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THE UNGULATE FAUNA OF ANGOLA

SYSTEMATIC LIST, DISTRIBUTION MAPS,
DATABASE REPORT

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LISBOA - 2005



HOMAGE AND MEMORIAL

S. NEWTON DA SILVA (seated) and A. DE BARROS MACHADO (standing), during a meeting on Fauna and Conservation of the Nature, in Sá da Bandeira (today Lubango), Angola, November 1972. Homage to all people who contributed to the scientific knowledge of the former Portuguese Overseas countries.

SÚMULA

O intento deste trabalho é documentar a distribuição em Angola das espécies das ordens Tubulidentata, Hyracoidea, Sirenia, Proboscidea, Perissodactyla e Artiodactyla. Toda a informação nele contida foi compilada numa base de dados computadorizada (dBASE III PLUS), num total aproximado de 8 000 registos. Foram múltiplas as fontes onde estes dados se obtiveram, desde o trabalho de campo e a colheita e estudo de exemplares realizados em Angola entre 1961 e 1975; os registos de exemplares em outros museus; a bibliografia consultada, incluindo não só a de índole científica, mas também obras de divulgação relativas à fauna angolana e outras sobre diferentes temas, desde que contivessem referências à distribuição das espécies consideradas; até, por último, a toda a informação da parte de pessoas idóneas e conhecedoras da distribuição dos ungulados em Angola, tais como caçadores e guardas de áreas protegidas. Apresenta-se em Apêndice um extracto sistematicamente organizado desta base de dados, que, dada a sua natureza, não se traduziu para inglês. Para a representação cartográfica das distribuições, referenciou-se cada dado geograficamente definido a um determinado *locus*, unidade de um quarto de grau quadrado. Todos os *loci* referenciados para uma dada espécie foram assinalados no respectivo mapa de distribuição, consistindo o cerne do presente trabalho na apresentação dos mapas e respectivos textos.

Nota: Apesar de editado em 2005, a base de dados em que o presente trabalho se alicerça foi finalizada em 2000 e o trabalho concluído e entregue para publicação em 2002; os autores entenderam por esse motivo não acrescentar quaisquer dados subsequentes, razão que levou a que a bibliografia mais recente não fosse incluída.

ABSTRACT

The present paper intends to document the distribution in Angola of the species of the orders Tubulidentata, Hyracoidea, Sirenia, Proboscidea, Perissodactyla and Artiodactyla. The data upon which this paper is based were compiled in a computer data basis (dBASE III PLUS) with a total of about 8 000 records. The data sources were multiple: field work, collecting and study of specimens in Angola from 1961 to 1975; registers of material in other museums; diversified bibliography, including not only scientific papers, but also articles for a larger public related with the Angolan fauna and books on different matter but with references to mammals and their distribution in Angola; and personal communication by a large number of people that lived in Angola and with enough knowledge on larger mammals, namely hunters and game rangers. A report from this data basis is included as an Appendix, and, in view that it represents an integral transcription from a computer data basis, it is not translated to English. All these data are geographically referred according to the quarter-degree *locus* system, and the plotting of the *loci* depicted the distribution maps of the different recognized species of ungulates that inhabit Angola. These maps and texts on the distribution of the species certainly form the bulk of the present work.

Note: In spite of edited in 2005, the database upon which the present work is founded was filled up in 2000 and the work concluded and delivered for publishing in 2002; accordingly, the authors intended to not add any subsequent data, the reason for which the most recent bibliography is not included.

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INTRODUCTION

As implicit in the title, this is a document on the distribution of Ungulates in Angola. In what concerns its geographical ambit, and differently from the criterion followed in HILL & CARTER' s *The Mammals of Angola, Africa* (1941), Cabinda is included in the present atlas as part of Angola, in spite of its separation by the Zaire R., recognizing in this particular the political, official, boundaries of the country. In what concerns the zoological scope of this work (Ungulates is a grouping of convenience, without any taxonomic value), the orders Tubulidentata, Hyracoidea, Sirenia, Proboscidea, Perissodactyla and Artiodactyla were considered, totalizing 46 species. Their classification follows their general lines of the 2nd edition of WILSON & REEDER' s *Mammal Species of the World* (1993) and, although the authors may express discordant opinions in the texts of the species, particularly in what concerns subspecies, the only significant change introduced was a different sequence of the Bovidae genera (tribes are not mentioned). As this is essentially a distribution atlas, no ecological notes are given for the species, but the status of conservation of each one is frequently pointed out.

The data used for the species mapping are listed in the Appendix. They are concerned with the second half of the 19th century and with the 20th century¹, though rather scarce after 1975. The authors of the present document recognize that, for many species, the real situation may not agree with the distribution maps. However, even if some of them do not indicate the actual situation, they do represent the potential distribution of the species, which is crucial for future recovering plans.

AN ABRIDGED REPORT ON THE KNOWLEDGE OF THE ANGOLAN MAMMAL FAUNA

Although the first zoological explorations in Angola go back to the end of the 18th century, related with the establishment of a Museum of Natural History in *Palácio da Ajuda*, in Lisbon², systematic studies on the ungulate fauna of Angola started only in the 2nd half of the 19th century. Such studies were in a large measure due to José Vicente Barbosa du Bocage (BOCAGE, 1869, 1878, 1889, 1890, 1897,

¹ Data from the Portuguese Duarte Lopez ex PIGAFETTA (1591) about the fauna of Northeastern Angola in the 16th century will be object of a separate study (J. CRAWFORD-CABRAL, in prep.).

² Geoffroy Saint-Hilaire, who accompanied the French inroad during the Napoleonic wars, held many of the zoological specimens housed in the museum of the Palácio da Ajuda and transferred them to the Paris Museum.

1902), professor of Zoology in the *Escola Polytechnica de Lisboa*³, to whom the naturalist José Alberto de Oliveira Anchieta sent the specimens he collected in some parts of western Angola (“Sertão de Loanda”; “Sertão de Benguella”; “Sertão de Mossâmedes”), and to other scientists, contemporary of Bocage, as J. E. Gray, of the British Museum, who examined specimens sent to London by the industrial Joachim José Monteiro, resident in Angola (GRAY, 1868, 1869), and W.C.H. Peters, of the Berlin Museum, who studied the material collected by the celebrated botanic Frederic M. J. Welwitsch (PETERS, 1865) and by the German Expeditions to Loango (Cabinda) (PETERS, 1879).

Alias, the last years of the 19th century, the first decade of the 20th century and the years that preceded the World War I were a time of intense surveys in Africa. Animals were shot during these long travels, and their trophies sent to European museums. Amongst others, we must refer the explorer Van der Kellen, whose collection of mammals, in the Leyden Museum, were studied by F. A. Jentink (JENTINK 1887, 1893, 1899, 1901); the Kunene-Sambesi Expedition, a basically botanical mission in which the presence of the zoologist A. Sokolowsky led to observations and collecting of large mammals (reported in H. BAUM, 1903); the explorations by Dr. W. J. Ansorge, whose collections, in the Tring and British Museums, were mainly studied by Oldfield Thomas (THOMAS, 1892, 1900, 1926; THOMAS & WROUGHTON, 1905). The interest by the Natural History was extensive to a large stratum of resident, educated people, who offered numerous zoological specimens to museums. It was the case, amongst others, of Dr. Pereira do Nascimento, whose material, offered to the University of Coimbra, was reported by A. F. de SEABRA (1908-09); of the Lieutenant Colonel Teodoro da Cruz, who sent specimens to the University of Porto, which were studied by A. THEMIDO (1931, 1946); and of the Belgian H. F. Varian, engineer of the Angola railways, who discovered the Giant Sable, the despoilments of which, sent to the British Museum, led Oldfield Thomas (THOMAS, 1916) to classify this animal in a new subspecies – *Hippotragus niger variani*. Huge collections in the British Museum led, besides, to the publishing of catalogues and other papers, including those on ungulates (LYDEKKER, 1899, 1903, 1904; LYDEKKER & BLAINE, 1913-16; BLAINE, 1922, 1925).

It was between the two World Wars that expeditions in Angola to collect zoological specimens for museums attained their highest point. Let us mention the two Swiss missions of Prof. Albert Monard, curator of the Musée d’Histoire

³ The *Escola Polytechnica de Lisboa* becomes latter the Science Faculty of the University of Lisbon and their natural history collections the basis of the National Museum of Natural History. The zoological section of this museum is named *Museu Bocage*, in homage to its founder; unhappily, this institution lost all collections in a fire in 1978.

The Ungulate Fauna of Angola

Naturelle, La Chaux-de-Fonds, in 1928-29 and 1932-33, which results in what mammals are concerned were reported in *Bull. Soc. Neuchâtel Sci. Nat.* (those of the 1st mission – MONARD, 1930, 1933) and in *Archivos do Museu Bocage* (those of the 2nd mission – MONARD, 1935); the Vernay Angola Expedition (1925), organized by Arthur S. Vernay of the American Museum of Natural History; the Gray African Expeditions, under the direction of Prentiss Gray, whose material collected in Angola, in 1929, including specimens of Giant Sable, was donated to the Academy of Natural Sciences, Philadelphia; the Pulitzer Angola Expedition (1930-31), organized by Rudyard Boulton, of the Carnegie Museum, who, in spite of being an ornithologist, also provided a collection of mammals; and the Phipps-Bradley Expedition (1932-33), organized by John H. Phipps, whose material was donated to the American Museum of Natural History. They were mainly the specimens collected by the Vernay Angola and the Phipps-Bradley Expeditions that were the basis of the classic paper by HILL & CARTER (1941), *The Mammals of Angola, Africa*. Other minor expeditions to Angola can otherwise be mentioned, as the Karl-Jordan Expedition (1934), the specimens of which are in the Tring Museum (reported by ST. LEGER, 1936), and the Percy Sladen and Kaffrarian Museum Expedition, under the direction of Capt. Shortridge, circumscribed in Angola to the margins of the Cunene River⁴. Besides all reports referred above, the large number of specimens in museums led also to the description of new subspecies (HINTON, 1921; MATSCHIE, 1900, 1906; ZUKOWSKI, 1964; ZUKOWSKI & HALTENORTH, 1957).

The direct Portuguese participation in zoological surveys in Angola became predominant after the World War II. In 1936, a board for overseas researches was founded in Portugal as a branch office of the Ministry of Colonies – the *Junta de Missões Geográficas e de Investigações Coloniais*, later *Junta de Investigações do Ultramar* and today *Instituto de Investigação Científica Tropical* (IICT). One of its members, the zoologist Prof. Fernando Frade, directed a mission to Angola in 1957-59, the material collected in the course of which is housed in *Centro de Zoologia* of the IICT; his papers dealt with diversified matter, including anatomy of the elephants and conservation (FRADE, 1933, 1936, 1955, 1956, 1958, 1959a,b, 1960, 1963; FRADE & SIEIRO, 1960). A rather similar institution – *Instituto de Investigação Científica de Angola* (IICA) – was founded later in Angola, the Mammal Section of which, directed by the senior author of the present document, was transferred from Luanda to Sá da Bandeira (Lubango) in 1962. Its collections are annexed today to the Agostinho Neto University.

⁴ The localities “Cunene falls” and “Ochumbumbi”, on the border of Cunene River, are usually accepted as in Namibia, but they are located in fact in Angola (Cunene Province).

Another institution in Angola with important zoological collections, larger mammals included, is the *Museu do Dundo*, a museum supplied by the former *Companhia de Diamantes de Angola* (Diamang). It was founded in 1945 on the bases of some collections obtained in the previous years and it is located in Dundo, a small town in the Northern Lunda Province. This museum had two sections, one for ethnographic and the other (the Laboratory of Biology) for biological studies, the last one directed by Dr. António de Barros Machado, and a renowned journal – *Publicações Culturais da Companhia de Diamantes de Angola*. Barros Machado, in spite of his specialization as entomologist, gave an extensive contribution to the mammalogy of Angola (MACHADO, 1952, 1968, 1969); R. W. Hayman, of the British Museum studied material of larger mammals housed in the Dundo Museum (HAYMAN, 1963); and unpublished reports by Mr. Luna de Carvalho, taxidermist of this museum, were also regarded as important to the completion of the present document (CARVALHO, 1956-1975).

In any way, the interest of scientists of foreign countries by the Angolan fauna never decreased. Let us mention, for the fifties and sixties, Gerd Heinrich, who, although an ornithologist, included mammals amongst the specimens he collected in Angola mainly for the Chicago Museum; Werner Trense, who undertake a collecting expedition in Angola, the material of which is housed in the Hamburger Institute and Zoological Museum (TRENSE, 1959); and the anatomist Prof. H. Oboussier, from the same Museum, whose collectings in Angola were related with her studies on the hypophysis of antelopes (OBOUSSIER, 1962, 1963, 1964, 1965, 1966; OBOUSSIER & TYSZKA, 1964). In 1969, the State Museum of Namibia organized a travel into the southwestern Angola (for the most part in the Namibe Province), under the direction of its director, Cornelius G. Coetzee, which was renewed in 1974, and, in June and July of the same year, the University of Cape Town and the Wild Life Society undertook an expedition to about the same areas of Angola (BROOM *et al.*, 1974). Amongst other scientists who performed field work in Angola during the sixties and seventies, Richard Estes, with his studies on the Giant Sable (ESTES, 1989; ESTES & ESTES, 1970, 1974; ESTES, ESTES & SILVA, 1970), and the ecologist and conservationist Brian Huntley (HUNTLEY, 1972a,b, 1973a,b,c,d,e,f, 1974, 1978) deserve a special mention.

After the independence of Angola (1975), Alfred Feiler, assistant of Prof. Ana Lúcia Guerra Marques of the University Agostinho Neto, Luanda, developed studies on mammal fauna (FEILER, 1989, 1990); the status of conservation areas was reported by J. H. RODRIGUES (1989 a,b, 1995) and J. JUSTE & C. CARBALLO (1992).

SOURCES OF DATA

The collecting localities referred to by the authors above mentioned and by others who have examined material collected in Angola during these or other expeditions are one of the sources of the present Atlas. The references to the species and their distribution in Angola given by these authors were supported by field observations during scientific expeditions or by museum specimens and represent the most valid data from bibliography.

However, in spite of written by authors not particularly prone to zoological studies in mammals, there is a large spectrum of other bibliographic data that should not be forgotten, which represent valid assertions by people normally engaged in faunal observations, as scientists, travellers and hunters. It is the case of the reports by explorers, as H. CAPELLO & R. IVENS, (1881, 1886), G. W. PENRICE (In BRYDEN, 1899) or J. C. B. STATHAM (1922, 1924, 1926); accounts on Angolan fauna, as, for instance, those by Teodósio CABRAL *et al.* (1933-44), Henrique GALVÃO (1941), J. M. EÇA DE QUEIROZ (1965), J. FENYKOVI (1958), J. Newton da SILVA (1942, 1944-46, 1952, 1958, 1962, 1970), Hugo de SEIA (1995, 1999), and J. Araújo FERREIRA (1989); and of an extensive number of articles on hunting, namely in the revues *Diana* and *Caça e Tiro ao Voo*.

Another bibliographic source has to do with scientific papers only indirectly related to wild mammals (sometimes in Agriculture or in Public Health) as those by E. C. AMARO (1947-48), F. CAMBOURNAC *et al.* (1962), C. B. CARNEIRO (1933), A. P. da CRUZ (1967), J. TRAVASSOS DIAS (1950, 1960, 1983-84), A. ALBL & G. ANSTOS (1966), P. A. GUERRA *et al.* (1956) and H. RIBEIRO (1974) and the reports of the *Missão de Combate às Tripanosomíases*. Curiously enough, also the reports of the *Missão Geográfica de Angola* and the *Dicionário Corográfico Comercial de Angola* (GRANADO & SERRANO, 1959) have data concerning to the distribution of Ungulates.

Museum registers of unpublished data were another source for these distribution maps. Although some material of ungulates in the Mammal Section of the IICA had been previously recorded (A. P. SIMÕES & J. CRAWFORD-CABRAL, 1990), the bulk of the specimens remained unreported. The first author of the present document, who had examined all material in the Mammal Section of the IICA along the fourteen years of his sojourn in Lubango, transcribed all registers before his departure from Angola in 1975. Another sources of unpublished data are the Dr. Coetzee's field books of his collectings in Angola (1969, 1974), so kindly put at our disposal; the register of the Heinrich's collection in the Field Museum, Chicago, by courtesy of Dr. Xavier Misonne; the total register of mammals in the Dundo Museum, photocopied in 1995, during a visit of the first author to this institution; the register of ungulates from Angola in the British Museum, transcribed by the

second author; and the total register of mammals in the Centro de Zoologia of the IICT, where both authors accomplished this task.

At last there is a source of data on the form of personal communications in the intercourse of interviews with persons with relatively solid knowledge on larger mammals of Africa, namely hunters, wardens of parks and other protected areas and people who lived long time in remote parts of Angola and in contact with wildlife. Many of the inquiries were made in the presence of maps. The persons who gave us this kind of information are mentioned in the Acknowledgements.

INFORMATIZATION OF DATA

For the informatization of data the **dBase III Plus** of the operating system DOS was utilized. The data entered a database file that received the name "Ungulata", and a total of more than 8000 records was obtained. As the main interest of this database was the mapping of the distributions, a very restrict number of fields was created, as indicated below:

1. An alphanumeric field for the scientific name of the species according to the classification followed in the present document.
2. A numeric field with a code number to the species, according to its arrangement in the present document.
3. An alphanumeric field for the name (common or scientific) of the species or subspecies, as given by the author of the reference, in the case of bibliographic source.
4. An alphanumeric field for the author and date of the reference, in the case of bibliographic source.
5. An alphanumeric field for the main kind of the source (bibliography, museum specimens, personal communication, etc.).
6. An alphanumeric field for the locality name.
7. An alphanumeric field for the respective *locus* (see below, Mapping of distributions).
8. A memory field, for all relevant comments.
9. A logic field to signalise or not the existence of museum specimens supporting the reference.
10. An alphanumeric field for the acronym of the respective museum.

MAPPING OF DISTRIBUTIONS

The system generally used for Southern Africa countries to plot a locality in a distribution map assumes, in a first step, the superimposing of a grid of coordinate lines at 15' intervals upon the map. The area unit with 15' of latitude and 15' of longitude obtained by this grid is named a *locus*, which, for a country at the latitude of Angola, corresponds to a quasi-square with 110-105 km of side.

Each *locus* is signalised in registers by an alphanumeric code, with four digits followed by two letters. The four digits indicate the latitude and the longitude of the locality, in degrees, and correspond to the quasi-square with 1° side where the locality is situated; the other two symbols, a majuscule and a minuscule letters, indicate the corresponding subdivision of this quasi-square: the majuscule letter – *A, B, C or D* – refers to the quasi-square with 30' side resulting from the subdivision of the quasi-square with 1° side in four parts, from north to south and west to east; the minuscule letter – *a, b, c or d* – refers to the quasi-square with 15' side resulting from the subdivision of the quasi-square with 30' side in four parts, also from north to south and west to east.

In spite of based on the Angola's gazetteer by CRAWFORD-CABRAL & MESQUITELA (1898), the geographic coordinates of the localities in the present Atlas, and therefore their *loci*, were checked up and localities not listed in this gazetteer were searched out. For this search, the sheets of the *Carta Aerofotogramétrica de Angola* on the scale of 1:100.000, the *Fotomapa de Angola* and the *Esboço Cartográfico do Distrito de Cabinda* were utilized.

The process we used to plot the localities in the present maps was by the filling of such *loci*. Regions or localities not accurately determined were signalised in the map by circumferences with 30' of diameter, except when one or more *loci* are filled in the area covered by them. To code such a region, a circumference symbol (⊙) is interposed between the digits that indicate the degrees of longitude and latitude and the letters that follow the digits (for instance, the code 1513⊙Ac refers to a circumference with half a degree of diameter centered in the locus 1513Ac).

The Appendix is a report from the database "Ungulata" of the localities signalised for each species, ordered according to their *loci*.

ACRONYMS

AMNH – American Museum of Natural History, New York, USA.

BMNH – British Museum (Natural History), London, UK.

BZM – Berliner Zoologischen Museum

- CMNH** – The Carnegie Museum of Natural History, Pittsburgh, USA.
CZL – Centro de Zoologia, Instituto de Investigação Científica Tropical, Lisboa, Portugal.
FMNH – Field Museum of Natural History, Chicago, USA.
GM – Göteborger Museum, Göteborg, Sweden.
HSC – Herr Steinhart Collection.
IICA – Instituto de Investigação Científica de Angola – Centro de Estudos⁵, Lubango, Angola.
ISCED – Instituto Superior de Ciências da Educação, Universidade Agostinho Neto, Angola.
JMAT – Jardim-Museu Agrícola Tropical, Instituto de Investigação Científica Tropical, Lisboa.
KM – The Kaffrarian Museum, King William's Town, South Africa.
LM – Landesmuseum für Naturkunde, Münster, Germany.
Locle – Musée de Locle, Switzerland.
LRM – Lord Rothschild Zoological Museum (Tring Museum)⁶, Tring, UK.
MA – Museu de Angola, Luanda, Angola.
MB – Museu Nacional de História Natural - Zoologia (Museu Bocage), Lisboa, Portugal.
MCT – Missão de Combate às Tripanosomíases, Angola.
MCZL – Musée Cantonale de Zoologie, Lausanne, Switzerland.
MD – Museu do Dundo – Laboratório de Biologia, Dundo, Angola.
MHNC – Musée d'Histoire Naturelle, La-Chaux-de-Fonds, Switzerland.
MNHZP – Museu de História Natural – Zoologia, Universidade do Porto, Oporto, Portugal.
MNNG – Musée d'Histoire Naturelle de Genève, Switzerland.
MTKD – Staatliches Museum für Tierkunde, Dresden, Germany.
MZUC – Museu Zoológico da Universidade de Coimbra, Coimbra, Portugal.
Neuch. – Muséum d'Histoire Naturelle de Neuchâtel, Switzerland.
NHMSK – Natural History Museum, S. Kensington, UK.
PCM – The Powell-Cotton Museum (Quex Park Museum), Birchington, Kent, UK.
RMNH – Rijksmuseum van Natuurlijke Historie, Leiden, Holland
SMNH – State Museum – Natural History, Windhoek, Namibia.
ZMB – Museum für Naturkunde an der Humboldt Universität, Berlin, Germany.
ZMH – Zoologisches Institut und Museum, Universität Hamburg, Hamburg, Germany.
ZSM – Zoologischen Staatssammlung, München, Germany.

⁵ The Mammalogy and Ornithology Sections of the IICA are incorporated today in the ISCED.

⁶ Part of the BMNH.

ACKNOWLEDGEMENTS

The first author of the present document performed his functions as biologist in Angola between 1960 and 1975, in the *Instituto de Investigação Científica de Angola* (IICA), prospecting the mammal fauna of Angola and collaborating on studies of wildlife conservation. As the responsible for the Mammal Section of the IICA since November 1961, he directed numerous field trips for observation and collecting of zoological specimens, having relied upon the collaboration of several persons, whose endeavour, dedication and enthusiasm are acknowledged herein. As collectors and preparators, a special mention is deserved to Mr. **A. Paías Simões**, already a member of the Mammal Section of the IICA before 1961; his father, Mr. **A. Carreço Simões**, retired taxidermist of *Museu de Angola*; Mr. **Emílio Epalanga**, who entered the Mammal Section of the IICA in 1964; the assistants of preparation Mr. **Rafael** and, later, Mr. **João Francisco**; the drivers, who accompanied the field trips in different occasions, namely Mr. **Ferreira**, Mr. **Nóbrega**, Mr. **Loureiro** and Mr. **Sousa**; and, for their contribution though occasional, Mr. **Avelino Pereira** (in 1962) and Mr. **Leonel Sousa** (in 1969).

Acknowledgements referring to the time the first author was in Angola are extensive to many people outside the IICA, whose names are indicated bellow, with excuses for eventual omissions. In what concerns game rangers and other people related to Wildlife Conservation, who have accompanied the field trips of the Mammal Section of the IICA in protected areas, a mention should be made to Mr. **A. M. de Andrade** and to Mr. **José Alves**, chief-wardens of the Cangandala National Park and the Luando Strict Nature Reserve respectively; to Mr. **Tobias de Sousa Chato**, the man who discovered the giant sable in Cangandala; to Mr. **Armando Neto**, chief-warden of the Bicuar National Park, and his auxiliary Mr. **Napoleão**; and to Mr. **Tito Gouveia**, retired chief-warden of Iona National Park, and his son, Mr. **Abílio Gouveia**, the chief-warden at the time. All these people gave a large contribution to the present work with numerous data on distribution that were included in our database. We also want to acknowledge the generous receptions received from Mr. **S. Newton da Silva**, author of books on wildlife in Angola and a big friend; from the veterinary Dr. **Santos Pereira**, known through his excellent results in the breeding of karakul sheep in Angola, who disposed his settlements in Cacanda Farm and Pedra Grande to the IICA field trips; and to Eng^o. **Passos de Carvalho**, the director of Agronomic Station of Ndalatando, an area in which the Mammal Section of the IICA collected specimens in 1972.

Inquiries on distribution of ungulates included however many other people in Angola to whom these acknowledgements are extensive: Mr. **Hernâni Espinha**, manager of the former Mucusso Game Reserve; Mr. **Mário Marcelino**, who supplied

us with excellent data on the distribution of giraffe; Mr. **Pedro Luís do Carmo**, a business man in Sá da Bandeira (Lubango) and member of the District Game Commission of Huíla; Mr. **Coimbra Correia**, a retired hunter who gave informations concerning the fifties; Mr. **Manuel Costa**, from Mupa; Mr. **Tavares de Almeida**, from Cabuta; Mr. **João Dias**, from Soque; Mr. **David de Matos**, from Cuvelai; Mr. **Rolando Monteiro**, topographer in the Roads Brigade; Mr. **Soares Rodrigues**, policeman in São Lucas; and many other people, as Mr. **Diogo de Carvalho**, Mr. **Mendes Martins** and Mr. **Urbano**, whose circumstances are impossible to remember, forty years passed.

After returning to Portugal, in 1975, the first author breaks the continuity of his inquiries, only recovered about ten years ago, in partnership with the second author. This inquiry was achieved in the *Centro de Zoologia* of the IICT, by confronting with the maps of the *Carta Aerofogramétrica de Angola*. The following names are consequently added to the present Acknowledgements: Mr. **A. Peixoto**, game ranger who worked for long time at the Quissama National Park; Mr. **Fernando Costa**, of the same service, who surveyed the Iona National Park and other parts of Southern Angola; Mr. **Aleixo Costa**, elephants hunter, a man with a large experience on these animals; Colonel **Mello Machado**, author of important articles in the game revue *Diana*; Mr. **Roque de Pinho**, also collaborator of the same revue, who so kindly offered us his field book; Dr. **A. de Barros Machado**, retired Director of the Laboratory of Biology of the Museum of Dundo, who so gently offered us a copy of the manuscript by W. TRENSE, *Die Säugetiere Angolas*; Mr. **Luna de Carvalho**, of the same museum, who put his 1956-1975 reports at our disposal, with useful data about the specimens in the Dundo collections; Mr. **Coelho Balsa**, old chief-taxidermist of the *Museu de Angola*, who offered us a set of sketches of the specimens in this museum with important data about their origin; Eng^o. **Castanheira Diniz**, eminent soil specialist; Eng^o. **Cardoso de Matos**, botanist, expert on the vegetation of the protected areas of Angola; Eng^o. **A. Milho da Conceição**, former director of the Tchivinguiro Agriculture School, on the Huíla Highlands, now researcher of the IICT; Colonel Dr. **A. Bivar de Sousa**, who, as biologist, made field observations when detached in Angola; Mr. **Romeu Santos**, who travelled the Cuando-Cubango Province during a botanic survey, reported in the present series (*Est. Ens. Doc.*, no. 137); Mr. **Pedro Santos**, who accompanied Dr. Frade Expedition to Angola in 1957-59; Mr. **F. Machado** and Mr. **G. Machado**, former residents at Longonjo, in the Province of Huambo; Mr. **J. Santos Silva**, who offered trophies of specimens shot in Luiana to the Centro de Zoologia; Mr. **Hugo Seia**, a man with large experience in African fauna, for his reports and photos concerning Angolan larger mammals; and to Prof. Dr. **Brian Huntley**, for his precious offer of distribution maps, upon which we have improved those we were drawing up.

The Ungulate Fauna of Angola

The first author of the present document visited the Dundo Museum in 1995, and we are also grateful to Dr. **Felizardo Gourgel**, actual director of the museum, and to Dr. **Esteves Afonso**, who directed the Laboratory of Biology, for their precious assistance.

At last, but not the least, our particular thanks go to our colleagues Dr. **Ana Morgado** (*Centro de Fotogrametria*) and Dr. **Estrela Figueiredo** (*Centro de Botânica*), researchers of the IICT, for their kind help in proof-reading this document; to Mr. **Fernando Chaves**, professional photographer who travelled Angola for many years, for the permission to include his excellent images of Angolan fauna and landscapes in our next book on larger mammals of Angola, and to Eng^o **Pedro Vaz Pinto**, active member of the Kissama Foundation⁷, for his incentive and valuable contribution with new data to be included in a future work.

⁷ Environmental organization settled in Luanda, Angola

shot at Sacandica and Mocolu does attest (FRADE, 1933). The elephants observed not far from the northeastern boundary, particularly at Zovo and Cafunfo and near to the Cassai R., belong most probably to the same form.

Nothing can be warranted about intergradations or non-intergradations in northwestern Angola between bush and forest elephants. The elephants that were so common centuries ago in «Bamba», a province between M'bridge and Cuanza rivers (Filippo PIGAFETTA, 1591, based on the report of the Portuguese Duarte Lopes, who lived in the Kingdom of Congo in the sixteenth century), perhaps represent the savanna species (CRAWFORD-CABRAL, *in prep.*), as well as those of the Quiçama National Park, south of Cuanza R. (FRADE, 1956).

The bulk of the distribution area of the bush elephant in Angola is, nevertheless, the south. Years ago its range covered the littoral from Benguela to Cunene R., and, although absent from most of Namibe Province, it was rather common on the bottoms of the Chela scarp and along the northern border of the Cunene R.; much possibly, it belonged to the same population of desert elephant that still occurs in Namibia. From there, it extended to all inland country south of parallel 13° S just to the Zambian border, and it was in the sixties rather common in the Cuando-Cubango Province and in recovering in the Bicuar National Park. It occurred also in the east, in the Alto Zambeze and in an isolated area between Lucusse and Chipoque (Moxico Province)

There is also notice of the occurrence, in north of the Zaire Province, of a pygmy elephant with no more than 2 meters high, known amongst Portuguese hunters by the name "trombeteiro", who distinguish it from the authentic forest elephant. It possibly represents *Loxodonta pumilio* (Noack, 1906), but there is no certainty if it is a separate species or an extreme form of *cyclotis*.

The present status of the elephant in Angola is unknown, but it is foreseen a strong decline of their numbers throughout its potential range, with high indexes of population decline (until to 90%) in some areas, as for instance in Quiçama, Bicuar and Iona National Parks, or even its full extinction in other regions. In what concerns total numbers, it is thought to exist 10 000-50 000 elephants in the country (ANSTEY, 1991). HALL-MARTIN & PIENAAR (1992), based on extrapolations from aerial and terrestrial counts in 1989, esteemed a population of 23 344 animals for the southeast, namely for the Cuando-Cubango Province. This population is the one which offers the best viability at median term. ANSTEY (1993) esteemed a population between 1000 and 10 000 animals for the whole country, and SAID *et al.* (1995) a total of 8170, with many doubts about its viability, taking into account the military situation in Angola at the time.

According to ANSTEY (1993), elephants have been found in the last years both in Cabinda (Maiombe) and in the forests of Zaire, Uige, Malange, Cuanza

Norte and Lunda Norte Provinces. The population number in the Quiçama National Park decreased from 800 in 1975 to 100-150 in 1992, and a ONG program for reintroduction of these animals from South Africa is at moment (2001) in course. They have also recently been observed in the Moxico Province south of Cazombo (1992), where it is thought they cross between Zambia and Angola. Small groups have also been found in the southwest of the country, in Benguela (Coporolo area) and Cunene Provinces, near to the Namibia border, and, inwards, in Bicular and Mupa Parks, where large groups were observed (JUSTE & CARBALLO, 1992; ANSTEY, 1993). For the neighbouring of Cunene R., contests due to crop destruction by elephants have been referred to. Near the southern border, more specifically between Cunene and Cuando-Cubango Provinces, migrations have been signalized after the rains of April/May from Namibia to Angola; likewise, moving of elephants between Angola, Namibia and Zambia are said to occur at Rivungo, Mavinga and Dirico districts (Cuando-Cubango Province), the area of Angola with the larger concentration of these animals (ANSTEY, 1993).

Order Perissodactyla

Family Rhinocerotidae

Diceros bicornis (Linnaeus, 1758)

Black Rhinoceros

Map 7

Portuguese name: *Rinoceronte preto* .

Names in national languages of Angola: *Fumé* – Cusso [STATHAM, 1922; SHORTRIDGE, 1934; TRENSE, 1959]; *Kevukevu* – Quioco [STATHAM, 1922]; *Mpanda* – Ganguela [MONARD, 1935; TRENSE, 1959]; *Ochimanda*, *Ochiputya* – Umbundu [GUENNEC & VALENTE, 1972]; *Ocimanda* – Umbundu [STATHAM, 1922; MONARD, 1935; TRENSE, 1959]; *Ompala* – Cuvale [Newton da SILVA, 1970]; *Ompanda* – Ambó [SHORTRIDGE, 1934], Cuvale [N. da SILVA, 1970]; *Omphala* – Olunyaneka [BONNEFOUX, 1941]; *Ongáva* – Chimba [N. da SILVA, 1970], Ambó [SHORTRIDGE, 1934]; *Quimanda*, *Simpanda* – sem indicação de dialecto [GALVÃO *et al.*, 1943.45]; *Xei* – Bochimane [TRENSE, 1959].

The Ungulate Fauna of Angola

It is today an extremely rare animal and its distribution, as given below, corresponds to rather old data, many of them with more than half a century. The subspecies here mentioned are based on cranial measurements and its validity is under discussion.

The distribution of the black rhinoceros in Angola had a rather discontinuous range, with a western population in the Namibe and Cunene Provinces, and an eastern population in the Cuando-Cubango Province. The larger number of data proceeded, in the Namibe Province, from the foots of Chela, between Curoca and Giraul rivers, and from the border of Cunene R., in the south of the Iona National Park; in the Cunene Province, they proceed from Otchinjau, Oncócuá and Ruacana, west of Cunene R., and Mupa and Chimporo, east of the same river. The range of the species extended even, on the littoral, to north of Giraul R. as it can be concluded from references in literature over its presence in Mamue, at north of the Namibe Province (SEIA, 1995), and in Cavaco R., at Benguela Province (GALVÃO & SELVAGEM, 1952). According to the classification followed by ANSELL (1974), this western population is referable to *Diceros bicornis minor* (Drummont, 1876), a subspecies with a larger range, covering, until recently, a great part of South Africa, Zambia, Mozambique and southern Tanzania.

The eastern population was restricted to the area between Cuito and Cuando rivers (Cuando-Cubango Province), with larger concentrations in former Mucusso and Luiana Game Reserves. When compared with the rhinoceros of Namibe and Cunene Provinces, those of Cuando-Cubango Province were classified in a different subspecies – *Diceros bicornis chobiensis* Zukowsky, 1964. According to ANSELL (1974), this subspecies is restricted to the southeastern Angola, being, therefore, an isolated population surrounded at west, east and south by populations of *minor*.

The black rhinoceros was already a very rare animal in the southwest of Angola a long while ago. In the last century seventies there were only residual populations in the Iona National Park (30 rhinos), in the Namibe Partial Reserve (10 rhinos) and in the Tchimporo area (30 rhinos); in southeast, mainly in Luengue e Mucusso areas, a population with about 100 animals did still exist in the seventies, being the total population of Angola, at the time, of about 500 animals (HUNTLEY, 1973c). The situation did aggravated in the following decades in a very dramatic way: no more than 300 rhinos existed in 1980 in the all country and their number fall to 90-50 between 1984 and 1991 and to 10 in 1993. The species was given as extinct in Angola in 1997 (EMSLIE & BROOKS, 1999), but it is possible that some individuals had survived in the extrem southeast.

Ceratotherium simum (Burchell, 1817)

White Rhinoceros

No map

Portuguese name: *Rinoceronte branco*.

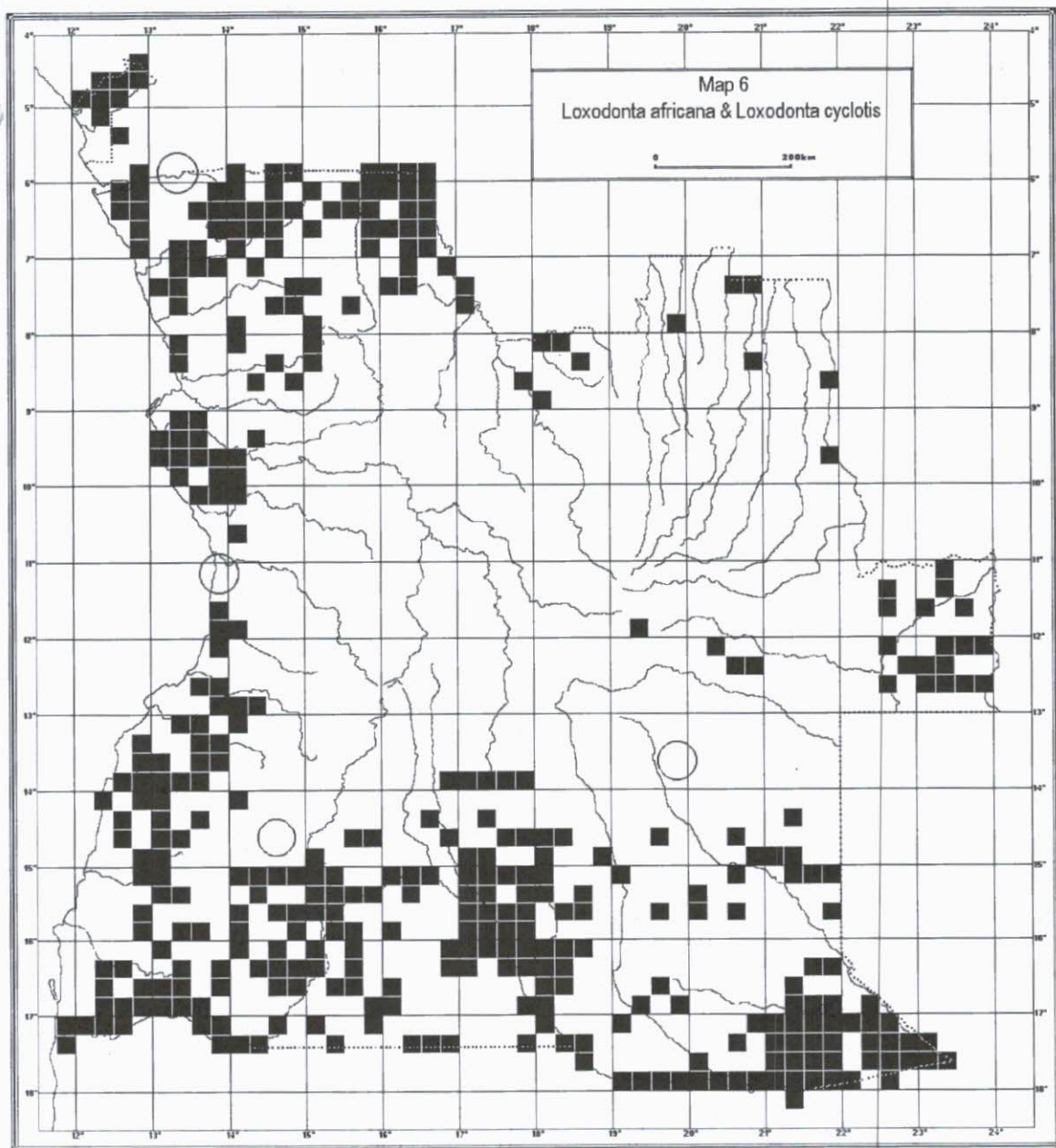
Name in a national language of Angola: *Gava* – Loengi, R. Cuando [STATHAM, 1926]

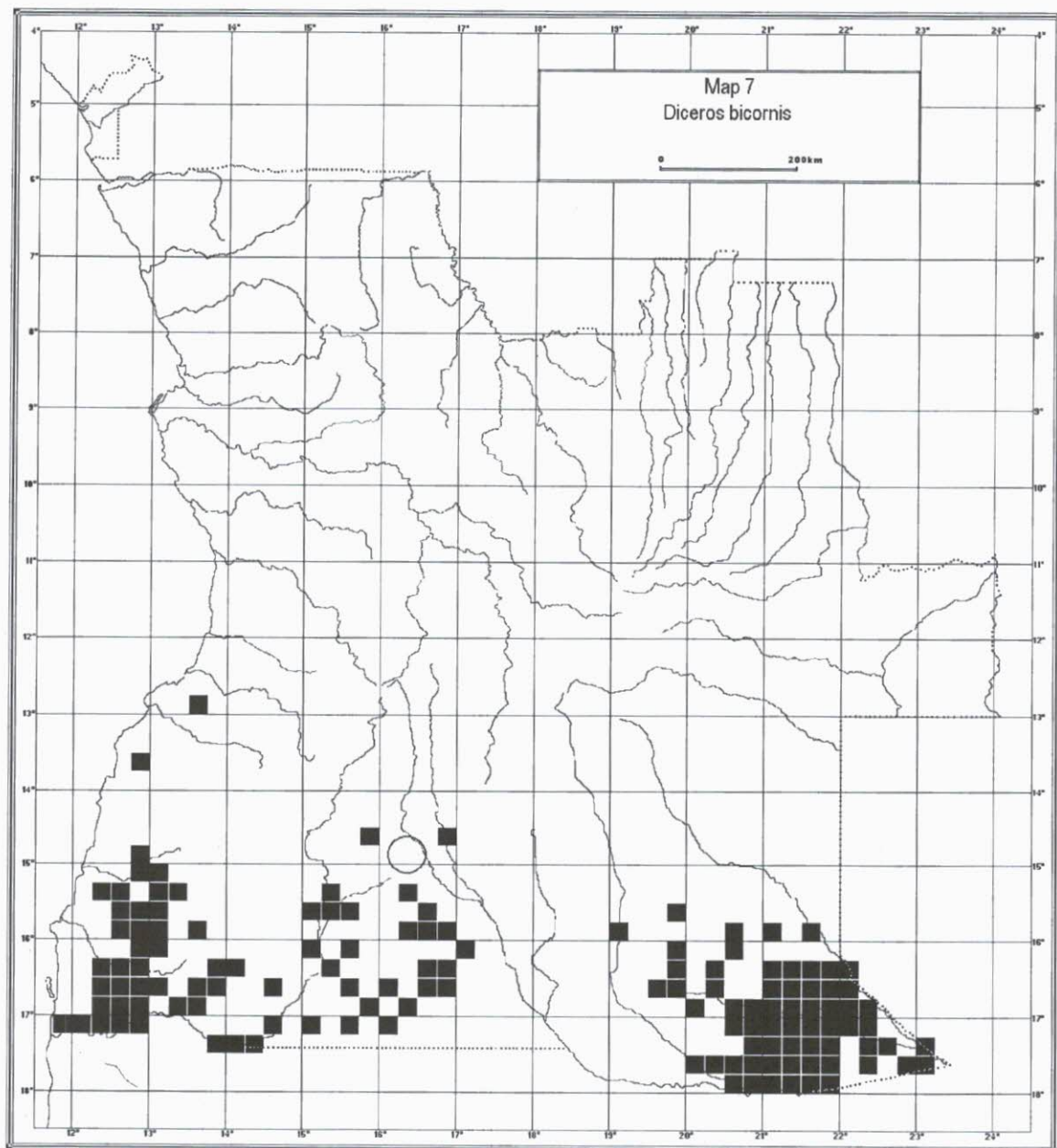
The white rhinoceros was regarded by SHORTRIDGE, in 1934, as extinct in South West Africa and, in 1941, HILL & CARTER referred that it was undoubtedly extinct in Angola, an opinion corroborated by Newton da SILVA (1958), who called into question a notice appeared in the newspapers in 1954 over the discovery of tracks of this animal in Angola. However, it seemed to have existed between Cuando and Cubango rivers, in the Cuando-Cubango Province, southeastern Angola. Its localizations are, however, rather difficult to accurately plot according to the $\frac{1}{4}$ square degree locus system used in present paper and, therefore, no map is given.

The mentions of the white rhinoceros for Angola, all of them founded only on indicia, go back to SCHULZ & HAMMAR (1877), ZUKOWSKY (1924), STATHAM (1926) and WILHELM (1933). If SCHULZ & HAMMAR reported the white rhinoceros as plentiful in Luiana, in the southeastern corner of Angola, ZUKOWSKY, about fifty years later, referred it as a very rare animal in the same area. An interesting report over the attempts of discovering this animal was presented by STATHAM (1926, page 264): "The chief Likoma of the Loengi told me he had killed several, the last quite a dozen years before, and that they were called Gava, and well known as distinct from the black variety, which were known as Fumé. They were formerly found on the Loengi, Kwando and between that river and the Kubango, and to the south and south-west of that river. Schultz and Hammar met white rhino spoor on the lower Kwando (south of the Loengi junction) as late as 1884. Though persistently searching for white rhino, I never saw any trace of them". This animal seems really extinct in Angola in that time, and a notice of the discovery in 1959 of a spoor in the Mucusso hunting reserve (PIRELLI, 1964) was not confirmed with any photo.

In spite that the white rhinoceros was never recorded for any other part of Angola, a couple of these animals were introduced in the Quiçama National Park in 1969. They have reproduced and survived at least to the day when Angola became independent.

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- | | |
|---|--|
| (? Locus) Novo Guibunguiça (Vasconcelos, 1924) | (? Locus) Maquela do Zombo e R. Cugo (Frade, 1933) |
| (? Locus) R. Quelo (Aleixo Costa, 1999) | (? Locus) Cuatir (Seia, 1995) |
| (? Locus) R. Cubango (Monard, 1935) | (? Locus) R. Cuito, baixo (Statham, 1926) |
| (? Locus) R. Luengue, maregens (Roque de Pinho, 1964) | (? Locus) Cabinda, distrito de (Granado e Serrano, 1959) |
| (? Locus) Luengue, coutada do (Bravo, 1974) | |

(*) Localidade típica de *Loxodonta africana angolensis* Frade, 1933

Ordo Perissodactyla

Fam. Rhinocerotidae

Diceros bicornis (Linnaeus, 1758)

- | | |
|--|--|
| 1213Dc R. Cavaco, curso superior (Galvão & Selvagem, 1952) | Bumbo (Trense, 1959; ZMH) |
| 1312Db (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.) | 1513Ac R. Aryona, afluente do (Fenykovi, 1958) Ponta do Hoque (limite NE da distrib.) (Newton da Silva, 1944-46) |
| 1412Dd Munhino ("muito raro")(Granado. & Serrano, 1959) | 1513Ad Cahinde (abundante) (Newton da Silva, 1944-46) Caine (P. Teixeira, P., 19459) Caine Djambaitai (Granado & Serrano, 1959) Cahinde, posto (Brandão de Melo, 1931) |
| 1415Db Dongo (junto ao R. Colui) (Statham, 1922) | 1513Ca Tchitavangua (Newton da Silva, 1944-46) Vau (Newton da Silva, 1944-46) |
| 1416Db R. Cuchi e ca. povoação do Cuchi (Statham, 1922) | 1513Cc Capalonga e Capacalombo (Newton da Silva, 1944-46) |
| 1512Ad (mapa de distribuição da espécie em Angola) (Huntley, in litt.) | 1513Dc R. Bero, source (Statham, 1922) R. Bero, nascentes (Galvão et al., 1943-45) |
| 1512Bb Cuanhanque, morro (limite NE da distrib.) (Newton da Silva, 1944-46) Hapa (Newton da Silva, 1944-46) Huimba, serra (Newton da Silva, 1944-46) 20Km N. do rio Sayona (Fenykovi, J., 1958) Tchicolangira (observado rasto) (Observação de campo IICA, 1961) | 1515Ad Onquenha (extinguiu-se em 1959) (H. Espinha, com. pess.) Luanganda, rápidos do (Statham, 1926) Espinheiros, rio dos (Statham, 1926) |
| 1512Bc (mapa de distribuição da espécie em Angola) (Huntley, in litt.) | 1515Ca Mulondo (Serrano, 1963) Mulondo (Granado & Serrano, F.E.L., 1959) |
| 1512Da Pico do Azevedo (Observação de campo IICA, 1968) | 1515Cb (mapa de distribuição da espécie em Angola) (Huntley, in litt.) |
| 1512D Virei, Curoca Norte (Newton da Silva, 1944-46) | 1515Cd Mupa, a 2 dias de marcha NW. (Delachaux & Thiebaud, 1934) |
| 1512Dc (mapa de distribuição da espécie em Angola) (Huntley, in litt.) | 1515Da Mui, região (Monard, 1935) |
| 1512Dd Caporopopo (limite W da distrib.) (Newton da Silva, 1944-46) | 1516Ad Chivoio (Baixo Cunene) (Serrano, 1963) |
| 1513Aa Macuala (observado rasto) (Observação de campo IICA, 1966) Tchamiombo (abundante) (Newton da Silva, 1944-46) Bumbo (Zukowsky, 1964; GM) | 1516Cd Ongolo (H. Espinha, com. pess.) Ongolo (M. Marcelino, com. pess.) Mupende, mulola (H. Espinha, com. pess.) |

- 1516Dc (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1516Dd Câmue (H. Espinha, com. pess.)
Câmue (D. Matos, com. pess.)
Manácuá, mulola (afil. mulola Cunene) (H. Espinha, com. pess.)
Manácuá, mulola (D. Matos, com. pess.)
- 1519Cc Chitengue (L. Simões, 1954)
Chitengue, anhara (Almeida, 1954)
- 1519Db Konsumbia (Zukowsky, 1964; **ZMB**) (*)
- 1520Dc Mavinga, 30Km E. (estrada) (Fenykovi, 1958a)
- 1521Cc (in Carta de Angola 1:100 000) (Milho da Conceição)
- 1521Dc N'riquinha, quartel (Romeu Santos, com. pess.)
- 1612Ad R. Karmujamba, para damba Cariata (Fenykovi, 1958a)
Charojamba, rio Curoca (Baptista et al., 1930)
(in Carta de Angola 1:100 000)
(Fernando Costa)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1612Bb R. Rutura (Lutula) (Zukowsky, 1964; **GM**)
- 1612Bc R. Curoca, entre S. Bento e Gargante do Diabo (Capello. & Ivens, 1886)
Otechipengo (Fenykovi, 1958a)
Pediva (Fenykovi, 1958a)
Pediva (Observação de campo IICA, 1963)
Pediva (abundante) (Newton da Silva, 1944-46)
Pediva, a sul (atravessado o Curoca) (Fenykovi, 1958a)
Otchifengo, Curoca (Serrano e Andrade, 1973)
Ocompala (Martins, 1950)
(in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
Pediva (Trense, 1959)
- 1612Bd Ovituriqua (=Nontulicua) (abundante) (Newton da Silva, 1944-46)
- 1612Cb Espinheira (Tito Gouveia, com. pess.)
(in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1612Cd Rinos, vale dos (Tito Gouveia, com. pess.)
(in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
- Rinos, garganta dos (Martins, 1998)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1612Da R. Muende (limite W da distrib.)
(Newton da Silva, 1944-46)
Otchifengo, serra do (Martins, 1950)
(in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1612Db Otchissengo (abundante) (Newton da Silva, 1944-46)
Otchifengo, sopé da montanha (Quidecamaupe) (Martins, 1950)
(in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1612Dc Biquissemo (abundante) (Newton da Silva, 1944-46)
Cambembo (limite W da distrib.)
(Newton da Silva, 1944-46)
Iona (limite W da distrib.) (Newton da Silva, 1944-46)
Iona, posto (Fenykovi, 1958*)
Biquecemo (Huntley, 1974)
(in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
Biquessemo (Junior, 1948)
Iona peak (Broom et al., 1974)
Iona (Granado & Serrano, 1959)
(in Carta de Angola 1:100 000) (Cardoso de Matos, com. pess.)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1612Dd Tido (Huibregtse, 1976 [trad.], apud descript.)
(in Carta de Angola 1:100. 000)
(Fernando Costa, com. pess.)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1613Aa Vilui (abundante) (Newton da Silva, 1944-46)
Virui, a 40 km do acamp. (Lima, 1952)
Virui (Zukowsky, 1965; **GM**) (**)
Olundo, Serra da Chela (J. A. Ferreira, 1989)
Virui (P. Teixeira, 1945)
Curoca-Norte (Granado & Serrano, 1959)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)

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- 1613Bd Otchinjau, partes superiores (Statham, 1922)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1613Ca Ovipaca (abundante) (Newton da Silva, 1944-46)
(in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
Ovipaca (Junior, 1948)
- 1613Cd Oncoina (Fenykovi, 1958a)
(Percurso do dia 8 de Agosto) (Artur de Paiva, in Sousa Dias, 1938)
- 1613Da Nguerengue, serra (Newton da Silva, 1958)
- 1613Db (Percurso do dia 19 de Setembro) (Artur de Paiva, in Sousa Dias, 1938)
Otschinjau (Trense, 1959)
Otchinjau (Galvão et al., 1943-45)
- 1613Dc Rio dos Elefantes (Newton da Silva, 1958)
- 1614Ac Caculovar e Otchinjau, entre (Statham, 1922)
Caculovar e Otchinjau, entre (Galvão & Selvagem, 1952)
- 1614Da Belavela (Capello & Ivens, 1886)
- 1615Aa R. Cunene, margem esq^a. (frente a Quiteve) (Capello & Ivens, 1886)
- 1615Ad Cunene, margem a norte do Cafu (Brandão de Melo, 1931)
- 1615Ba Mupa (Galvão & Selvagem, 1952)
Mupa (Sieiro, 1974)
- 1615Da Evale (Granado & Serrano, 1959)
Evale (Brandão de Melo, 1931)
- 1615Dd Kafima, região (Monard, 1935)
Cafima (Galvão & Selvagem, 1952)
Cafima (Galvão et al., 1943-45)
- 1616Bc (in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
- 1616Bd (in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
Chimporo (Galvão et al., 1943-45)
- 1616Ca Nehone (Granado & Serrano, 1959)
- 1616Cd (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1616Da (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1616Db (in Carta de Angola 1:100 000)
(Fernando Costa, com. pess.)
- 1617Aa Chimporo, alto do (Monard, 1930; **MHNC**)
Tchimporo (Galvão & Selvagem, 1952)
- 1619Bb R. Luancundo, próx. nascente (L. Simões, 1954)
- 1619Bd R. Luancundo, a 30Km S da nascente (L. Simões, 1967)
- 1619Da Luengue, entre o 1^o e 2^o acampamentos (Eça de Queiroz, 1965)
- 1619Db R. Luengue, próximo da nascente (L. Simões, 1954)
- 1620Ad Mavinga, a 75Km de (area dos Vasekele) (L. Simões, 1967)
- 1620Ba R. Vasseque (L. Simões, 1967)
- 1620Cb R. Luengue, a norte do Mucusso (Fenykovi, 1958a; **JMAT**)
(in Carta de Angola 1:100 000) (Milho da Conceição, com. pess.)
Luengue, 2^o acampamento móvel do (Eça de Queiroz, 1965)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1620Cc R. Lumuna, próx. das nascentes (L. Simões, 1954)
- 1620Dc (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1620Dd (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1621Ac R. Luangundo, 12-20 km confl. d/ R. Utembo (Aleixo Costa, com. pess.)
- 1621Ad R. Utembo (L. Simões, 1967)
R. Luangundo, confl. c/ R. Utembo (Aleixo Costa, com. pess.)
- 1621Bc R. Uefo (L. Simões, 1967)
R. Luangundo, 25 km E confl. c/ R. Utembo (Aleixo Costa, com. pess.)
- 1621Bd R. Uefo, 20Km W Missão de Santa Cruz (Amaro, 1950)
- 1621Ca R. Canga, nascentes do (Aleixo Costa, com. pess.)
- 1621Cb Canga e Utembo, entre os rios (Aleixo Costa, com. pess.)
- 1621Cc Machivi e Tjisingue, entre os rios (Fenykovi, 1958b)
Machive-Candombe e R. Luengue, entre (Aleixo Costa, com. pess.)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1621Cd Chimbuaco-buaco, embala (L. Simões, 1954)
R. Luengue, a norte da lagoa Mangorovera (Fenykovi, 1958b; **JMAT**)
R. Luengue, acampam.^{to} 15Km a jusante (Fenykovi, 1958b)
R. Luengue e Candombe-Canga, entre (Aleixo Costa, com. pess.)

- (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1621Da Utembo e Luangundo, 30 km SE confluênc. (Aleixo Costa, com. pess.)
- 1621Db Chamavera, lagoa (Aleixo Costa, com. pess.)
- 1621Dc Cambungo, margem esq^a. do R. Luengue (L. Simões, 1967)
- Luengue, mulola Nota (Fenykovi, 1958b)
- Ripaco, lagoa(126Km NE do início da picada) (Fenykovi, 1958b)
- Chanyanga, lagoa (Fenykovi, 1958b)
- R. Luengue, acamp.^o 31Km a jusante (Fenykovi, 1958b)
- R. Luengue, acamp.^o 20Km a jusante (Fenykovi, 1958b)
- Candombe e Luengue, 15 km W da confl. (Aleixo Costa, com. pess.)
- 1621Dd Caromo, quimbo (Aleixo Costa, com. pess.)
- 1622Ac Santa Cruz do Cuando, missão (Roque de Pinho, 1956)
- 1622Ca R. Uefo, junto à estrada de Santa Cruz (L. Simões, 1967)
- 1622Cc Luongue, mulola (nas lagoas) (H. Espinha, com. pess.)
- 1622Cd Chipunde (J.A. Ferreira, J.A., 1989)
- 1711Bb R. Cunene, 18Km a montante da foz (C.R. Machado, 1923)
- R. Cunene, 15Km a montante da foz (Faria e Maia, 1929)
- 1712Aa (in Carta de Angola 1: 100 000) (Fernando Costa, com. pess.) (in carta geográfica) (Gondis, 1897)
- 1712Ab (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1712Ba R. Cunene, até ao meridiano de Cambeno (Newton da Silva, 1944-46)
- Caiombo (Jarvis, 1968)
- Okomandchaihe, a este de (Jarvis, H.G., 1968)
- Caiombo (Huibregtse, 1976 [trad.]) (in Carta de Angola 1:100 000) (Fernando Costa, com. pess.) (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1712Bb (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1713Bd Chitado (Sieiro, 1974)
- Chitado (Granado & Serrano, 1959)
- Chitado (Newton da Silva, 1970)
- Chitado (Trense, 1959)
- Chitado (Galvão et al., 1943-45)
- 1714Ac Ruacanã e Chitado, entre (Galvão & Selvagem, 1952) (in carta geográfica) (C.R. Machado, 1926)
- Ruacanã, quedas do, 15Km a jusante das (Faria e Maia, 1929)
- Ruacanã (Galvão et al., 1943-45)
- 1714Ad (in carta geográfica) (C.R. Machado, 1926)
- 1714Ba Naulila ("raro") (Granado & Serrano, 1959)
- Donguena (Trense, 1959)
- 1715Aa Cuamato (Brandão de Melo, 1931)
- 1715Ba Cuanhama (Brandão de Melo 1931)
- 1716Aa Ondue, mulola (D. Matos, com. pess.)
- 1720Ba Sacachai (L. Simões, 1967) (in Carta de Angola 1:100 000) (Milho da Conceição, com. pess.) (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1720Bb Tondo, mulola (Seia, 1999) (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1720Bd Sacaxi e Calonga , entre (Eça de Queiroz, 1965)
- 1720Ca R. Mapango (Aleixo Costa, com. pess.)
- 1720Cb R. Chaluxaxe, nascentes (Aleixo Costa, com. pess.)
- 1720Da R. Bandua, nascentes (Aleixo Costa, com. pess.)
- 1720Db Dirico, 50 km NE (Aleixo Costa, com. pess.)
- 1720Dc R. Cuito, 10-12Km do Dirico (Netto, 1959)
- Cuito e Cubango, próx. da confl. dos rios (Statham, 1924)
- R. Cuito, a poucos Kms da passagem (Dirico) (Fenykovi, J., 1958b)
- Dirico, a 12Km de, confl. Cuito-Cubango (Netto, J., 1966)
- R. Cuito, 20 milhas a N de Dirico (Statham, 1926)
- 1720Dd Dirico (Granado & Serrano, 1959) (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1721Aa R. Lumuna (L. Simões, 1967)
- R. Lumuna e mulola Tondo (H. Espinha, com. pess.)
- Muino, zona do rio Lumuna (L. Simões, 1954)
- Tondo-Mucusso (Seia, 1995) (mapa de distribuição da espécie em Angola) (Huntley, in litt.)

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- (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Ab Boloca (H. Espinha, com. pess.)
Samatengue (Mucusso) (Seia, 1995)
Kalonga, acampamento (Mucusso) (Seia, 1995)
Samatengue, lagoa (Fenykovi, 1958b)
Samatengue (Seia, 1999)
Kalonga, acampamento (Seia, 1999)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Ac (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Ad Emeka (Fiuzza, 1956)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Ba Luengue e R. Nota (H. Espinha)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Bb (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Bc (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Bd (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Ca (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Cb Chimparanda, região (40-90Km N. Mucusso) (Fenykovi, 1958a)
Chimbaranda, 40Km a N do 1º acampamento (Fenykovi, 1958b)
Mucusso, 50 km N (Aleixo Costa, com. pess.)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Cc Garo, quimbo (Galvão, 1941)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Cd Mucusso, posto (Fenykovi, 1958b)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Da Mucusso, 50 km NNE (Aleixo Costa, com. pess.)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Db (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Dc (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- (In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1721Dd Kaschi (Zukowski, 1964; **ZMB**)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.)
- 1722Aa (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1722Ab (mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1722Ad R. Loengi, 3º acampamento (Statham, 1926)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.)
- 1722Bc Likoma (Statham, 1924)
- 1722Cb Buabuata, 25 km NNW do acamp. da (Aleixo Costa, com. pess.)
- 1722Db Macumucha, nascentes (Aleixo Costa, com. pess.)
- 1723Ac R. Luiana, confluência c/ o R. Cuando (Aleixo Costa, com. pess.)
- 1723Ca Luiana, coutada (Bico sul) (J.A. Ferreira, 1989)
Samacuio, lagoa (Aleixo Costa, com. pess.)
- 1416⊙Ad Artur de Paiva, conelho ("raro")
(Granado & Serrano, 1959)
- 1515⊙Dc Mupa (Galvão et al., 1943-45)
- 1520⊙Cd Mavinga, conelho (Granado & Serrano, 1959)
- 1613⊙Cb Oncocua, conelho (Granado & Serrano, 1959)
- 1613⊙Cc Iona-Oncócuá, trajecto (Fenykovi, 1958*)
- 1613⊙Dd Muchimbas, região (J.R. Soares, com. pess.)
- 1616⊙Ba Mulola Cunene (D. Matos, com. pess.)
- 1620⊙Bc R. Luacundo (L. Simões, 1967)
R. Luacundo, região banhada pelo (L. Simões, 1953)
- 1621⊙Bc Utembo, margens (coutada do Luiana) (Roque de Pinho, 1964)
- 1621⊙Ca R. Candombe (H. Espinha, com. pess.)
- 1720⊙Ba R. Lumuna, região banhada pelo (L. Simões, 1953)
- 1721⊙Bc R. Luengue (L. Simões, 1967)
- 1722⊙C Mucusso, coutada a sul (picada de fronteira) (H. Espinha, com. pess.)
- (? Locus) R. Cuito, baixo (Statham, 1921)
- (? Locus) Cubango, curso superior (Statham, 1922)
- (? Locus) Tchibombo (R. Lujana) (Wilhelm, 1938)
- (? Locus) R. Cuengue, toda a região banhada pelo (Luís Simões, 1953)

(*) Localidade típica de *Diceros bicornis chobiensis* Zukowski, 1964

(**) Localidade típica de *Diceros bicornis angolensis* Zukowski, 1964

Ceratotherium simum (Burchell, 1817)

- | | | | |
|-----------|--|-----------|---|
| 1621⊙Dc | Loengi, R. Cuando [Statham, 1926] | (? Locus) | Ao longo do R. Cuando [Wilhelm, 1933] |
| 1721⊙Bb | R. Cuando, a sul da confl. c/ o Loengi
[Shulz & Hammer, 1884] | (? Locus) | Mata do Tshombe, junto ao Luiana
[Statham, 1926] |
| (? Locus) | <i>Ambas as margens do R. Cubango</i>
[Wilhelm, 1933] | (? Locus) | Para sul e sudeste do R. Cubango
[Statham, 1926] |

Fam. Equidae

Equus zebra Linnaeus, 1758

- | | | | |
|--------|--|--------|---|
| 1213Dd | Reserva Parcial do Búfalo (L. Simões, 1973) | 1512Bb | R. Monhino, behind Mossamedes (Statham, 1926) |
| 1214Ca | R. Catumbela, a N do Cubal (Trense, 1959) | 1512Ca | Hikia, damba da (Newton da Silva, 1944-46) |
| 1312Bc | Baía dos Elefantes (Blaine, 1922; BMNH)
Baía dos Elefantes (Statham, 1926)
Baía dos Elefantes (Shortridge, 1934)
Baía dos Elefantes (Newton da Silva, 1942) | 1512Cb | Zebra Hills, 80 milhas a SE de Moçamedes (Statham, 1926)
(in Carta de Angola 1:100 000 (Cardoso de Matos, com. pess.) |
| 1312Bd | Baía dos Elefantes, 12 mi SE (in registo BMNH)
(In Carta de Angola 1: 100 000) (Hugo Seia, com. pess.) | 1512Cc | R. Coroca, 50 km E Port Alexander (Thomas, 1900) |
| 1312Dc | Lucira (Newton da Silva, 1942) | 1512Da | Pico Azevedo, 57Km SE Moçamedes (Hill & Carter, 1941; AMNH) |
| 1313Ac | Baía dos Elefantes, 30 mi. interior (Blaine, 1922?)
Baía dos Elefantes, 20 mi. SE (Blaine, 1922; BMNH)
Baía dos Elefantes, 20 mi. interior (Blaine, 1922; BMNH) | 1512Dc | Camilungo (Observação de campo IICA, 1963) |
| 1313Bc | R. Coporolo, a S de Catengue (Trense, 1959) | 1512Dd | Capolopopo (Trense, 1959; ZMH) |
| 1313Cc | Mamue (Seia, 1995) | 1513Ad | Cahinde (Trense, 1959) |
| 1412Ad | Moçamedes, 130Km N (Shortridge, 1934)
Damba do Chapéu Armado (Newton da Silva, 1942)
R. Chapéu Armado (Newton da Silva, 1944-46)
São Nicolau, morro de (Newton da Silva, 1944-46) | 1612Ab | Furnas (Moçamedes) (A.P. Simões, 1971) |
| 1413Ab | Mundas do Hambo (Serrano e Andrade, 1973) | 1612Ad | R. Karmujamba e Damba Cariata, entre (Fenykovi, 1958a)
Techidiva (Observação de campo IICA, 1963)
Maculungo (Observação de campo IICA, 1971)
Charojamba (Tito Gouveia, com. pess.) |
| 1512Ac | Morro Preto, planícies do (Newton da Silva, 1944-46) | 1612Bb | Bero e Curoca (entre os rios), 40-100milh.S Monhino (Statham, 1926) |
| 1512Ad | Morro Preto (Newton da Silva, 1944-46) | 1612Bc | Pediva (Missão Geográfica de Angola, 1958) |
| 1512Ba | Providencia, 70 km NE Mossamedes (Thomas, 1900; BMNH) (*)
Providência (F.C.D. Carvalho, 1904) | 1612Ca | (in Carta de Angola, 1:100 000) (Fernando Costa, com. pess.)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.) |
| | | 1612Cb | (in Carta de Angola, 1:100 000) (Fernando Costa, com. pess.)
(mapa de distribuição da espécie em Angola) (Huntley, in litt.) |
| | | 1612Cc | (in Carta de Angola, 1:100 000) (Fernando Costa, com. pess.) |

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