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Donald Menzel

The Peterson Identification System

The system of identification in this Field Guide is based on the original system devised by Roger Tory Peterson, which emphasises comparative patterns and makes use of arrows to point out the most important field marks.

A FIELD GUIDE TO THE LARGER MAMMALS OF AFRICA

Jean Dorst and Pierre Dandelot

with 44 colour plates

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are destructive feeders, often uprooting a tree to collect just a few leaves. Very voracious, they consume from 400 to 600 lb. of fodder per day. They collect food with their trunk, an exquisitely sensitive organ adapted for use as a hand.

Elephant, like many other animals, are also very fond of certain mineral salts, and periodically go to salt-licks where they dig out earth with their tusks and swallow it in considerable quantities (? purgative and anti-parasite).

Elephant apparently breed all the year round. There is no connection between the activity of special glands in the side of the head, discharging an oily product ('musk glands') and breeding condition; this discharge occurs periodically in both male and female, and even in the young. Mating fights are rare, most of the fights being made for mastery of a herd. The period of gestation is 22–24 months. When calving, the expectant mother generally leaves the herd with one or two other females and retires to a quiet spot where birth takes place. They rejoin the herd a few days later, when the calf is strong enough to follow the adults. At birth the calves weigh about 270–300 lb. and are a little under 3 ft. high at the shoulder. They are very playful. The maternal instinct is very strongly developed for the mother takes great care of her offspring. The calving interval is about four years.

Elephant are weaned at two years old, and grow until 25 years, sometimes longer; tusks continue to grow later and the cheek-teeth are replaced in a peculiar manner. Elephants reach puberty at about 10–12 years, and full maturity at 18 or more. The normal life span is 60–70 years, some individuals may live longer, possibly up to 120 years. The 'elephant cemeteries' are a myth and remains of dead may be found everywhere through the bush, especially near water where sick animals gather.

Adult elephant have no natural enemies, but young may be attacked by Lions.

ORDER Perissodactyla
(Odd-toed Ungulates)

ASS, ZEBRA: Equidae

Horse-like hoofed mammals, characterised by the reduction of the number of toes to one (adaptation to fast motion on hard soil). Zebra, the only striped Equidae, are confined to Africa, as are the Wild Ass. Wild horses and forms intermediate between horses and asses are found in Asia. All of them are animals of open habitat, sometimes even desertic.

WILD ASS *Equus* (*Asinus*) *asinus* L. p. 141
F Ane sauvage K Punda G Afrikanischer Wildesel
Identification: Height at shoulder 43 in. An ass, with a big head, long ears, white inside. General colour uniform, buff or greyish, with a dark spinal line and a dark band crossing the shoulders. Underparts white. Legs with or without dark stripes.
Intraspecific variation: Two races may be distinguished in Africa. The Nubian Wild Ass (*africanus*) is greyish buff or grey and has no dark markings on the legs. The Somali Wild Ass (*somalicus*) is reddish-fawn; the shoulder-band is ill defined or absent, but the legs are conspicuously marked with dark transverse bands.
Similar species: Wild Ass may be easily confused with feral asses, which are numerous in most of their range as well as in the Sahara. Their plain coloration, similar to the dominant colours of their habitat, their greater size, their extreme wariness and their ability to walk among rocky mountains may help to distinguish them, often a very difficult task.
Habitat: Mountains, broken country and open grass plains. A closely related Wild Ass inhabited North Africa up to the fourth century B.C. This stock has contributed to domestication, probably in Egypt. Map, p. 197.
Habits: Wild Asses are remarkable climbers and move with ease among rocks and cliffs. They retire to the mountains during the day and come down to the valleys to graze at night.

They live singly or in small herds of up to 10 individuals, sometimes up to 30.

The populations have declined very substantially during the last half century, due to overshooting, destruction by herdsmen and competition with domestic livestock in a country where the available pasture is limited. Many have been captured for crossing with domestic stock. A gradual deterioration of the wild strain through inter-breeding with domestic or feral donkeys also occurs.

GREVY'S ZEBRA *Equus* (*Dolichohippus*) *grevyi* Oustalet p. 141
F Zèbre de Grévy G Grevy-Zebra
Identification: Height at shoulder 60 in.; weight 780–950 lb. A large zebra,

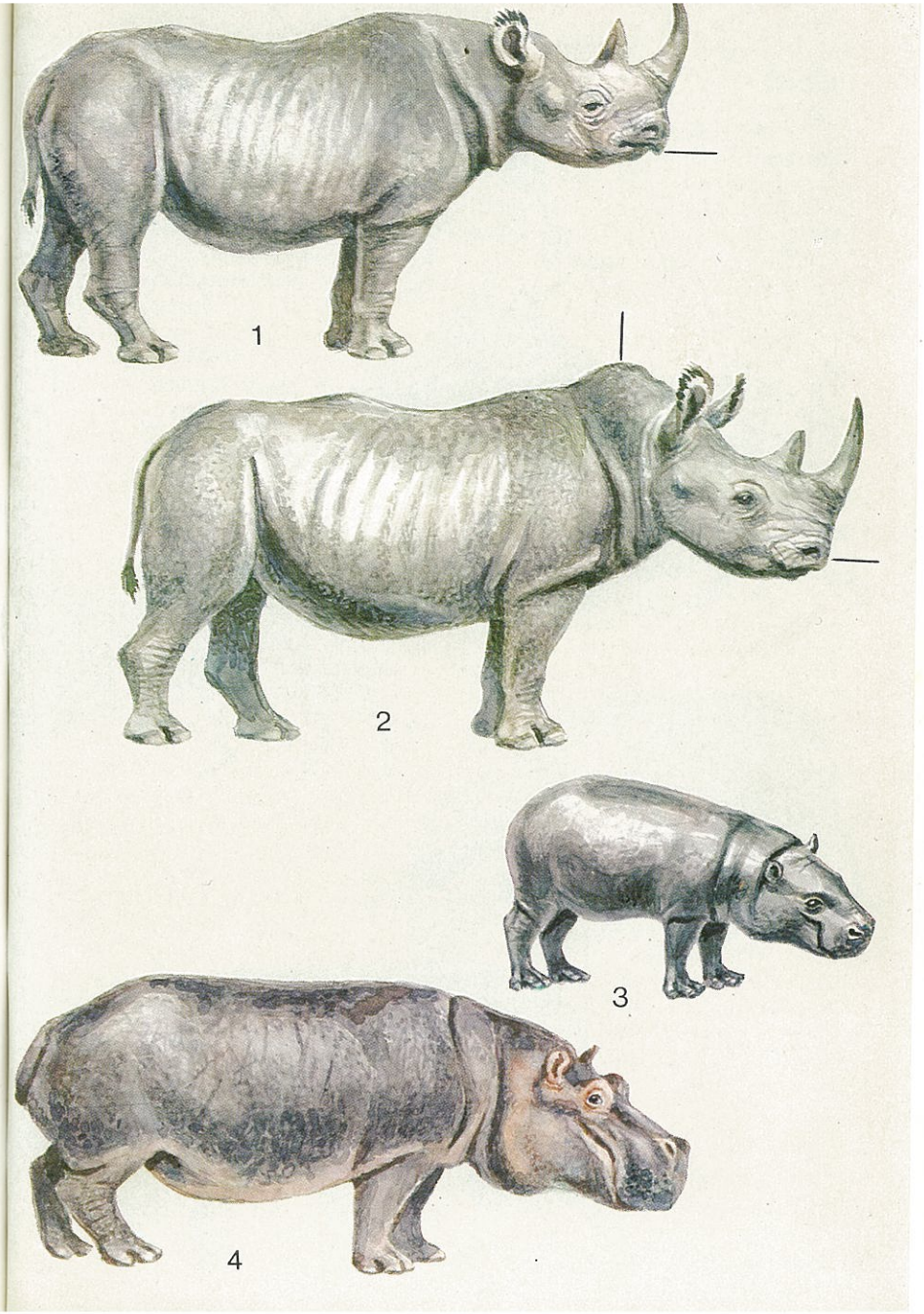
Plate 25 RHINO, HIPPO

1. **BLACK RHINOCEROS** *Diceros bicornis* *page* 166
   Smaller; head short; upper lip triangular.

2. **WHITE RHINOCEROS** *Ceratotherium simum* 169
   Larger; head very long; broad square muzzle; massive hump on neck.

3. **PYGMY HIPPOPOTAMUS** *Choeropsis liberiensis* 172
   Small; head relatively small; black.

4. **HIPPOPOTAMUS** *Hippopotamus amphibius* 171
   Huge; head enormous; dark brownish grey, pinkish on head.



The voice is a low snuffling neigh or whinny, resembling that of a horse, quite different from the bark of the Burchell's Zebra.

Their range overlaps in the central and eastern Kaokoveld with that of this species and they can be seen on the same plain. But their herds never mix and they do not hybridise in the wild.

Mountain Zebra of the nominate race have been exterminated throughout most of their former range as a result of settlement. Saved from extinction by the efforts of some landowners, they are now strictly protected in the Mountain Zebra National Park, near Cradock, and on some private farms. No more than 75 were supposed to be living in 1965. Hartmann's Zebra is still relatively numerous in some parts of its rather restricted range.

RHINOCEROSES: Rhinocerotidae

Odd-toed ungulates (three toes), very massively built, standing low on the legs. Neck short, eyes small; head bearing two solid horns (the front horn being the larger) of dermal origin, growing from the skin and with no skeletal support. Skin practically naked, grey in colour and very thick, making folds on shoulder and hindquarters. Two species in tropical Africa; other representatives in south-eastern Asia, some with only one horn.

BLACK RHINOCEROS *Diceros bicornis* (L.) p. 160

(Hook-lipped Rhinoceros)

F Rhinocéros noir K Faru G Schwarzes Nashorn, Spitzmaulnashorn A Swartrenoster

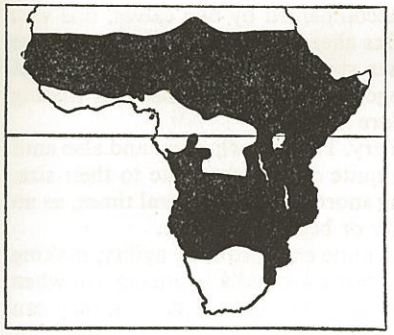
Identification: Height at shoulder 60 in.; weight 2,000 to 3,000 lb. A Rhino with proportionately short head, and a narrow muzzle. No hump on the neck; line of back concave. Upper lip triangular in shape, prehensile and very mobile. Ears relatively small, almost hairless. Two horns, very variable individually in proportions and shape, measuring up to 53 in. Front horn sometimes projecting forwards; rear horn as a rule much smaller, invariably flattened from side to side.

Female similar to the male, with generally longer and more slender horns.

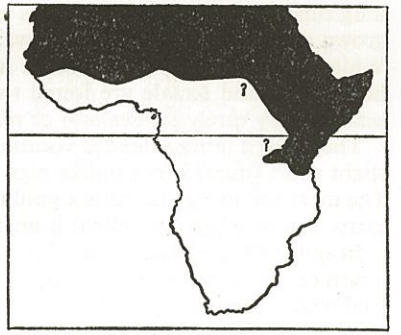
Similar species: Distinguished from the White Rhino by its smaller size, lighter features, lack of nuchal hump, and by the smaller head which is carried high, giving a different silhouette; also by the pointed upper lip, which is distinct from the square muzzle of the White Rhino.

Habitat: Dry bush country and particularly thorn scrub. Also mountains up to 11,500 ft. (Mount Kenya) in the cloud-soaked moorlands. Map, p. 197.

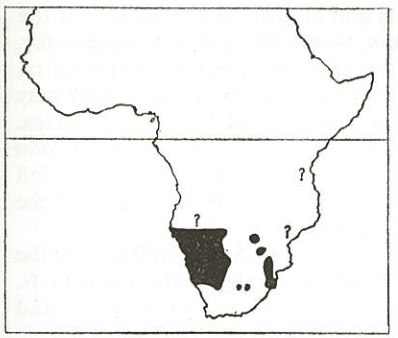
Habits: Sedentary, Black Rhino are usually solitary, especially the males. Pairs are formed by a cow and her calf, which lives with the mother for a



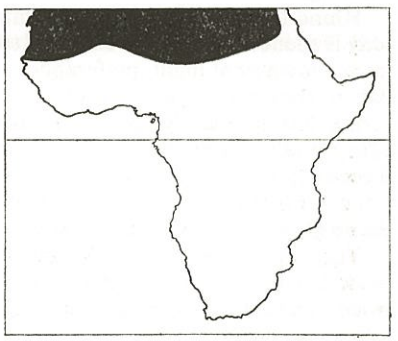
Spotted Hyaena, p. 129



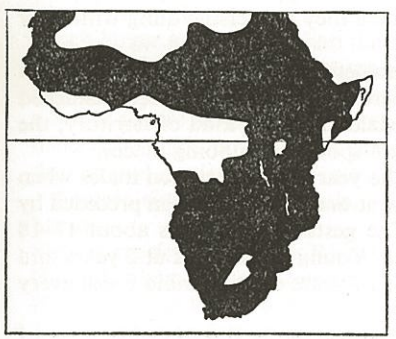
Striped Hyaena, p. 134



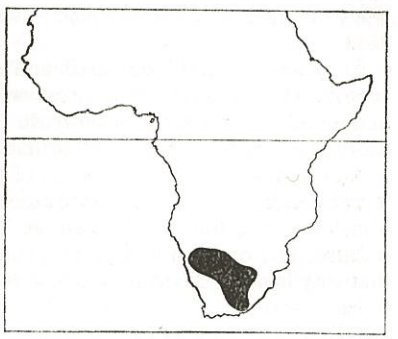
Brown Hyaena, p. 134



Sand Cat, p. 136



Wild Cat, p. 136



Black-footed Cat, p. 137

long time: sometimes the female is accompanied by two calves, one well grown and one small. The female walks ahead of her calf, contrary to the White Rhino mother who follows her young, guiding it with her front horn. Male and female are found together only during the brief mating season. Very rarely parties of 4 or more are seen.

They have a fairly extended vocabulary. They growl, grunt and also emit slight short squeaks, not unlike pigs, quite disproportionate to their size. The most commonly heard is a puffing snort, repeated several times, as an alarm call or when the animal is angry or begins to charge.

In spite of their bulk, Rhino show a quite extraordinary agility, making a turn on the spot. Their usual gait is a fast walk and a bouncing trot when frightened; they gallop only when charging. On short distances, they can reach 30 m.p.h.

They have very poor sight, but a good sense of smell and excellent hearing.

Rhino feed during the early morning and at dusk; the remainder of the day is spent resting in the shade of trees. Normally they drink once a day, at sundown or at night, preferably in stagnant water. In subdesert country, where they may be found up to 30 miles from any water hole, they may drink less frequently, getting moisture from succulents or euphorbias. They wallow very frequently and roll in the dust, their colour then becoming whitish, yellowish or reddish according to the colour of the soil (in any event their name 'Black' Rhino is misleading for their skin has the same grey colour as that of the 'White' Rhino).

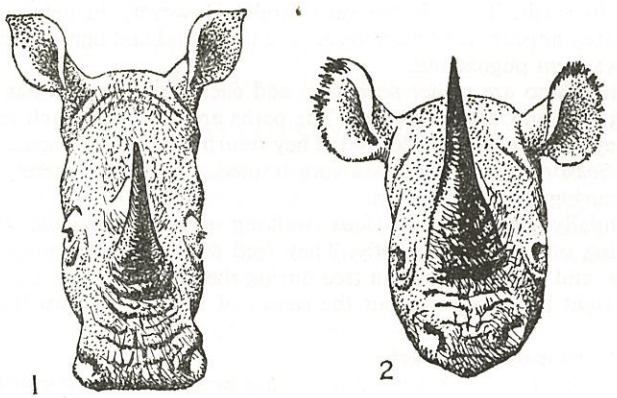
They wander within a wide home range, moving 5 to 15 miles from the watering place to the feeding grounds, along regular paths some 1½ ft. wide. These tracks are not fitted to the contours as elephant paths and often rise steeply.

Black Rhino browse on twigs, leaves and bark of trees (acacias, euphorbias) and bushes, using the prehensile upper lip; they rarely graze. They defecate in particular places, where they scatter the dung with their hind legs.

They are rather ill-tempered and sometimes charge without apparent reason. They are vicious in areas where they have been much disturbed and should never be taken on trust. Males defend a kind of territory, the limits marked by dung heaps, urination spots and rubbing places.

Mating takes place at any time of the year. Fights between males when a cow is coming into season are frequent and mating is often preceded by attacks on the bull by the female. The gestation period is about 17–18 months, and one calf is born at a time. Young are weaned at 2 years and maturity is not reached before 5 or even 7 years of age. Rhino breed every 3 years or so.

Like the other Rhinos, the Black Rhino is badly threatened in spite of the protective legislation adopted in all the territorities in which it still survives. The survival of such a big animal with a wide range and specific



9. Head of White Rhinoceros (*Ceratotherium simum*) (1) and of Black Rhinoceros (*Diceros bicornis*) (2)

ecological requirements is almost incompatible with the transformation of the habitat and the development of the country. Poaching is prevalent in many countries. The total population is estimated between 11,000 and 13,500 head. They will only be preserved, like most big game, in wide, protected areas.

WHITE RHINOCEROS *Ceratotherium simum* (Burchell) p. 160
(Square-lipped Rhinoceros)
F Rhinocéros blanc, Rh. de Burchell A Witrenoster
G Weisses Nashorn, Breitmaulnashorn

Identification: Height at shoulder up to 70 in.; weight 3½ tons, up to 5 tons. Much larger and heavier than the Black Rhino, especially in regard to the height at shoulder. A distinct massive hump on the neck; middle of back slightly but distinctly arched. Head very long, carried low, terminating in a broad square muzzle with no trace of protruding lip. Ears large, pointed, fringed by thick hair. Horns generally longer (front horn up to 62 in.), thinner and straighter than in the Black Rhino.

Female similar to the male, with generally longer and more slender horns.

Similar species: See Black Rhino.

Habitat: Grassland and open savannas with scrub. Map, p. 203.

Habits: White Rhino are much more sociable than their Black relatives. They are seen in family groups of 2 to 5 head, or even in parties up to 10. Herds of 24 head have been observed. They are very placid and even-tempered animals and it is a relatively simple matter to approach them

within 30 yards. They charge very rarely. However, during the mating season they appear very ferocious among their kind and fight fiercely; even the cows seem pugnacious.

White Rhino are rather sedentary and each family group has its own grazing area and watering place. The paths are used with such regularity that they become deeply grooved. They return every day to selected dung heaps. Seasonal movements are very limited, the Rhinos merely retiring uphill during the rainy season.

Essentially grazers, they feed walking slowly forwards, the jaws munching off the grass shortly. They feed during the morning and the evening, and they rest under a tree during the day.

The sight is quite poor, but the senses of hearing and smell are very good.

The voice is a harsh snort.

Cows seem to mate not more than once every three to four years.

White Rhino are the largest of all the Rhinos, and after the elephants the largest living land mammals.

Status: Formerly distributed over much of the perennial grassland of tropical Africa, their range is now limited to a few areas in south-eastern and north-central Africa where they are well protected. Extinct outside these sanctuaries because of overshooting for sport and horn. Except in some parts of their present range (West Nile), White Rhinos are increasing at a very satisfactory rate and in Natal have even become too numerous. Translocation to other areas within their former range seems a good solution to the surplus of population. Several hundreds have already been moved from the Natal reserves to the Kruger N.P. and other sanctuaries. Nevertheless the total number does not exceed 4,000 head.

ORDER Artiodactyla
(Even-toed Ungulates)

HIPPOPOTAMUS: Hippopotamidae

Huge to medium-sized mammals, very massively built, with a big head, a broad muzzle, short legs terminated by 4 toes, the lateral digits being nearly as well developed as the median ones. Incisors and canines growing continuously. A 3-chambered, but non-ruminating stomach. Aquatic or semi-aquatic. Restricted to Africa.

HIPPOPOTAMUS *Hippopotamus amphibius* L. p. 160

F Hippopotame K Kiboko G Flusspferd, Nilpferd A Seekoei

Identification: Height at shoulder 55–63 in.; weight averaging 2,500–3,000 lb., sometimes up to 5,800 lb. Unmistakable. A huge, fat animal, with short legs, an enormous head with an extremely broad muzzle, short neck and a barrel-shaped body, the belly carried only a short distance above the ground. Ears, eyes and nostrils prominent so as to emerge when most of the animal is submerged. Long tushes (canines) strongly curved, and elongated incisors, the lower ones growing straight forward, and the upper ones downward. Skin, except for a few bristles on the muzzle and tail, nearly naked and forming folds on neck and shoulders. Colour uniform brownish grey, lightening to pinkish around the muzzle, eyes and throat; sometimes the body is coloured red by a secretion of glands ('blood sweat').

Female similar to the male, smaller.

Habitat: Streams, lakes and ponds with permanent water bordered by grassland; up to an altitude of 8,000 ft. Map, p. 203.

Habits: Very gregarious, sedentary and attached to a particular place, Hippo live in schools of 5–15 head, sometimes up to 30, which during certain seasons may join together in larger herds. Density of population may be very high in some districts (up to one Hippo every 6 yards, along the Upper Semliki, Congo). Females seem to form schools with their young, and around the bulls are settled according to the hierarchy, the dominant adult bulls being the nearest. However, this social organisation is controversial and according to some observers a master bull is responsible for the whole group.

Hippo are semi-aquatic, truly amphibious, and well adapted to living in water, their natural refuge when disturbed. They swim very well and dive for periods averaging 2 minutes, but they can stay under water much longer, up to 6 minutes. Their specific gravity being higher than that of water, they can walk on the bottom.

They spend the entire day sleeping and resting on sand banks or in water; often birds of various species (from Cormorants and Egrets to

PREFACE

Many books have been published on African mammals. Some are purely technical, such as checklists of species found within a particular area, with their scientific names and range; others deal with only one of the African countries. They are of invaluable help for the scientist, but less useful for the layman.

However, there has been no Field Guide to the mammals of the whole continent south of the Sahara, and the need for one has often struck us while walking or driving through different regions of Africa. Hence this book. We felt that such a book would be useful at a time when more and more people are interested in African wildlife and travel, and when there is so much concern over the fate of African mammals, the last great community of large animals in the world. So we started work with enthusiasm.

But we soon found that we had seriously underestimated the task. So little is known about large animals apparently familiar to man for decades and even centuries. The systematics of many antelope and primates need to be thoroughly revised. The status and distribution of many other groups, such as the small carnivores, are largely a matter of guesswork. Large areas of Africa have still to be investigated thoroughly, particularly in Ethiopia and West Africa. And in spite of all the information gathered by hunters and travellers, and all the biological research of recent years, relatively little is known about the habits of most African mammals.

This book is not a work of systematics. We have tried to follow the modern trends of classification—but not too rigidly: ease of identification sometimes seemed to require a modified order. Nor is it a work of biogeography. The maps are mere sketches to show the broad lines of distribution as known today. And it is certainly not a comprehensive book on mammals, with full descriptions of the animals, their coat, horns, skull and teeth, their ecology and behaviour. We have limited its scope to species which a mammal watcher can identify in the field, south of Tropic of Cancer. We have ignored all those smaller mammals which are difficult to observe and impossible to identify—except by specialists holding a specimen in the hand or through an examination of the skull and teeth.

It is meant primarily as a practical book for recognition. We have concentrated on game, carnivores and primates, adding some species frequently seen, like big diurnal rodents, squirrels, a few shrews, and oddities like pangolins, aardvark and manatee. All the species described are illustrated in colour.

We received constant co-operation from many well-known scientists.

Several sets of rough drafts were circulated for comments and we are most grateful here to Mr. W. F. H. Ansell, Dr. R. Bigalke, Prof. F. Bourlière, Mr. L. H. Brown, Mr. C. G. Coetzee, Dr. K. Curry-Lindahl, Mr. R. W. Hayman, Dr. X. Misonne, Mr. R. Rosevear, Mr. N. Simon and Dr. L. M. Talbot. They made many most useful comments, suggestions and criticisms. Mr. C. W. Benson, Mr. J. H. Blower, Dr. A. Kortlandt, Dr. V. de Pienaar, Dr. U. Rahm and Mr. D. R. M. Stewart were also particularly helpful, as was Prof. Th. Haltenorth in collecting German names.

For specimen material in addition to that kept at the Museum of Paris, we made use of the extensive collections at the British Museum (Natural History), London, the Institut Royal des Sciences naturelles, Brussels, and the Musée Royal de l'Afrique Centrale, Tervuren. Dr. G. B. Corbet, Mr. R. W. Hayman, the late Dr. S. Frechkop, Dr. X. Misonne, Dr. M. Poll and their staffs have been most helpful.

We called on the help of many zoos. Professor J. Nouvel and his staff at the Parc Zoologique de Vincennes and the Ménagerie du Jardin des Plantes were exceptionally kind. We are also much indebted to the London and Antwerp Zoological Gardens. Their directors, Dr. L. Harrison Matthews, and Dr. W. van den Bergh, and their staffs all helped us in every possible way. It would be impossible to list here all the directors and staffs of National Parks, Game Reserves and other areas throughout Africa, who kindly helped us in our travels and observations in the field. In preparing the illustrations we benefited greatly from numerous unpublished pictures taken by various photographers; we are particularly indebted to Mr. M. Langer who supplied so many documents to us.

Rowland Ward Ltd. and its director, Mr. Gerald A. Best, kindly allowed us to make use of material published in Rowland Ward's *Records of Big Game*.

Mr. W. F. H. Ansell checked many maps and very generously provided us with certain first hand and unpublished information. Mr. F. Edmond-Blanc contributed with many records, particularly from Portuguese Africa. Mr. F. Roux did the same for the Senegal. Dr. F. Petter and Mr. J. Roche contributed valuable information. Mrs. Jean Dorst drew the distribution maps and improved them to a large extent. Mr. J. Brouillet drew the geographic and vegetation maps, while Miss Odile Jachiet coped nobly with typing and re-typing the manuscript.

We would like to express our deep gratitude to all of them. This book owes a great deal to their wide knowledge and generous assistance.

J.D. and P.D.

HOW TO USE THIS BOOK

This book is primarily intended to be used for identification of mammals in the wild. Many are nocturnal and secretive in their habits, particularly carnivores and smaller mammals—such as most rodents. Most primates are diurnal, but as they live in close habitats, their recognition often is quite difficult. So are many forest dwellers, even among larger mammals, like duikers and forest antelopes. Plains game is easier to observe, and many larger carnivores like big cats, jackals, and hyaenas are seen by day.

We have listed only characters which can be noted in the field; if characterisation sometimes seems vague, it is because these mammals do not show obvious field marks; two species can look much alike and differ mainly by internal characters (skull, teeth etc.).

Recognition

Those not yet well acquainted with the mammals should first study the plates. This will at least determine the group to which the mammal in question belongs, and in most cases the illustrations and the short captions given opposite will suffice for identification (most illustrations are drawn from live animals, photographs or field notes; but for a few species no documents are available and we have had to imagine what they would be like when alive). Species are illustrated by an adult male, unless specified by the signs ♂ (male) and ♀ (female). When several well-characterised sub-species can be recognised, the name of the subspecies illustrated is indicated between brackets on the opposite page.

From the plates you can turn to the descriptions in the main text and read the characters listed. Take note not only of the pattern, colour contrasts and coloration, but also of the general features, the shape of the body, paying particular attention to the field marks indicated by bars on the plates. The distribution maps will help in showing which species are to be found in your area. The characters given under *Similar species* will draw your attention to the species showing superficially the same characters. Finally the data given under *Habitat* and eventually *Habits* (particularly social behaviour, gait etc.) should help you to recognise the animal.

Do not forget that identifying mammals can also be a matter of elimination.

One must be particularly careful in identifying young or subadults. Shape and development of horns are especially misleading in the case of antelopes; the horns of young animals may seem quite odd compared with the final stage reached in the adult, and can sometimes resemble those of a very different species.

The geographical variation within the range of a species must be taken into account. Most of the species are illustrated by one animal only, showing the average type; other populations belonging to the same species can be markedly different, particularly among monkeys. Such points are treated in the text under the heading *Intraspecific variation.*

Measurements

The most useful measurement to estimate the size of larger mammals is the height at shoulder. This is given for most species, except for the long-bodied ones, like genet, mongoose and rodents, and for the monkeys; the length of body is given for those. In the text, the words 'large' or 'small' must be understood as *proportionately* large or small, in relation to the size of the animal or its general features.

The given measurements (in inches, rarely in feet) and weights (in pounds, rarely in tons) are average figures for the species. They may vary to a wide extent individually and according to sex, age, race and season (weight). They should be considered as rough indications only.

The animals on each plate are illustrated to the same scale, though it was impossible to keep to the same scale throughout the book, owing to the great differences in size. The measurement given in the text will assist the reader.

For horn lengths, two figures are given: the first is the length of an approximate or average good head of the species (and not of any particular subspecies), the second the maximum possible length known or record length as given by Rowland Ward's *Records of Big Game*, XI edn., 1962 (with two addendum lists). Thus for Grant's Gazelle: '22; 31¾' means 'good average horns measure about 22 inches; the record is 31¾ inches'. For the method of measuring trophies, the reader should also refer to that classic work.

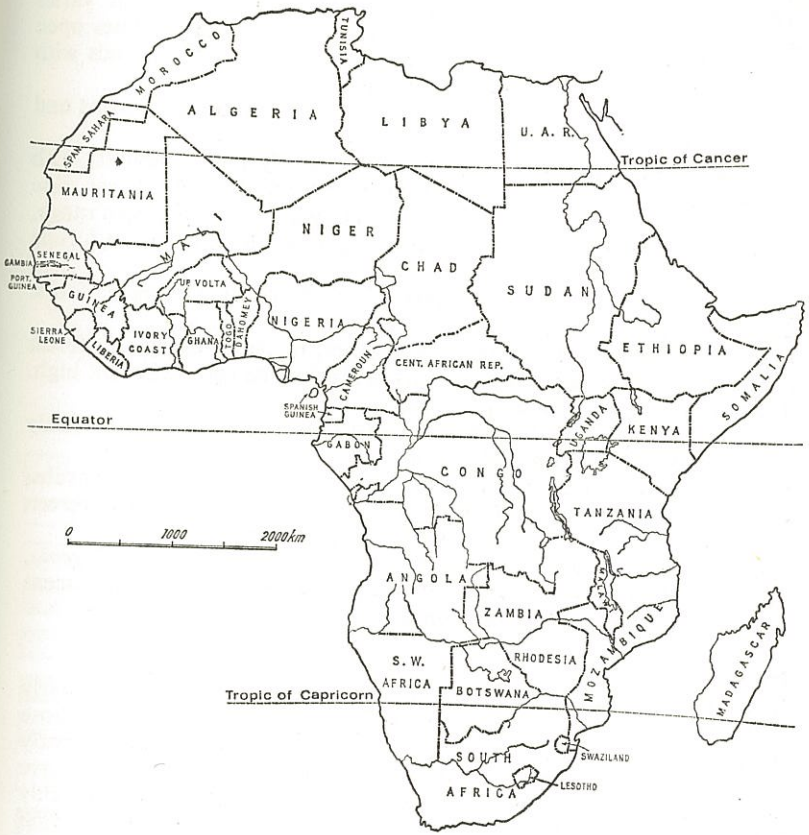
Similar Species

Under this heading the most similar species are listed with their main distinctive field marks. These species are not always closely related, but may superficially show the same features. Only those animals occurring in the same habitat are listed. Cross-references are given.

Habitat

The type of habitat can be an important aid to identification. Many animals are closely linked to a particular type of habitat, while others do not show very precise ecological preferences and are therefore widespread through a wide range of habitats. The information given is only approximate.

The vegetation map on p. 15 is based largely on the *Vegetation Map of Africa* published on behalf of l'Association pour l'Etude taxonomique de la Flore d'Afrique Tropicale by Oxford University Press (1959), but is considerably simplified. It shows the main types of vegetation in Africa,



AFRICA: POLITICAL BOUNDARIES AND RIVERS

so that the reader may compare distribution maps with the vegetation belts.

The main vegetation types shown on the map are as follows:

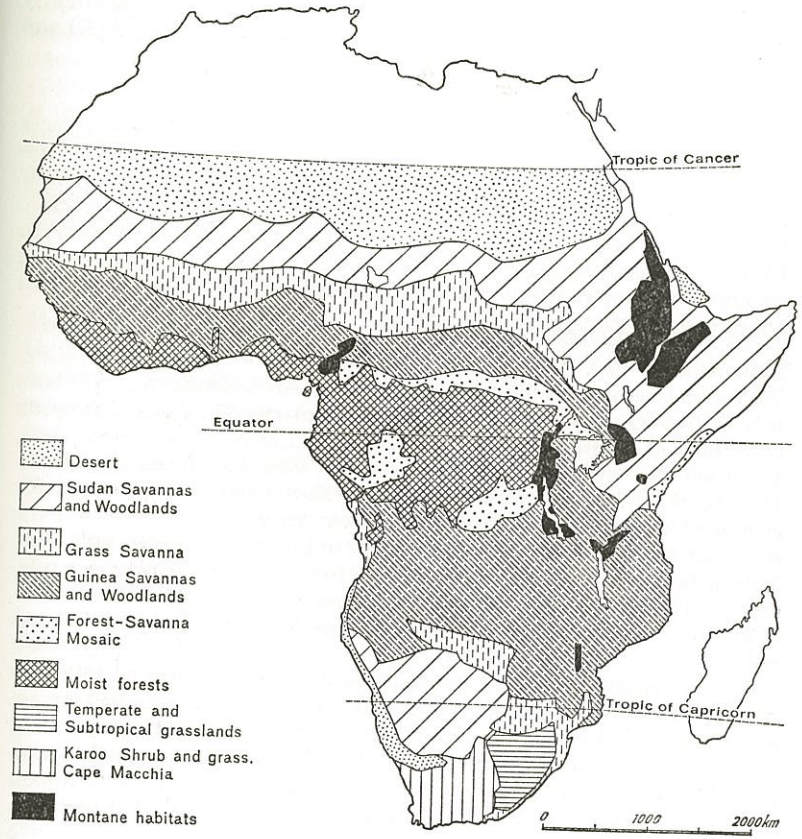
1. DESERT An area with widely scattered plants, often almost entirely devoid of vegetation, owing to the very low rainfall.
2. SUBDESERT STEPPE, 'SUDAN' SAVANNA, WOODED STEPPE Low perennial plants widely spaced, and grasses, generally low, which flourish after the rains in the subdesert steppe. In more humid zones, shrubs and scattered trees (mostly *Acacia* and *Commiphora*), the density of which varies according to moisture and annual distribution of rains; sometimes open woodland or thickets. Most of the trees are deciduous. Grasslands with *Cenchrus* (in the west) and *Themeda triandra*.
3. GRASS SAVANNA Grasslands, relatively dry, with scattered acacias and broad-leaved trees.
4. 'GUINEA' SAVANNA and WOODLAND Relatively moist habitats, with very dense growth of tall grass and numerous trees; dominance over wide areas of *Isoberlinia*, *Brachystegia* and *Julbernardia*. In the southern range, these forests are known under the name 'Myombo'. Riverine moist forests along streams.
5. FOREST-SAVANNA MOSAIC Patches of moist, partly evergreen, forest surrounded by savanna, of tall grass.
6. MOIST FOREST ('RAIN FOREST') Evergreen, or partly evergreen, forest made up of several distinct strata; the trees may be up to 180 feet high. These habitats include swamp forests.
7. TEMPERATE and SUBTROPICAL GRASSLAND Pure grassland at fairly high altitude; *Themeda triandra* abundant.
8. KAROO SHRUB and GRASSLAND: CAPE MACCHIA Woody shrubs, shrublets, succulents, aloes. Cape Macchia is composed of small evergreen shrubs, often heath-like, of Mediterranean physiognomy.
9. MONTANE HABITATS Evergreen forest, grassland, woodland (*Hagenia*, *Erica*), bamboo (*Arundinaria alpina*) and alpine communities (arborescent *Senecio* and *Lobelia*, *Alchemilla* shrubs).

Habits

Under this heading are noted the main biological peculiarities, particularly those which may help in recognition. Some of these, particularly those related to daily rhythm of activity and social behaviour, are greatly influenced by habitat and may vary from one region to another; some have been modified by contact with man. Herd size and structure are also highly variable, according to the type of habitat and to the season of the year (reproduction).

Distribution Maps

The black parts of the maps represent the approximate areas within which the species may be found. This does not mean that it will be found over the



AFRICA: VEGETATION ZONES

entire range, but only where suitable habitat exists, and where man has not suppressed local populations. Former distribution has not been taken into account. The boundaries are only approximate, for we are still not aware of the exact distribution of most species, particularly over West Africa and Ethiopia. A question mark indicates an area where the species probably is to be found, but from which it has not yet been recorded with certainty.

Common Names

There is no official list of vernacular names for African mammals. We have adopted the most commonly used, but they may change from one country to another, and have added French (F), German (G), Kiswahili (K) and Afrikaans (A) names where appropriate.

Subspecies

Subspecies, which within the geographic range of a species represent races recognisable by morphological characters, variations in coloration, size and development of horns, are usually not recognisable in the field. Their characteristics are mostly apparent in museum series. We have therefore omitted subspecies unless some well-marked races are fairly easy to identify. Under the heading *Intraspecific variation* we have indicated the general trends of variation within the species and listed the local races which can be recognised in the field.

Systematics

This book is not concerned with systematics of African mammals. We have followed as far as possible the classification proposed by G. G. Simpson (*Principles of Classification and a Classification of Mammals*, New York, 1945) adopted by most mammalogists. We have also made use of Th. Haltenorth (*Die Klassification der Saügetiere: Artiodactyla*, 1963) for even-toed ungulates. But for practical reasons we have rearranged the sequence adopted by most mammalogists to make the book easier to use. Within each group, we go from the larger to the smaller member as a rule, except when the animals look quite different.

We have had a hard time with some groups. Systematics of the genet and mongoose is still in its infancy. Many groups of 'Ungulates' badly need thorough revision. Bubal Hartebeest and Red Colobus can be split into several well defined forms, which might be full species. Dibatag and impala are probably not closely related to gazelle. Duiker constitute a puzzling group with several 'problem' forms. Dik-dik need re-examination and probably may be divided into more species than they are here. Common and Defassa Waterbuck may be conspecific, as Bubal and Red Hartebeest. Our treatment certainly does not mean that we have adopted a definitive position on questions which still need to be carefully investigated.

We have given the main external characteristics of each group of mammals within the scope of this book, but we have ignored the anatomical and structural characters as useless for identification in the field.

ORDER Insectivora

Small mammals, primitive in structure, usually with short limbs, a long, narrow snout and numerous teeth, the cheek-teeth with cusps arranged in a V or W (an adaptation for grasping and crushing insects and the kinds of hard food on which they feed).

Some of them are tiny creatures (some shrews are the smallest of all mammals), rarely seen, although sometimes very common.

Ubiquitous over the world, except for Australia and most of South America, they are well represented in Africa (Elephant Shrews, Golden Moles, Hedgehogs, Otter Shrews, Shrews).

Most of the species escape the attention of the non-specialist. However, a few are frequently seen, either because they are larger or because, although small, they are diurnal, like the Giant Musk Shrew (*Crocidura occidentalis* and allies), from western Africa (head and body up to 5 in.), which lives in houses. Hedgehogs, Elephant Shrews and Otter Shrews can sometimes be observed in the field.

HEDGEHOGS: Erinaceidae

The members of this family are immediately characterised by their upper-parts being entirely covered by hard, sharp spines, their protection against predators. They are able to roll themselves into a tight ball, thereby protecting their face, short limbs and underparts. The muzzle is pointed and protruding.

Hedgehogs[1] are widespread over Europe, Asia and Africa. In North Africa and in the Saharan zone, they are represented by the Long-eared Hedgehog (*Hemiechinus auritus*), easily recognisable by its very large ears, erect and somewhat pointed (fringes of the desert in north-eastern Africa, and also driest part of western and central Asia); and by the Desert Hedgehog (*Paraechinus aethiopicus*) which also has fairly large ears, rather long legs and a strikingly contrasted pattern on the head, the muzzle being dark brown, the rest of head and neck white; fur of underparts is long and soft (northern Africa to Near East). Farther south are found several forms which resemble each other closely. The Common Hedgehogs of tropical Africa are *Atelerix albiventris* (p. 32), *A. pruneri* and allies, all similar to the European Hedgehog. In southern Africa, *Erinaceus frontalis* is the common species.[2] (p. 32)

Hedgehogs are mainly nocturnal, and hide in holes or in thickets during the day. They feed on various insects, worms, snails, young rodents, bird's eggs, vegetable matter and soft fruits. In cold climates, they hibernate during the winter.

[1] F Hérisson. G Igel. A Krimpvarkie. K Kalunguyeye.
[2] Related to another species, *E. algirus*, from North Africa. Extralimital.