93	0,20	42M	1	0	0	--
1096	2,40	0,09	2F	1	0	0	--
1071	2,93	0,19	31F	1	0	0	--
1100	2,93	0,19	31M	1	0	0	--
1050	2,42	0,17	23M	1	0	0	--
1058	2,54	0,26	47F	1	0	0	--
1044	2,25	0,19	42F	1	0	0	--
1117	2,40	0,09	1F	1	0	0	--
1113	2,63	0,19	26F	1	0	0	--

ID	Location	Name	Sex	Known	Birth Date	Death Date	Sire
1180	Bandia 1	Boubacar	M	0,99	2017-02-01	--	[1059|1062|1062|1073|1073|1084|1084|1088|1088|1089|1089|1092|1092|1097|1097|1102|1102|1109|1109|1115|1115|1119|1119|1122|1167]
1181	Fathala 1	Nikola	F	1,00	2017-02-05	--	[1022|1048]
1182	Fathala 1	Fion	M	1,00	2017-03-01	--	[1022|1048]
1183	Fathala 1	Niké/Félicité	F	1,00	2017-04-01	--	[1022|1048]
1184	Bandia 3	Noname 16	U	1,00	2017-11-01	2017-11-15	[1094|1138]
1185	Bandia 1	Slovakia	F	0,50	2017-10-11	--	MateOf1071
1186	Bandia 1	Diesel	M	0,50	2017-10-22	--	MateOf1118
1187	Bandia 1	Matumaini	F	0,50	2017-11-07	--	MateOf1100
1188	Bandia 1	Bonita	F	0,50	2017-11-25	--	MateOf1132
1189	Bandia 1	Bartolomej	M	0,50	2017-12-12	--	MateOf1095
1190	Fathala 2	Damian	M	0,50	2017-12-17	--	MateOf1063
1191	Fathala 2	Dominica	F	0,50	2017-12-17	--	MateOf1058
1192	Fathala 1	Farhat	M	1,00	2017-12-20	--	1048
1193	Fathala 1	Naila	F	1,00	2018-01-10	--	1048
1194	Fathala 1	Flora	F	1,00	2018-01-10	--	1048
1195	Bandia 5	Dorothy	F	1,00	2018-01-18	--	1072
1196	Bandia 1	Noname 17	U	0,50	2018-01-25	2018-02-21	MateOf1133
1197	Bandia 3	Sander	M	1,00	2018-02-16	--	[1094|1138]
1198	Fathala 1	Neon/Freon	U	1,00	2018-03-04	--	1048
1199	Fathala 1	Nancy/Fancy	U	1,00	2018-03-19	--	1048

Dam	Gen	F	MK Rank	Age (Years)	N of offspring	N of living offspring	Last Repro Date
1132	3,25	0,21	46M	1	0	0	--
1091	2,63	0,19	27F	1	0	0	--
1029	2,25	0,19	48M	1	0	0	--
[1045|1090]	2,44	0,19	36F	1	0	0	--
[1051|1136|1139]	3,02	0,17	---	---	0	0	--
1071	3,00	???	25F	0	0	0	--
1118	3,10	???	51M	0	0	0	--
1100	3,00	???	30F	0	0	0	--
1132	3,64	???	40F	0	0	0	--
1095	3,00	???	43M	0	0	0	--
1063	2,00	???	11M	0	0	0	--
1058	2,50	???	52F	0	0	0	--
1113	2,63	0,16	21M	0	0	0	--
1091	2,63	0,16	22F	0	0	0	--
1044	2,25	0,19	39F	0	0	0	--
1146	3,20	0,11	7F	0	0	0	--
1133	3,14	???	---	---	0	0	--
1149	3,33	0,22	18M	0	0	0	--
[1029|1045|1090]	2,33	0,18	---	0	0	0	--
[1029|1045|1090]	2,33	0,18	---	0	0	0	--

Explanatory note:

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

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

Subadult male in the Bandia reserve

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

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