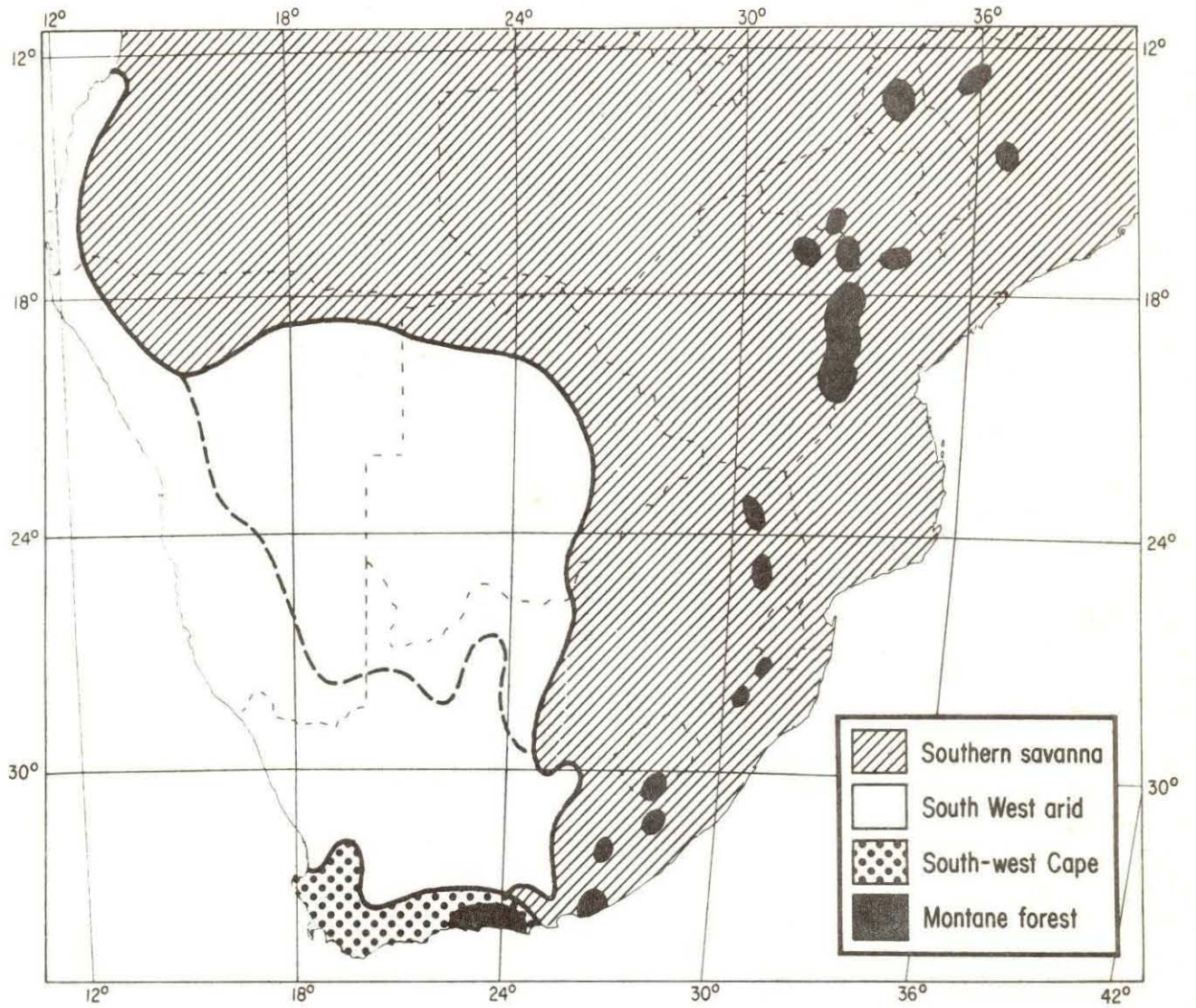
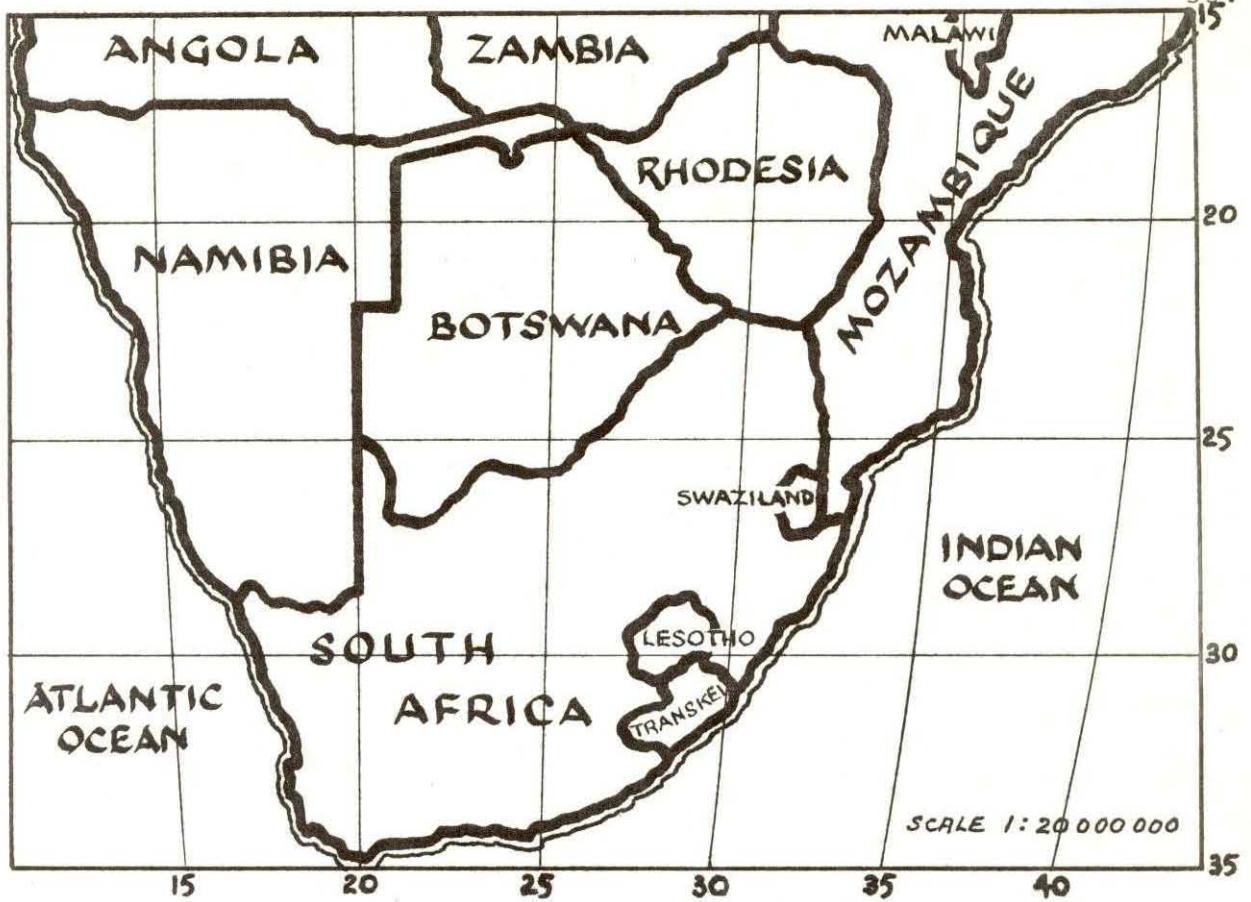


An Atlas of Hair of Southern African Carnivora

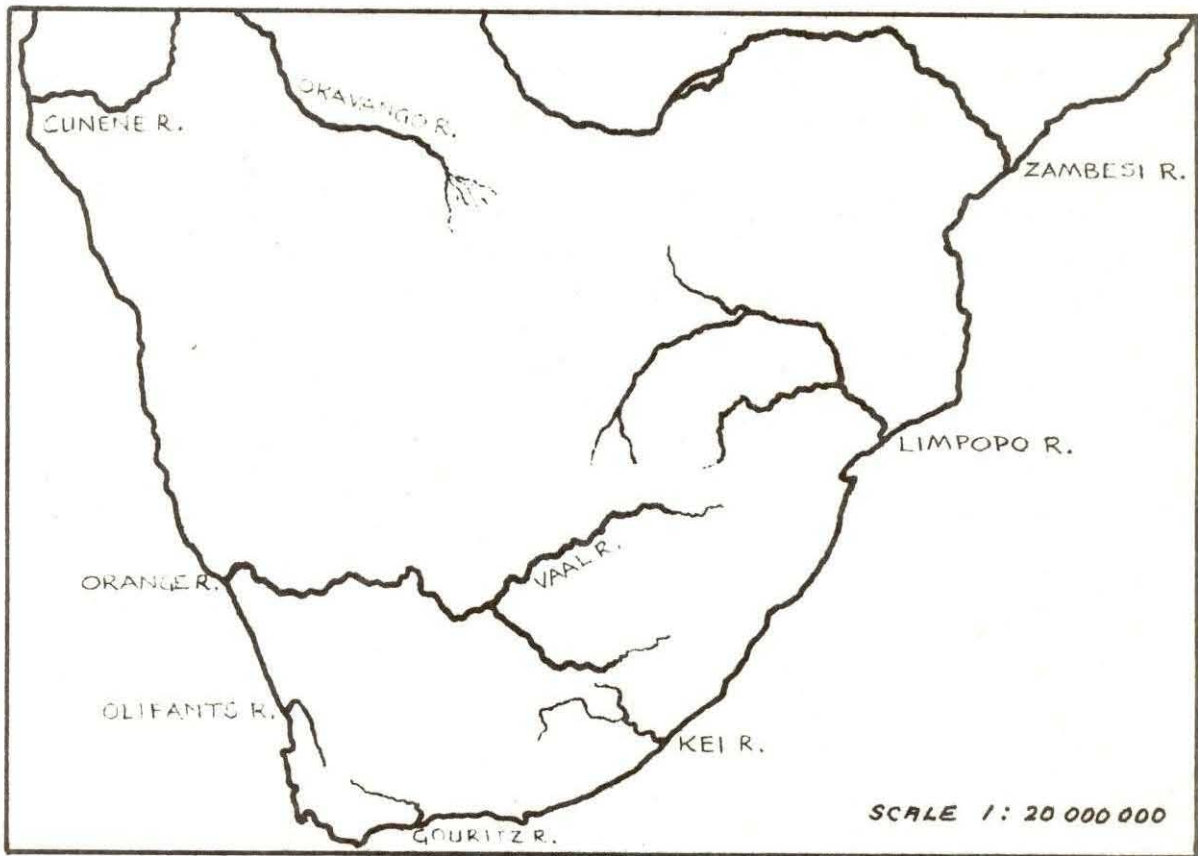


Map 1. Main biotic zones of southern Africa.

Reproduced from Davis (1962), after Moreau (1952) and Keay (1959).



Map 2. Southern Africa : political.



Map 3. Southern Africa : rivers.

AN ATLAS OF THE HAIR OF SOUTHERN AFRICAN CARNIVORA
WITH DESCRIPTIONS OF THE GROSS AND MICROSCOPIC FEATURES OF
THIRTY-SIX SPECIES

Introduction

The atlas forms the illustrative portion of work on hair studies in relation to ecology, taxonomy and epidemiology. It forms a photographic reference system as an aid to identifying carnivore hairs. This is the first portion of a more comprehensive reference system which will eventually include work on other mammalian families found in southern Africa.

Explanatory notes

1. Sampling: Hair samples were taken from the mid-dorsal and mid-ventral line between the shoulders of at least four representatives of each species. Most of the specimens sampled are housed at the Transvaal Museum. Hair from other body regions, especially that of the underbelly, was subsequently examined and no differences were detected in cross-sectional shape and cuticular scale pattern, although colour differences were marked.
2. Arrangement: The microphotographs of the hairs of each species are accompanied by distribution notes and a map to aid in identification of hair samples. Brief data on habitat and habits are included as having possible relevance to various hair types. A description of the pelage, gross size, and description of various individual hairs is included as well as the descriptions of the microstructure of the hairs.

3. Sources of various data:

- a) Black and white illustrations of each species have been derived from plates in Dorst and Dandelot (1970), with the publishers' permission.
- b) The nomenclature used is that used in the Smithsonian Institution publication *The Mammals of Africa: an identification manual*. (1971).
- c) Maps are included for clarification of vegetative and locality data mentioned in the text. The vegetation map was compiled from Moreau (1952) and Keay (1959).
- d) Distribution data has been drawn from as many sources as possible with special reference to Meester, Davis and Coetzee (1964), Smithers (1971), Skinner (1976), Rautenbach (1978), Pringle (1977), Dorst and Dandelot (1970). A small scale distribution map is included for each species, and the maps of 29 small carnivores are reproduced, with the author's kind permission, from Smithers (in prep.). Data for the maps of *Proteles cristatus* and *Hyaenna brunnea* were taken from Cooper and Skinner (in press) and Skinner (1976) respectively and are in agreement with Smithers (in prep.). The maps indicate those areas in which the species could occur, and do not always reflect exact collecting localities.
- e) Brief habitat and habit notes are in the text as these may be found to have some bearing on various differences in hair structure. The information has been taken from as many literature sources as possible including Roberts (1951), Shortridge (1934), Smithers (1971), Dorst and Dandelot (1972), Rautenbach and Nel (1978) and Skinner (1976 and in press).
- f) The hair length refers mainly to guard hairs and never to underfur. It is stated in mm with standard deviation, thus: 78 ± 10 mm.
- g) Cross-sectional appearance: The classification of the shapes of hairs in cross-section has been taken from the definitive

types used by Brunner and Coman (1974). The relative size of the medulla in relation to the cortex is described as large, medium and small. This varies according to the species from which the hair was sampled.

- h) The pattern of the cuticular scale imprints is described according to the nomenclature used in Keogh (1974). This is based on that of Wildman (1954).

AARDWOLF



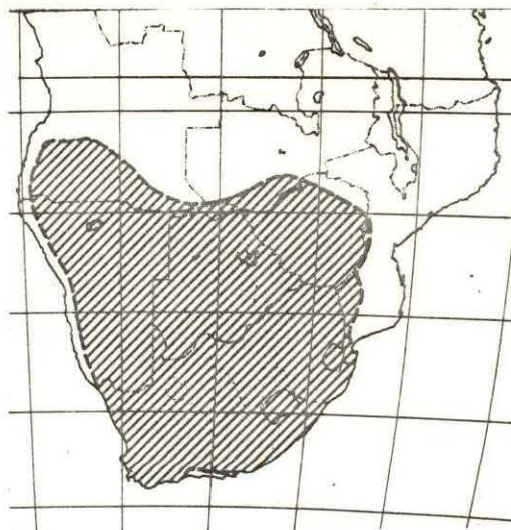
Family: PROTELIDAE

Proteles cristatus
(Sparrman, 1783)

Aardwolf

DISTRIBUTION:

South African sub-region excluding Namibia coastal strip and south eastern Mozambique.



HABITAT:

Open veld and plains. Never in forest areas. Distribution likely to be determined by distribution of termite genus *Trinervitermes*.

HABITS:

Nocturnal. Solitary or in pairs or small family groups. Shy and elusive. When attacked secretes musky smell. Not well equipped for defence, except loud vocal roar. Well developed canine teeth. Rests in holes in the ground. Diet: Almost entirely termites and larvae.

HAIR

GENERAL DESCRIPTION OF FUR:

Well developed mane along dorsal spine from neck to tail, erected when alarmed. Buffish yellow to reddish brown coat, paler and darker stripes running vertically on shoulders, flanks and thighs.

INDIVIDUAL HAIRS:

Length: $32,59 \pm 9,12$ mm

Colour: Tawny banded white. Sepia banded white. Beige, sepia tipped. Grey. Brown. (9)

Cross-sections:

Guard hairs -

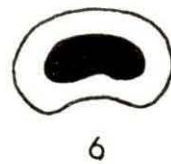
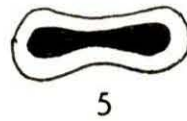
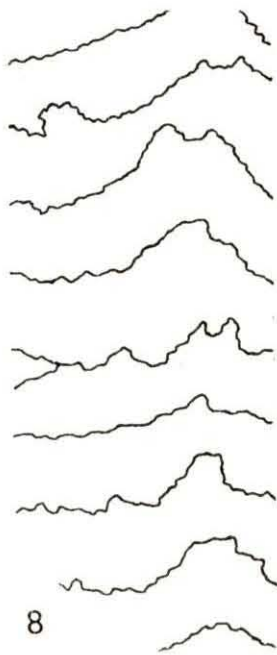
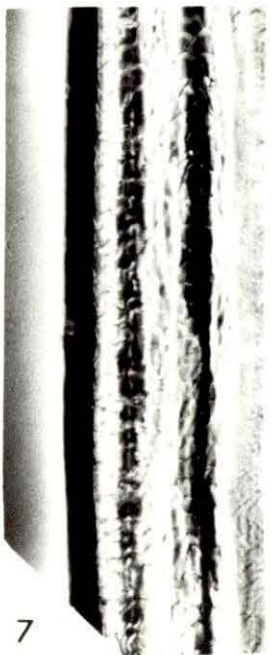
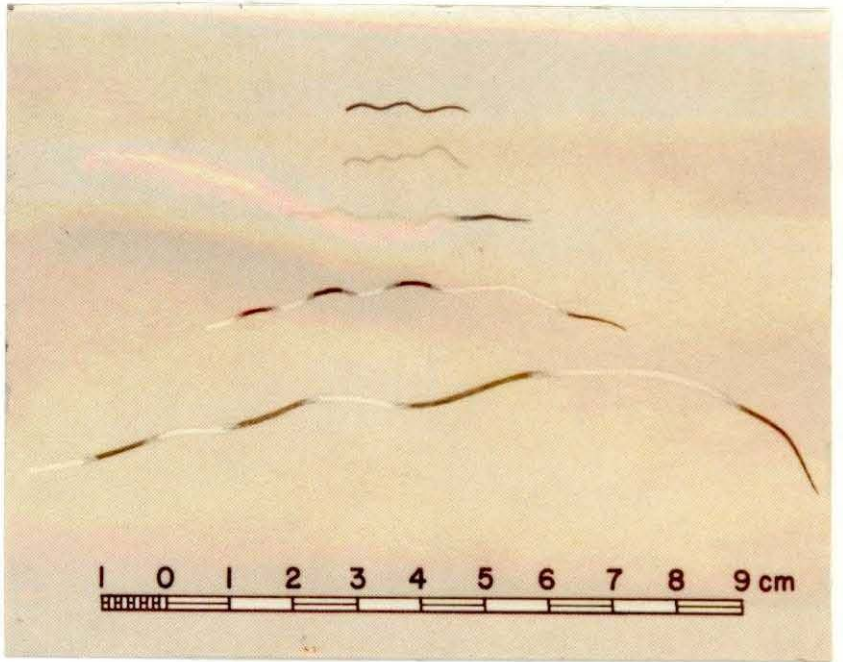
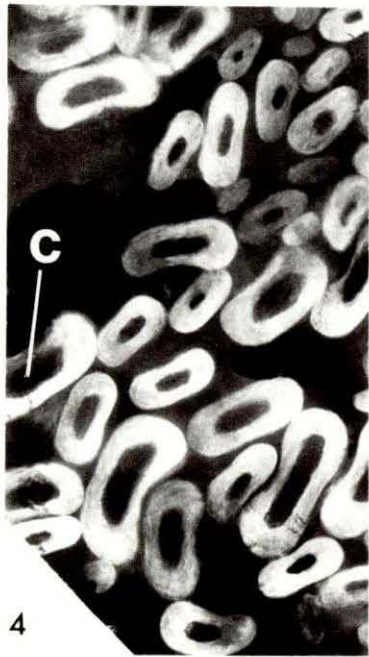
Mane hairs: Circular and dumb-bell, medium medulla (1) and (2).
 Body hairs: Reniform (3a) and (b), (6). Dumb-bell (4c) and (5).
 Oval, medium medulla (3b).

Underfur -

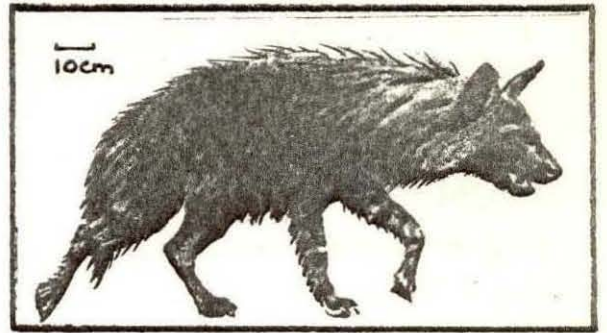
Oval, medium medulla. Oval, large medulla.

Cuticular scale patterns:

Waved mosaic, but waves in definite peaks (7) and, enlarged x 5, (8). One or two scales across width. Scale margins: crenate. Distance apart of scales: near.



BROWN HYAENA



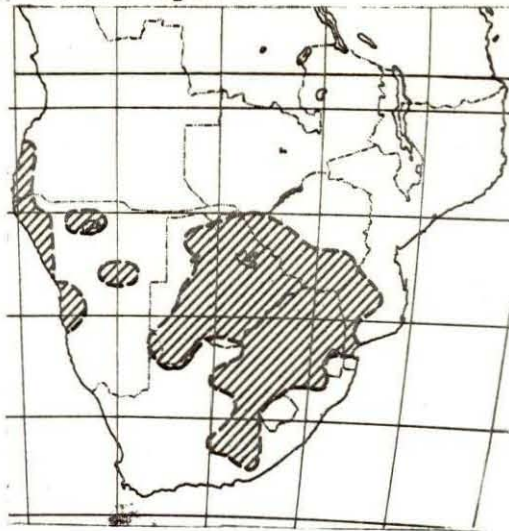
Family: *HYAENIDAE*

Hyaena brunnea
Thunberg, 1820

DISTRIBUTION:

Eastern Cape Province, Orange Free State, Transvaal, Mozambique, Rhodesia, Botswana and Namibia.

Brown Hyaena



HABITAT:

Dry savannah and desert

HABITS:

Nocturnal. Solitary, sometimes in family groups. Very shy. Lives in dense bush, burrows or caves during daylight. Diet: Omnivorous. Scavenger.

HAIR

GENERAL DESCRIPTION OF FUR:

Coarse, shaggy, blackish brown. Neck, shoulder and upper back have long lighter hairs forming a mantel. Tail bushy, long.

INDIVIDUAL HAIRS:

Length : 112 ± 60 mm

Colour : Dark brown. Dark brown merging tawny into white.
Tawny banded white. (5)

Cross-sections:

Guard hairs -

Circles with small medulla (1d) and (2). Few circles and ovals with large medulla (1b), (1e).

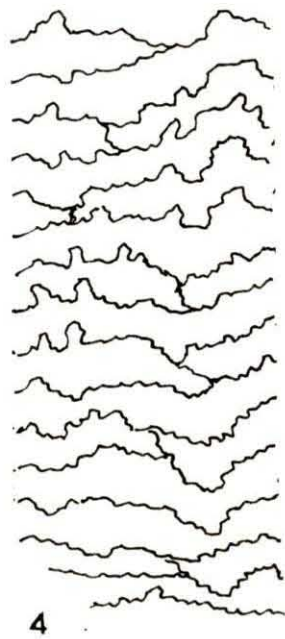
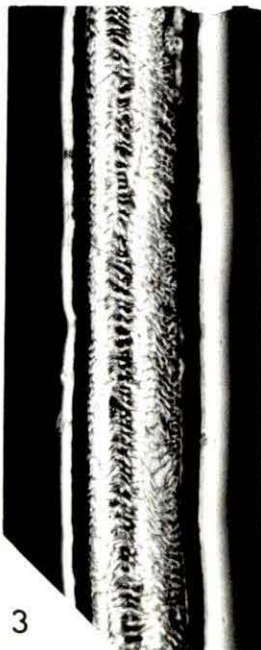
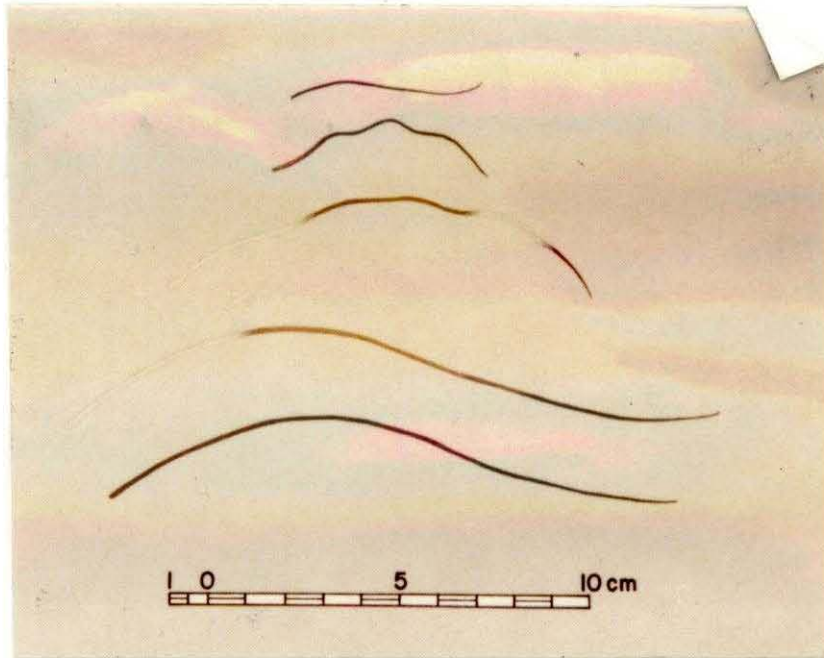
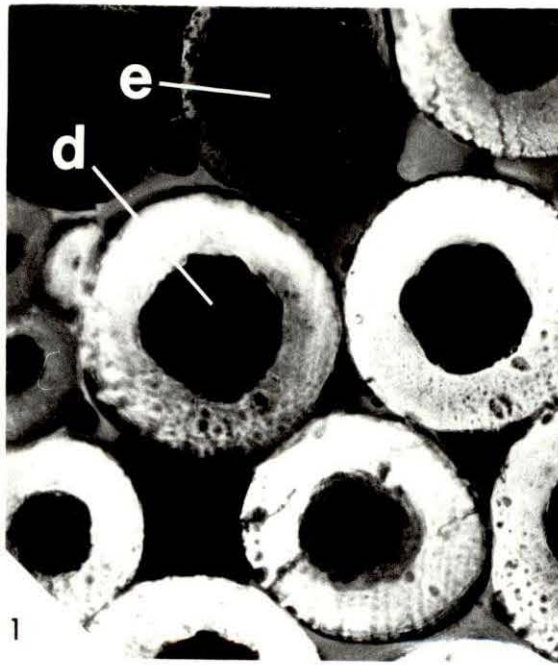
Colours: browns and whites.

Underfur -

Round or oval, medium medulla.

Cuticular scale patterns:

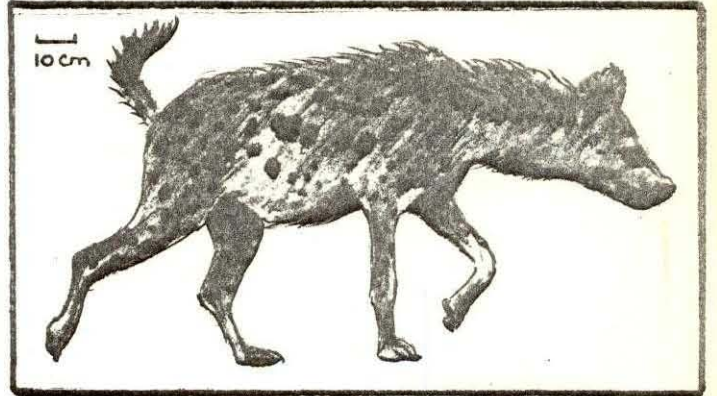
Waved mosaic with one, or two, scales across width of hair. Scale margins: crenate. Distance apart of scales: near (3) and, enlarged x 5, (4).



3

4

SPOTTED HYAENA



**DISTRIBUTION:**

Lesotho, northern Transvaal,
Mozambique, Rhodesia, Botswana
and Namibia.

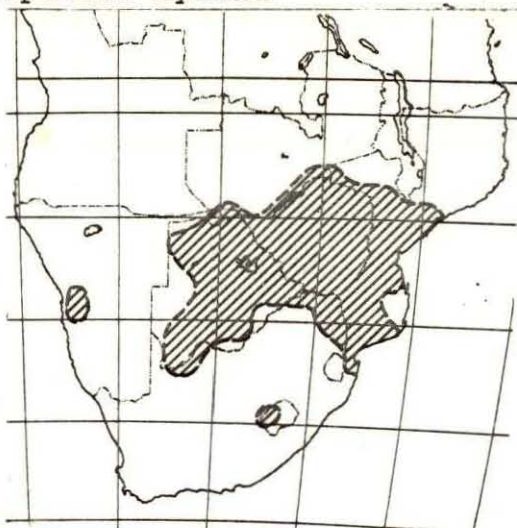
HABITAT:

All types of savannah.

HABITS:

Mainly, but not entirely nocturnal. Solitary or in pairs, but usually social occurring in clans. Burrows or lives in dense bush or in aardvark holes. Scavenger, and predatory. Diet: Carcasses, bones and warm blooded prey.

Spotted Hyaena

**HAIR****GENERAL DESCRIPTION OF FUR:**

Coat short and coarse. Ground colour, buffy to dull grey. Irregularly marked with blackish round spots. Throat light coloured, unspotted. Face, muzzle and lower limbs dark brown. Young, blackish. Tail short with bushy tip.

INDIVIDUAL HAIRS:

Length : $33,54 \pm 10,37$ mm

Colour : Tawny, banded sepia. Sepia, paler base. Buff. Buff, tipped brown. Sepia merging brown to white. (5).

Cross-sections:**Guard hairs -**

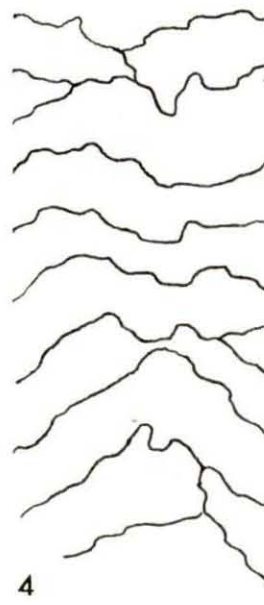
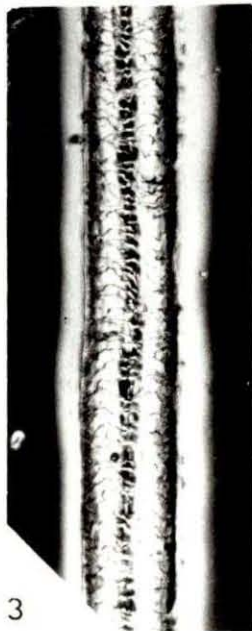
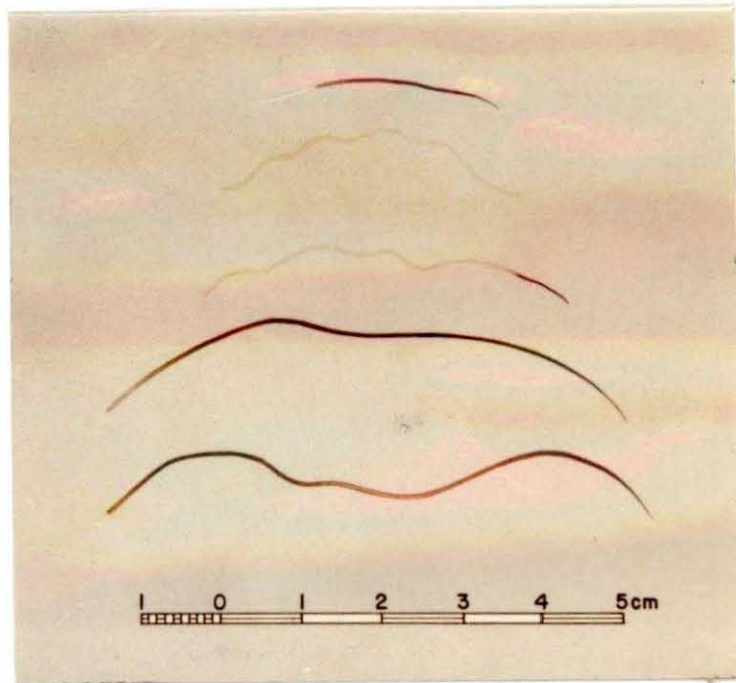
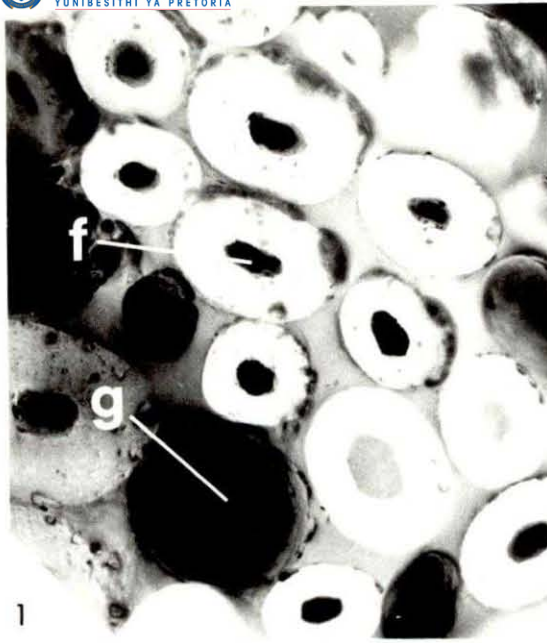
Ovals and circles with small medulla. Cortex large (1f). Cortex white, orangy or light brown. Some ovals with large medulla (1g) or medium medulla (2).

Underfur -

Circles with small medulla. Circles and ovals with medium medulla.

Cuticular scale patterns:

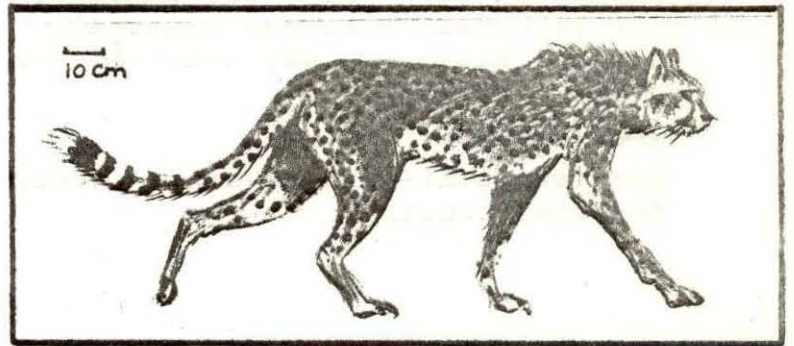
Irregular waved mosaic, one or two scales across width (3) and, enlarged x 5 (4). Scale margins: Smooth or slightly crenate. Distance apart of scales: near. Overall appearance as wind-swept sand.



3

4

CHEETAH



Family: FELIDAE



Acinonyx jubatus
(Schreber, 1775)

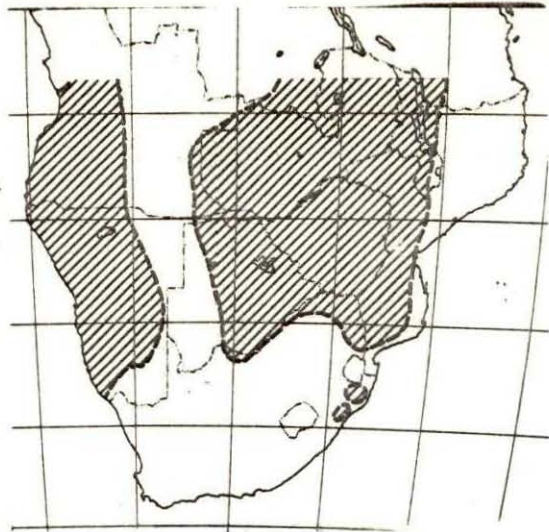
DISTRIBUTION:

Northern Cape Province, northern Transvaal, Rhodesia, Botswana (except eastern part) and Namibia, game reserves of Kruger National Park and Hluluwe (Map adapted from Wrogeman 1975).

HABITAT:

Open and semi-arid savannah; never forested country.

Cheetah



HABITS:

Diurnal. Solitary or in pairs but may be found hunting larger prey in troops.

Diet: Small antelope, warthog, hares and birds.

HAIR

GENERAL DESCRIPTION OF FUR:

Coat roughish, entirely covered with small round black spots. General colour tawny to pale buffy; lighter, almost white on belly. Black stripe from eye to mouth.

INDIVIDUAL HAIRS:

Length: $20,35 \pm 7,67$ mm

Colour: Brown tipped sepia. Entirely black or sepia. Buff tipped light brown (5).

Cross-sections:

Guard hairs -

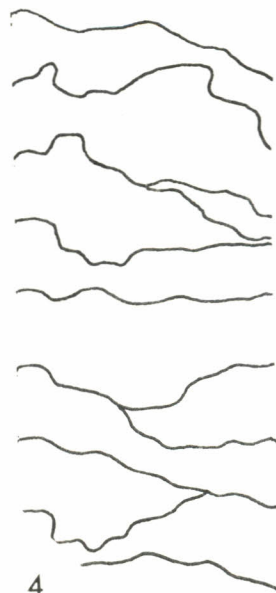
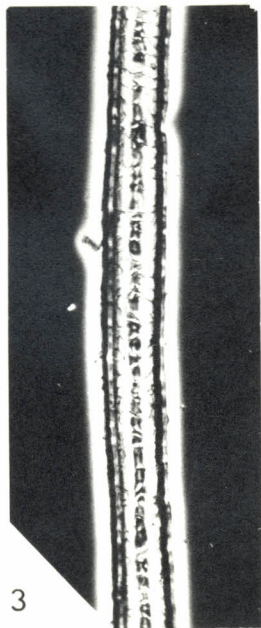
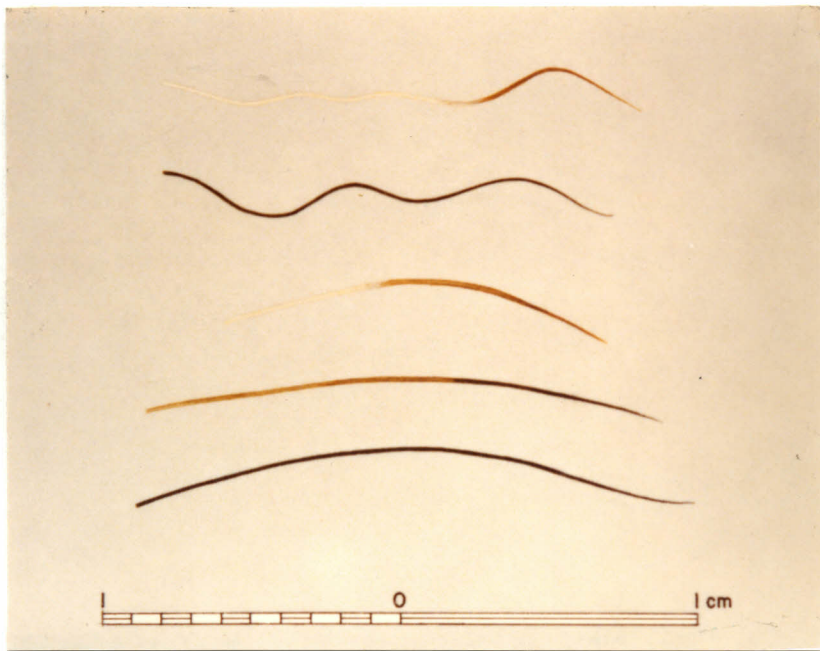
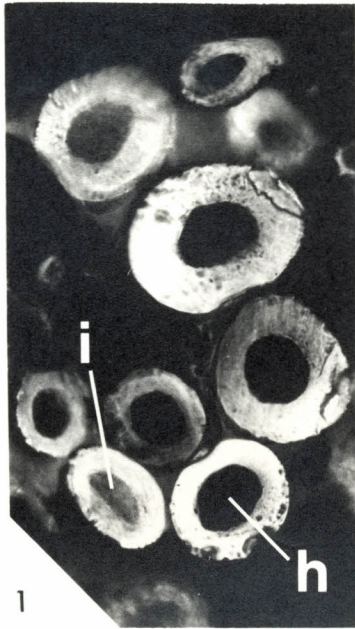
Circles with medium medulla (1h), or large medulla (2), Ovals with medium medulla (1i).

Underfur -

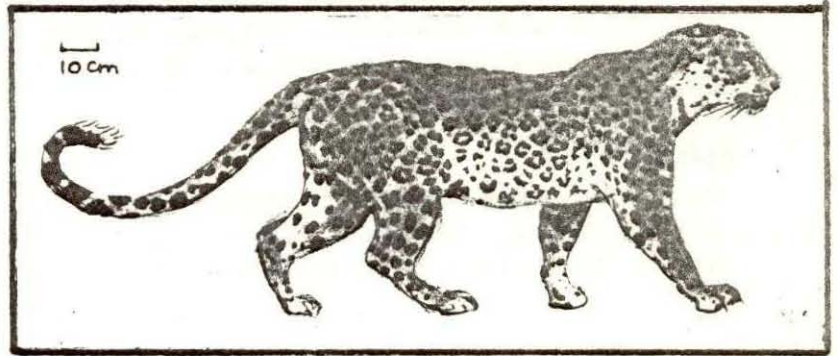
Circles and ovals with medium medulla. Few with large medulla.

Cuticular scale patterns:

Mosaic, one or two scales across width (3), and (4). Waved mosaic towards tip (cf leopard, no petal pattern). Scale margins: smooth except in waved mosaic, when rippled. Distance apart of scales: Near.



LEOPARD



Family:

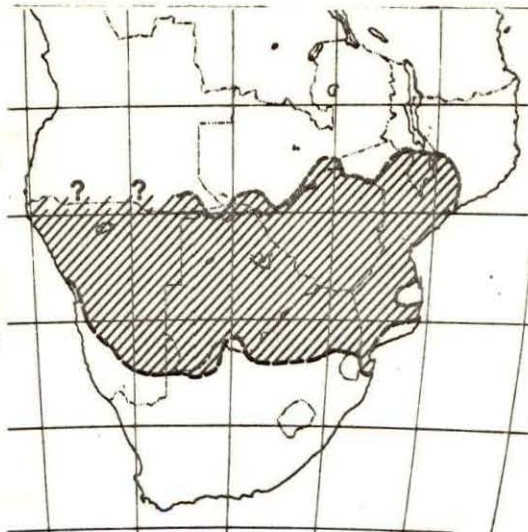
FELIDAE

Panthera pardus
(Linnaeus, 1758)

Leopard

DISTRIBUTION:

Northern Cape Province.
Mozambique, Transvaal, Rhodesia,
Botswana and Namibia. May be found
in very mountainous regions else-
where (not shown on map).



HABITAT:

Varied. From dense forests to open
dry country. Frequently in fairly
dense bush in rocky surroundings.

HABITS:

Nocturnal, solitary except in mating season when lives in pairs.
Sometimes small groups up to six. Climbs trees.
Diet: wide range of birds and mammals.

HAIR

GENERAL DESCRIPTION OF FUR:

Coat dense and soft, rather short, marked with numerous spots
arranged in rosettes. Broken bands across chest. Underparts
and inner sides of limbs pure white. Tail long, spotted, with
terminal tuft.

INDIVIDUAL HAIRS:

Length: $19,20 \pm 6,59$ mm

Colour: Sepia or black. White or white tipped tawny or
tawny to black. White (6).

Cross-sections:

Guard hairs -

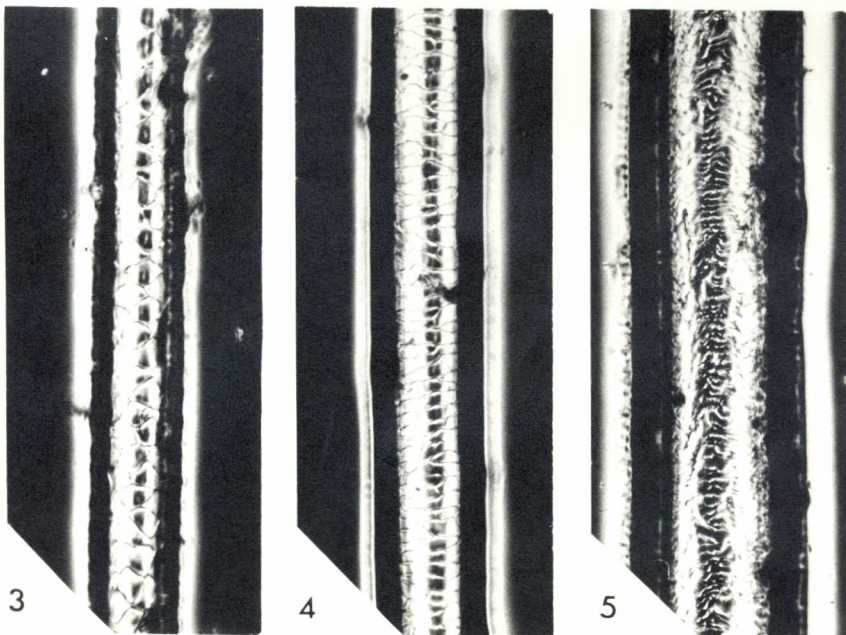
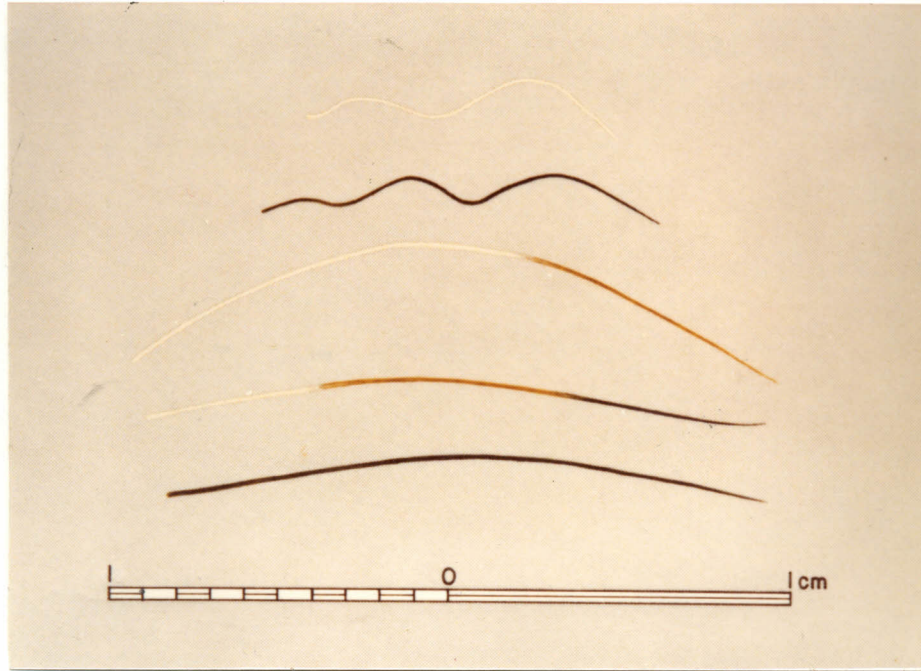
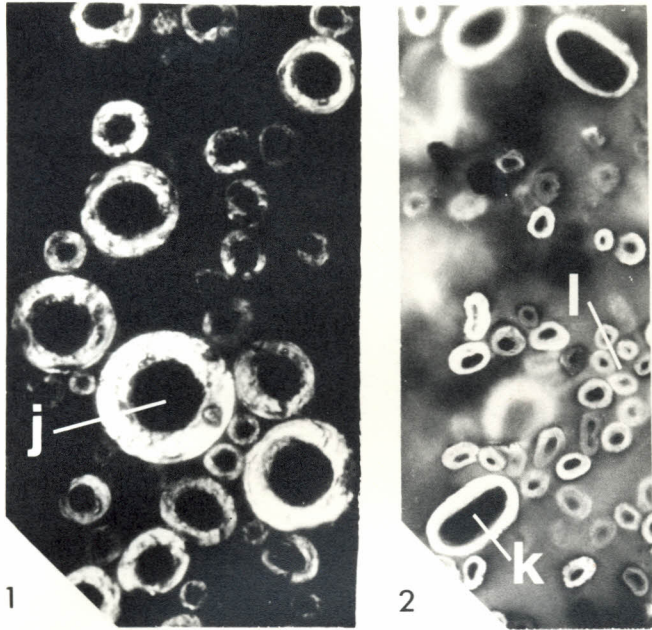
Mostly circles medium medulla (1j). Some ovals with medium
medulla (2k). Colours reds, blacks and yellows.

Underfur -

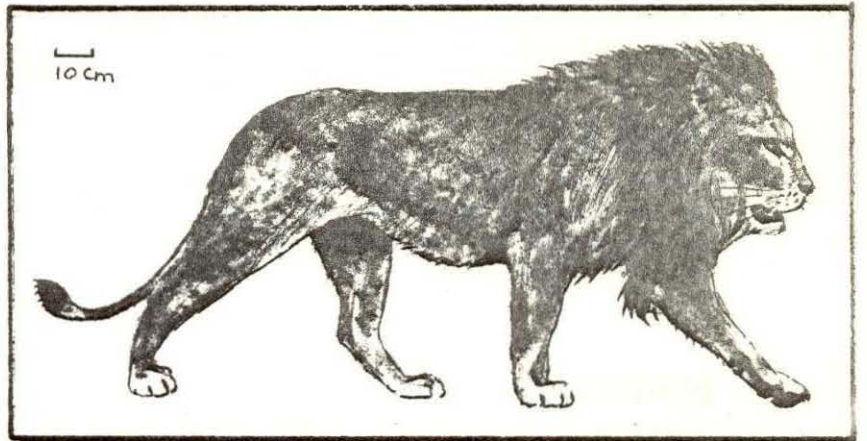
Predominantly circles (2l) with small and large medulla.

Cuticular scale patterns:

Petal at base (3). Mosaic along shaft, one or two scales across
width (4), distal part waved mosaic (5). Scale margins: crenate
in waved mosaic, smooth in petal. Distance apart of scales:
near in waved mosaic, distant in mosaic and petal.



LION





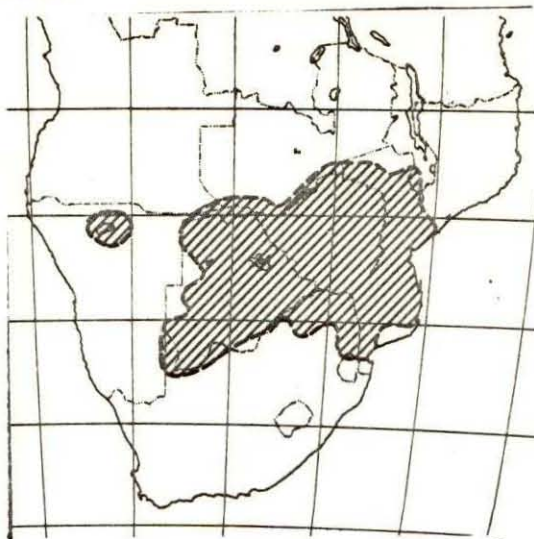
Lion

DISTRIBUTION:

Extreme northern Cape Province, northern and eastern Transvaal (especially Kruger National Park): Mozambique, Rhodesia, Botswana, Namibia - Etosha Game Reserve.

HABITAT:

Open and lightly wooded grassland: even mountain grassland up to 10,000 feet. Sometimes semi-desert country.

**HABITS:**

Diurnal, although they will hunt and move at night. Rarely seen alone, very sociable. Prey on herbivores from small antelope to elephant.

HAIR**GENERAL DESCRIPTION OF FUR:**

Coat coarse, short, of uniform colour varying from ochraceous silver grey to dark ochre brown. Head darker, underparts lighter. Mane on neck and shoulders varies from silver blond to rufous to black. Long tufts on elbows. Tail long with black tuft.

INDIVIDUAL HAIRS:

Length: (not mane) $9,21 \pm 2,17$ mm

Colour: White. White tipped tawny marging sepia. Tawny tipped black or white (4).

Cross-sections:**Guard hairs -**

Mane hair: ovals with medium medulla (2).

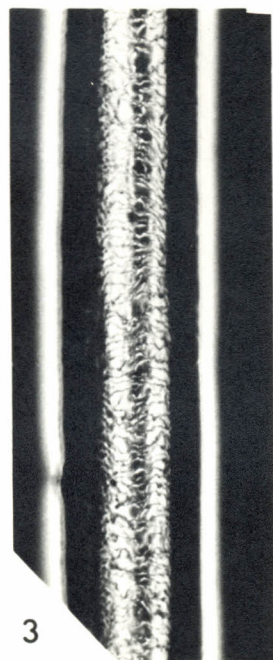
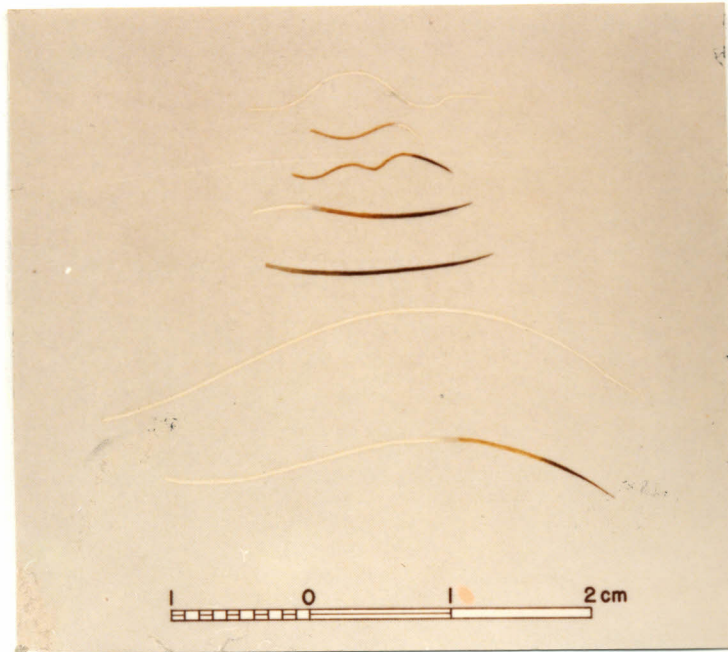
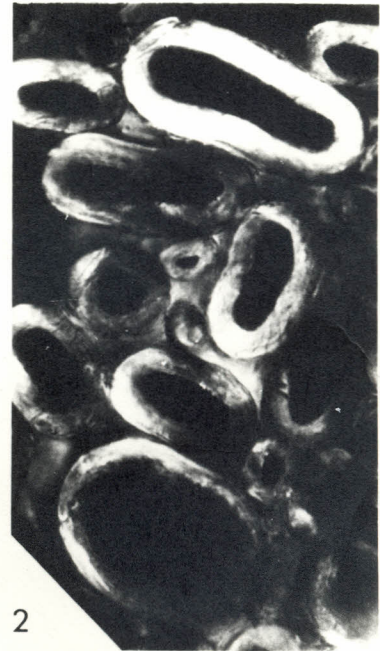
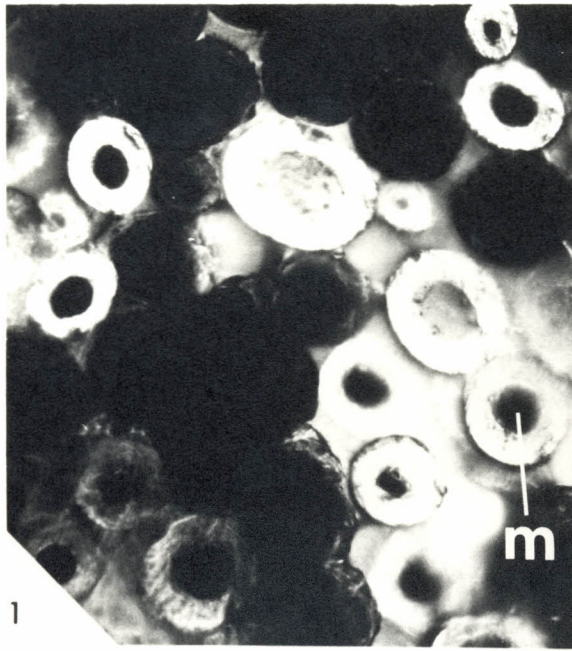
Body hair: mainly circles with medium medulla (1m).

Underfur -

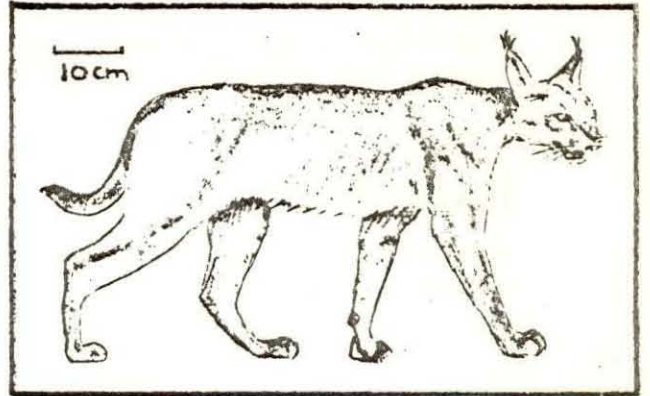
Ovals and circles - with medium medulla.

Cuticular scale patterns:

Irregular waved mosaic (3). Scale margins: rippled crenate. Distance apart of scales: near.



CARACAL LYNX



Family:

FELIDAE

Felis caracal
Schreber, 1776

DISTRIBUTION:

Throughout the southern African sub-region except Namibia coastal strip and parts of Natal.

HABITAT:

All types of savannah and semi-desert. Never in dense forest.

HABITS:

Mainly nocturnal. Takes refuge among boulders or in thick underbush in daytime. Good climber. Little known of habits. Diet: various mammals from young antelope to rodents, birds, hares, dassies. (Jumps for birds).

Caracal Lynx



HAIR

GENERAL DESCRIPTION OF FUR:

Coat thick and soft, uniform reddish fawn to brick-red brown. Sometimes darker, can be entirely blackish. Long tassel of hairs on ears. Underparts lighter, whitish with faint indication of spots. Tail shorter than other African cats.

INDIVIDUAL HAIRS:

Length: $21,68 \pm 9,97$ mm

Colour: White darkening to yellow brown, black tipped. Entirely buffy white, or white tipped beige (3).

Cross-sections:

Guard hairs -

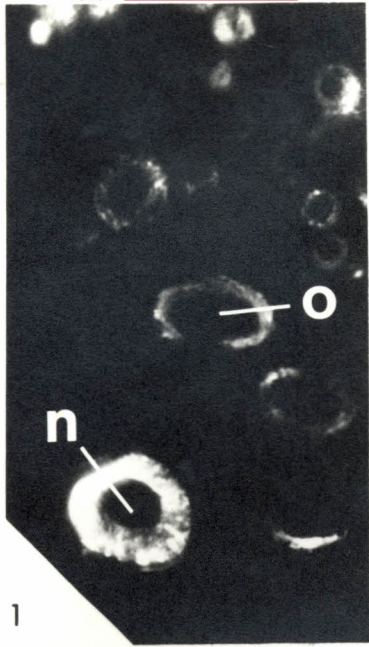
Circles and ovals with medium medulla (1n). Some with large medulla. Occasional true oval shape (1o).

Underfur -

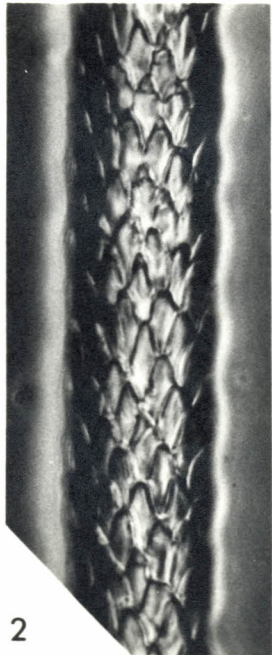
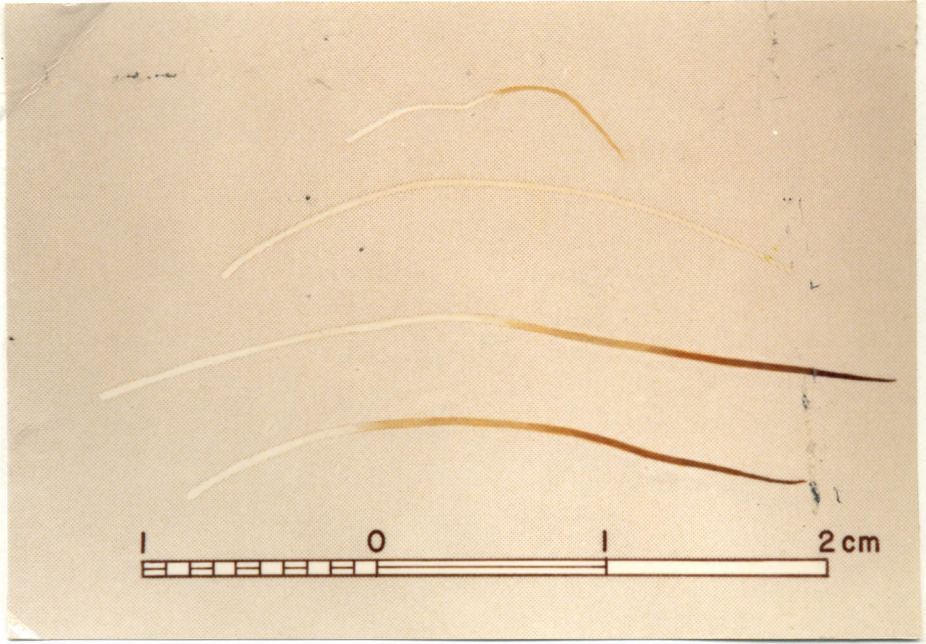
Present in large quantities. Circular with medium medulla. Reddish pigment obvious.

Cuticular scale patterns:

Pectinate flattened scales along shaft (2). Tip, waved mosaic, basal part coronal. Scale margins: smooth except towards tip. Distance apart of scales: near in mosaic, distant in other patterns.

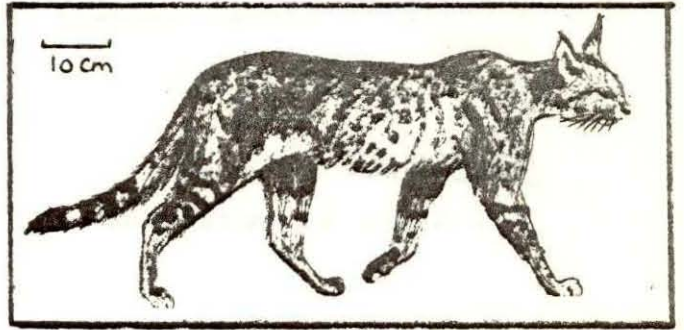


1



2

AFRICAN WILD CAT



Family: FELIDAE

Felis libyca Schreber, 1777

DISTRIBUTION:

Throughout southern African sub-region except Namibia coastal strip.

HABITAT:

All types of savannah.

HABITS:

Nocturnal. Remains hidden in thick bush during the day.
Diet: birds, (particularly guinea fowl and francolins), rodents, snakes, lizards, insects and fruits.

African Wild Cat



HAIR

GENERAL DESCRIPTION OF FUR:

General colour from greyish to buffish or ochraceous with rather indistinct "tabby-cat" vertical stripes.

INDIVIDUAL HAIRS:

Length: $38,79 \pm 7,47$ mm

Colour: Black. Black banded white, some merging grey. Grey (4).

Cross-sections:

Guard hairs -

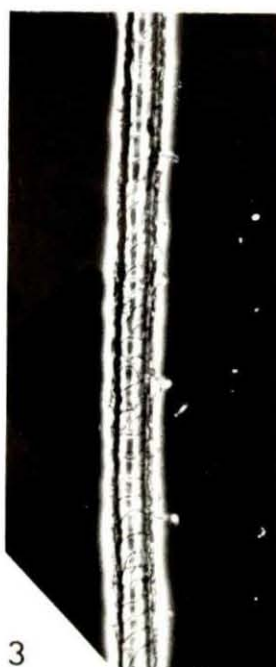
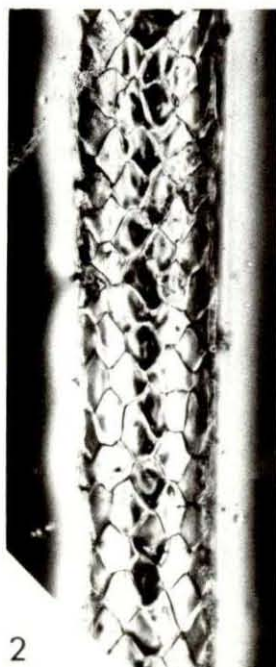
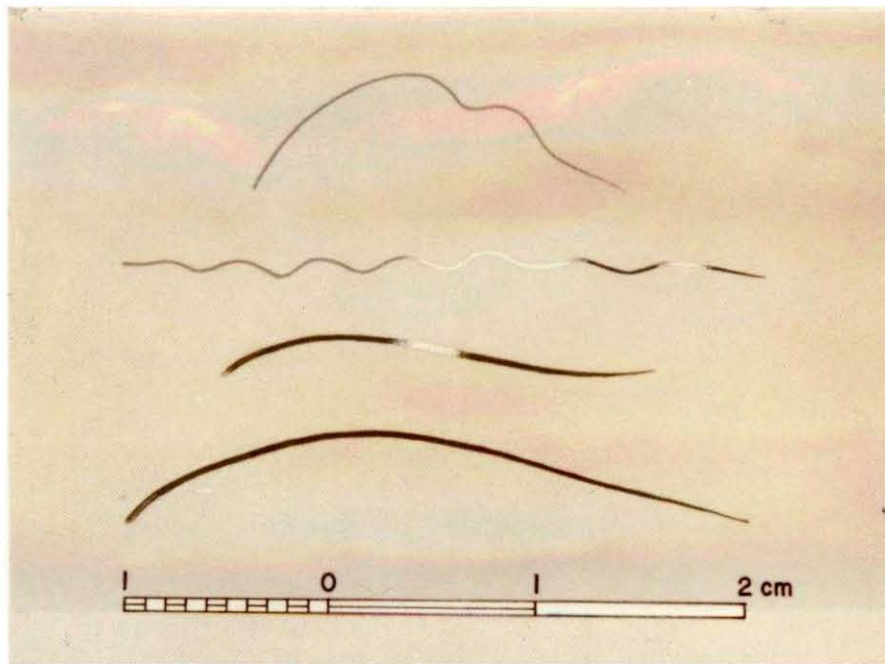
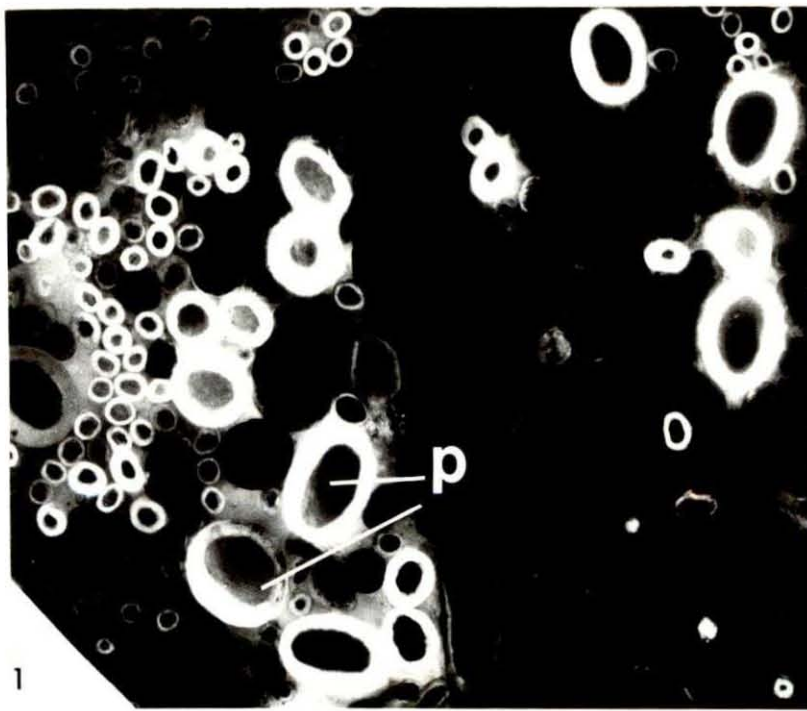
Circles or roundish ovals with medium medulla (lp). Large medulla in some cases.

Underfur -

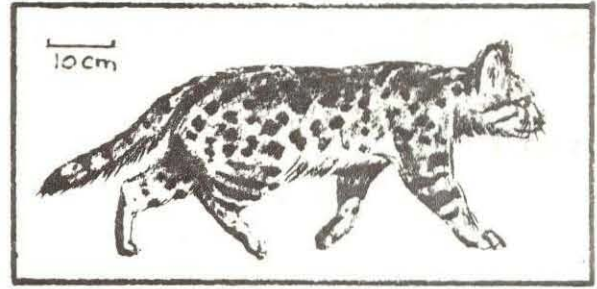
Present in large amounts. Circles with medium medulla.

Cuticular scale patterns:

Large guard hairs, diamond petal (2). Smaller hairs mosaic or coronal (3). Scale margins: smooth except near tip when waved mosaic becomes crenated. Distance apart of scales: distinct in petal, near in mosaic.



BLACK-FOOTED CAT



Family:

FELIDAE



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Felis nigripes

Burchell, 1823

DISTRIBUTION:

Eastern and northern Cape Province, Orange Free State, southern Transvaal, Botswana and Namibia.

HABITAT:

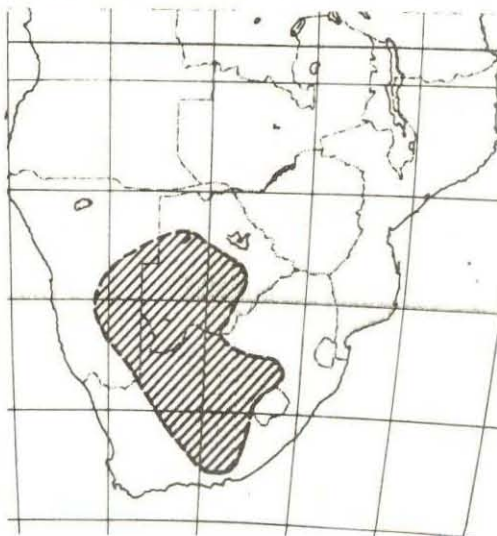
Dry open country.

HABITS:

A rare cat of little known habits.

Diet: probably ground squirrels, small rodents, birds.

Black-footed cat



HAIR

GENERAL DESCRIPTION OF FUR:

Tawny, lighter on underparts. Profusely marked with large black spots. These are rather long, not in rings or ocellated, and elongated into transverse stripes on shoulder. Tail short, bushy, with spotted tip.

INDIVIDUAL HAIRS:

Length: $16,72 \pm 4,73$ mm

Colour: Entirely black or black banded yellow-brown. Yellow-brown dark tipped. Dark grey, tipped black (3).

Cross-sections:

Guard hairs -

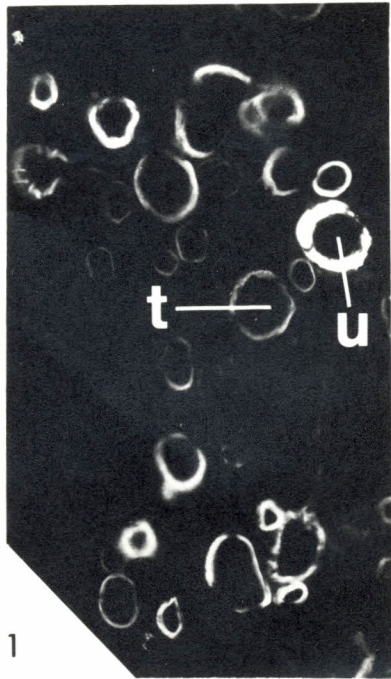
Circles, large medulla, (1t) circles medium medulla (1u).
Colour: black and tawny.

Underfur -

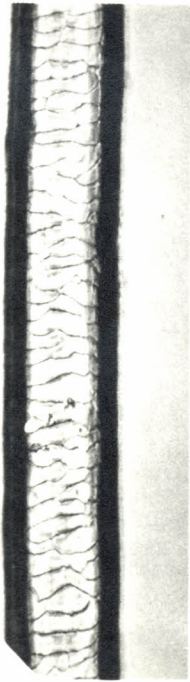
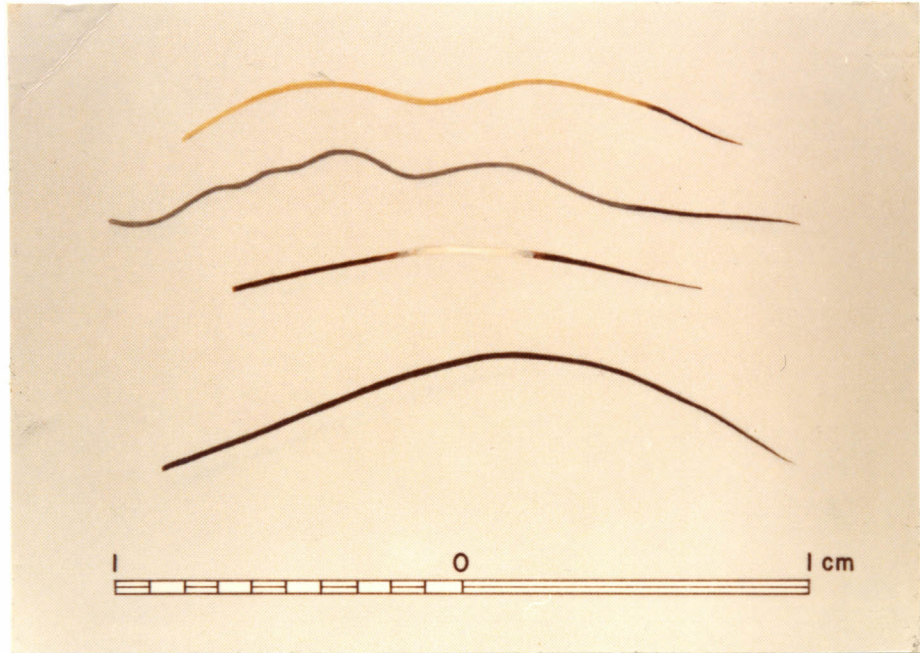
Present in large amounts. Circles, medium medulla. Circles, large medulla.

Cuticular scale patterns:

Mosaic (2). Tip, waved mosaic, base coronal. Scale margins: crenate in waved mosaic, otherwise smooth. Distance apart of scales: near.

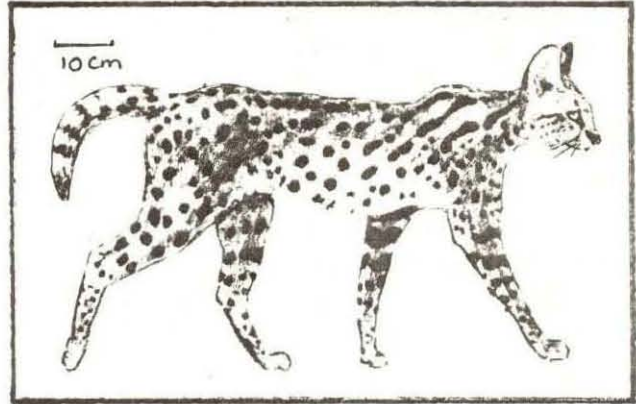


1



2

SERVAL



DISTRIBUTION:

South-eastern Cape Province, Natal, Swaziland, Transvaal, Mozambique, Rhodesia, northern Botswana and northern Namibia.

HABITAT:

Open savannah from slightly bushed country to forests, especially near marshy places or rivers. Also high mountain moorlands.

HABITS:

Nocturnal, sometimes partly diurnal, although terrestrial can climb trees. Long legs good for running and seeing prey. Diet: small animals, lizards, rodents, birds. Reputed to eat fish and vegetable matter.

Serval



HAIR

GENERAL DESCRIPTION OF FUR:

Yellowish buffy, heavily marked with black spots, bands and stripes. Underparts whitish or buffy.

INDIVIDUAL HAIRS:

Length: $30,93 \pm 3,15$ mm

Colour: Tawny, black tipped, or entirely tawny or black or buff (6).

Cross-sections:

Guard hairs -

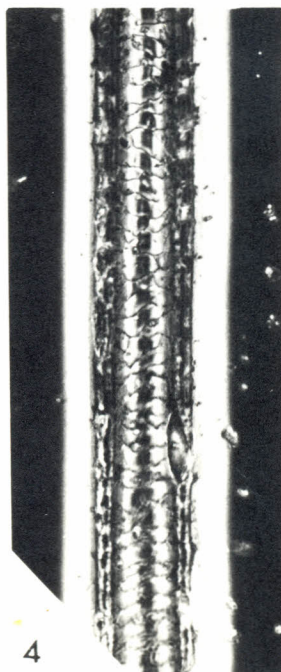
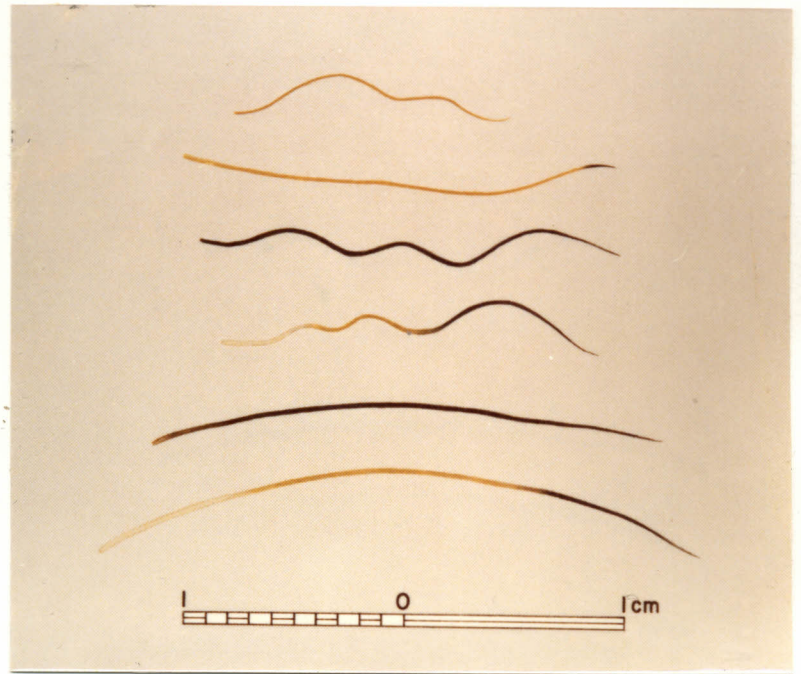
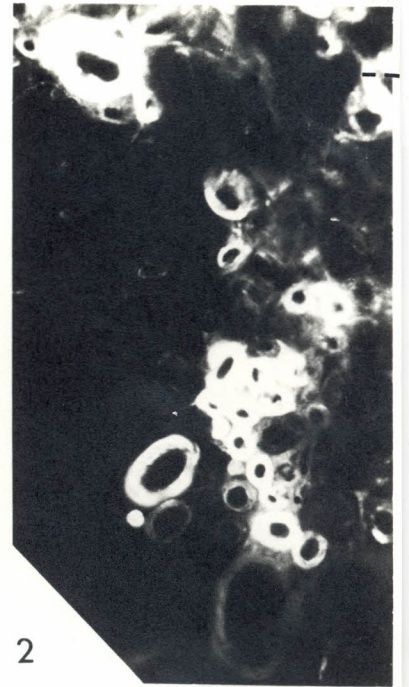
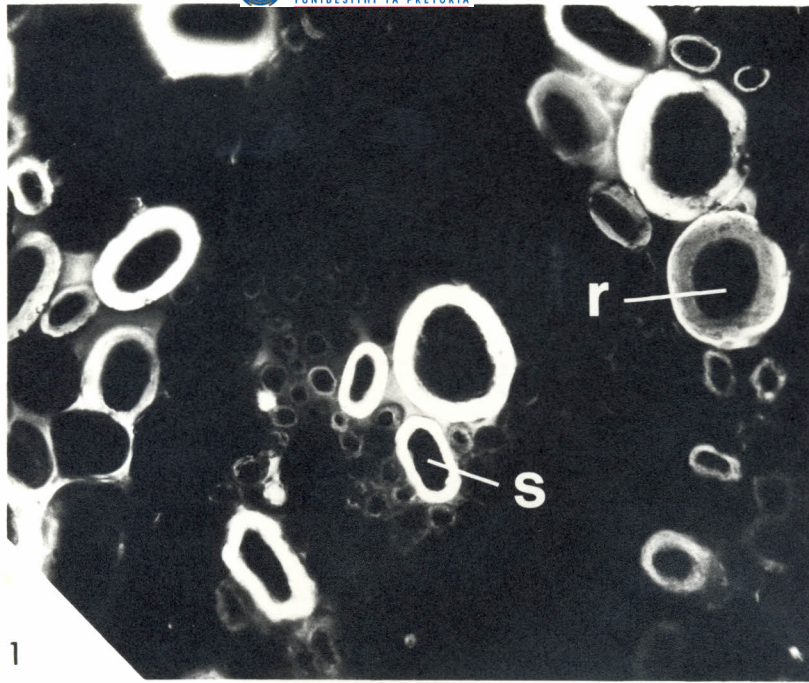
Shape: circles with medium medulla (1r). Some with large medulla as in (3). Some ovals with medium medulla (1s). Colour of cross section distinctive yellows and blacks.

Underfur -

Much underfur. Circles with medium medulla (2).

Cuticular scale patterns:

Broad scales in mosaic pattern (4). Tip waved mosaic (5), base coronal. Scale margins: smooth except towards tip when crenate. Distance apart of scales: near except in waved mosaic when close.

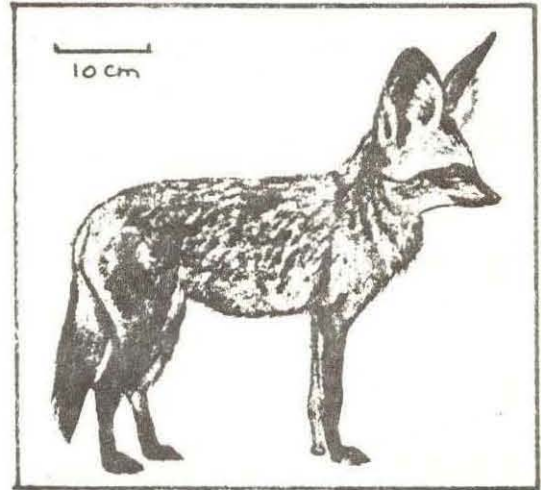


3

4

5

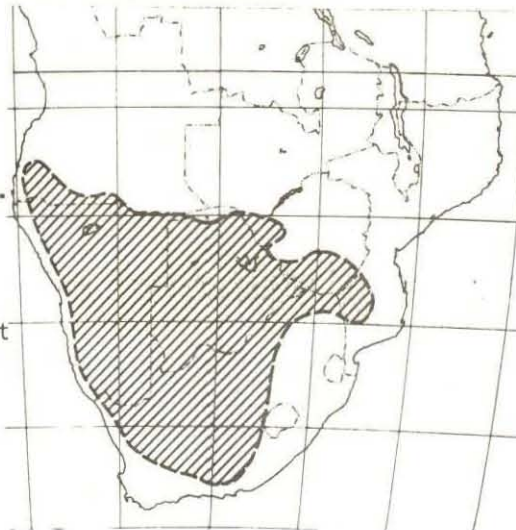
BAT-EARED FOX



Bat-eared Fox

DISTRIBUTION:

Cape Province, Orange Free State, western Transvaal, southern and western Rhodesia, Botswana and Namibia, except Namib coastal strip.

**HABITAT:**

All types of savannah and semi-desert specially associated with dry open plains.

HABITS:

Mostly nocturnal. Spends days in burrows or at entrance to den. Lives in groups up to ten, sometimes in pairs. Diet: insects, mice and wild fruit, birds and lizards. Digs out prey with long claws of front feet. Predominantly insectivorous.

HAIR**GENERAL DESCRIPTION OF FUR:**

Face blackish, upper parts grizzled silvery buff. Flanks lighter, underparts buffish. Limbs black at extremities. Tail bushy, blackish above and at tip.

INDIVIDUAL HAIRS:

Length : $22,08 \pm 8,08$ mm

Colour : Sepia. Sepia banded white. Grey. Grey white tipped (5).

Cross-sections:*Guard hairs -*

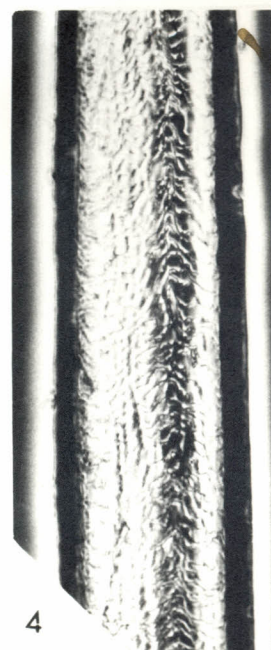
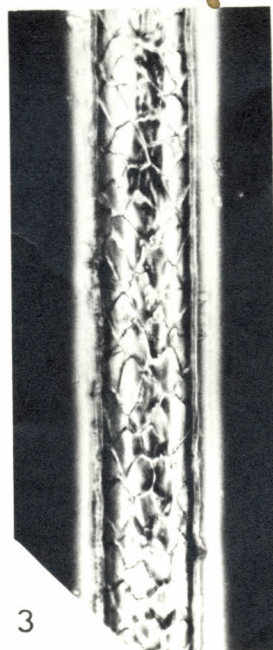
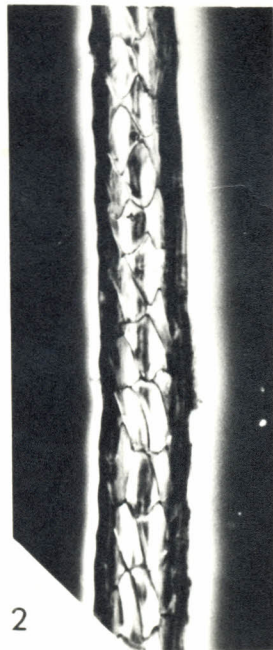
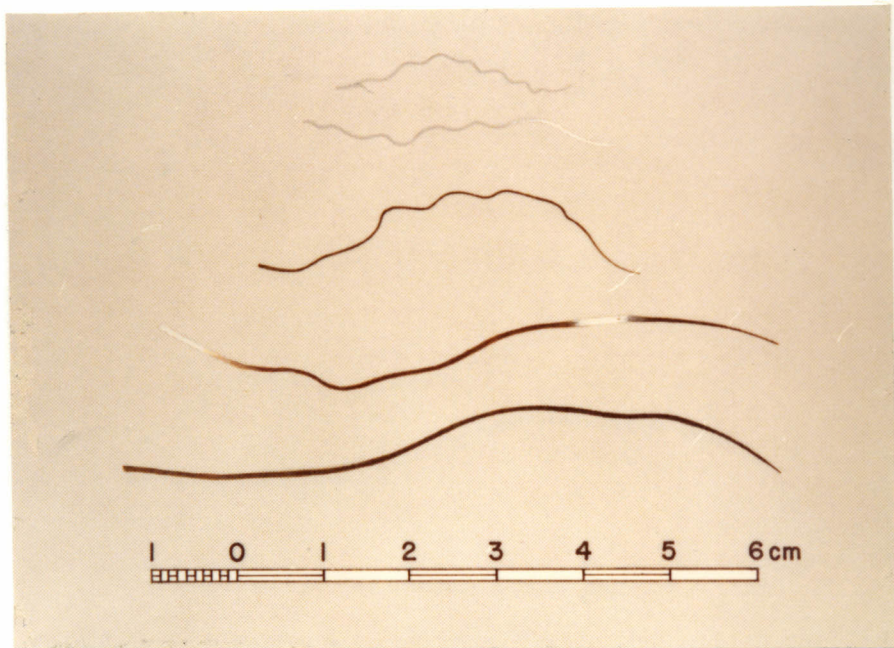
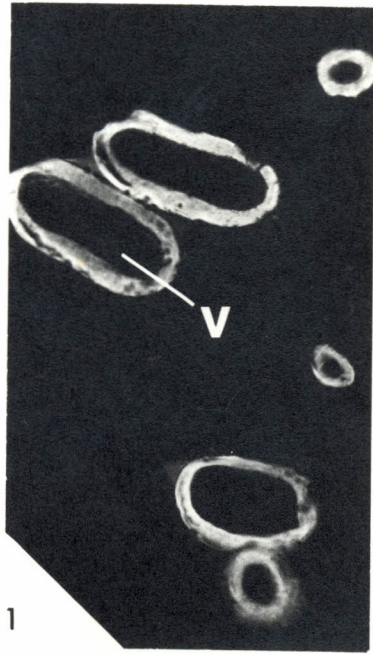
Distinctly oval with large or medium medulla (1v).
 Colour: red, yellow and black.

Underfur -

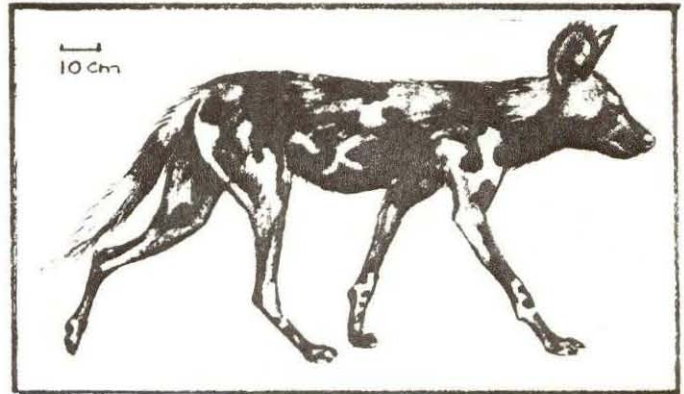
Ovals and circles with medium medulla.

Cuticular scale patterns:

Petal pattern, even at base (2). Waved mosaic towards tip (4).
 Scale margins: smooth except in mosaic. Distance apart of scales: distant in petal, near in mosaic.



HUNTING DOG



Cape Fox

DISTRIBUTION :

Cape Province, Orange Free State, Natal, western Transvaal, Botswana, Namibia except Namib coastal strip.

**HABITAT :**

Dry country, mainly open plains and Karroo veld, also Kalahari savannah.

HABITS :

Nocturnal. Hides in rocky crevices or sandy burrows in daytime. Solitary or in pairs. Diet: insects, birds, small mammals and vegetable matter.

HAIR**GENERAL DESCRIPTION OF FUR :**

Head and upper parts silvery grey. dark grey with white or black tips. Roots of hairs grey, buffish. Underparts pale buffish.

INDIVIDUAL HAIRS :

Length : $18,82 \pm 7,43$ mm

Colour : Black. Sepia banded white. Grey or grey merging white, black tipped (5).

Cross-sections :*Guard hairs -*

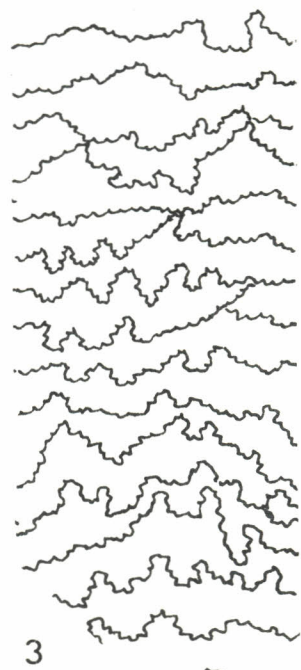
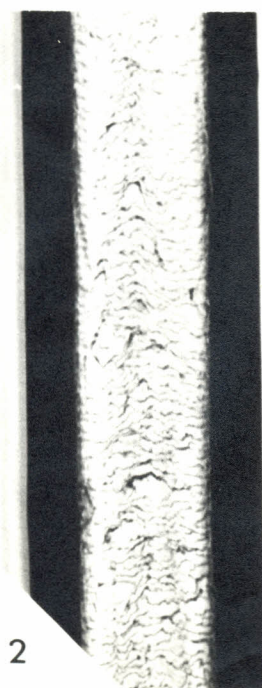
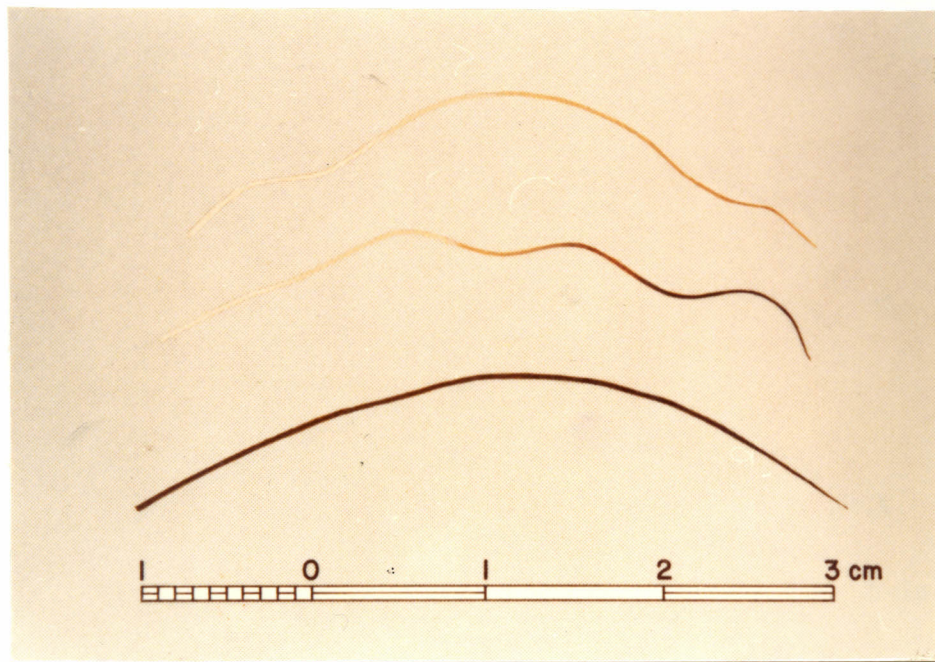
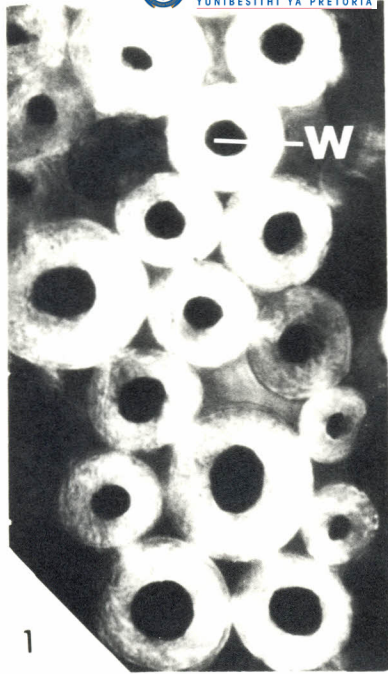
Circles and oblongs with medium medullas (1x). Some dumb-bells and, some concavo-convex with medium medullas (2z). Colour: red, yellow, black and beige.

Underfur -

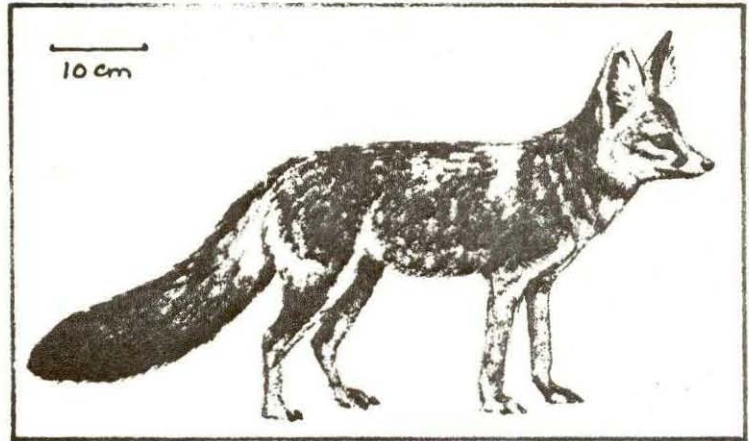
Circles and oblongs with medium medulla. Oblongs with large medulla.

Cuticular scale patterns :

Coronal at base (3), petal along shaft (4), waved mosaic towards tip. Scale margins: smooth, except in mosaic. Distance apart of scales: distant in petal, near in mosaic.



CAPE FOX



DISTRIBUTION :

Cape Province, Orange Free State, Natal, western Transvaal, Botswana, Namibia except Namib coastal strip.

HABITAT :

Dry country, mainly open plains and Karroo veld, also Kalahari savannah.

HABITS :

Nocturnal. Hides in rocky crevices or sandy burrows in daytime. Solitary or in pairs. Diet: insects, birds, small mammals and vegetable matter.

Cape Fox



HAIR**GENERAL DESCRIPTION OF FUR :**

Head and upper parts silvery grey. Roots of hairs grey, buffish dark grey with white or black tips. Underparts pale buffish.

INDIVIDUAL HAIRS :

Length : $18,82 \pm 7,43$ mm

Colour : Black. Sepia banded white. Grey or grey merging white, black tipped (5).

Cross-sections :*Guard hairs -*

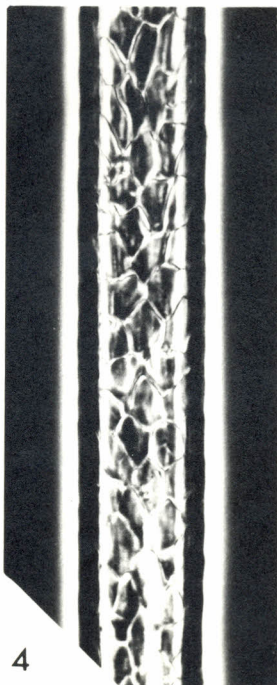
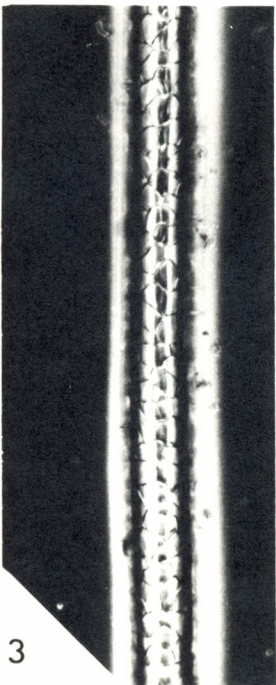
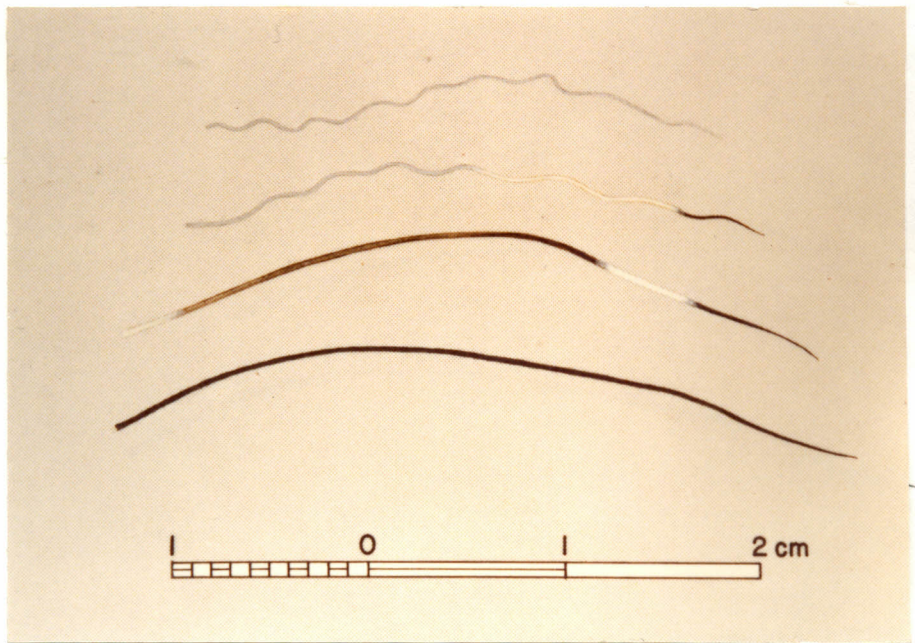
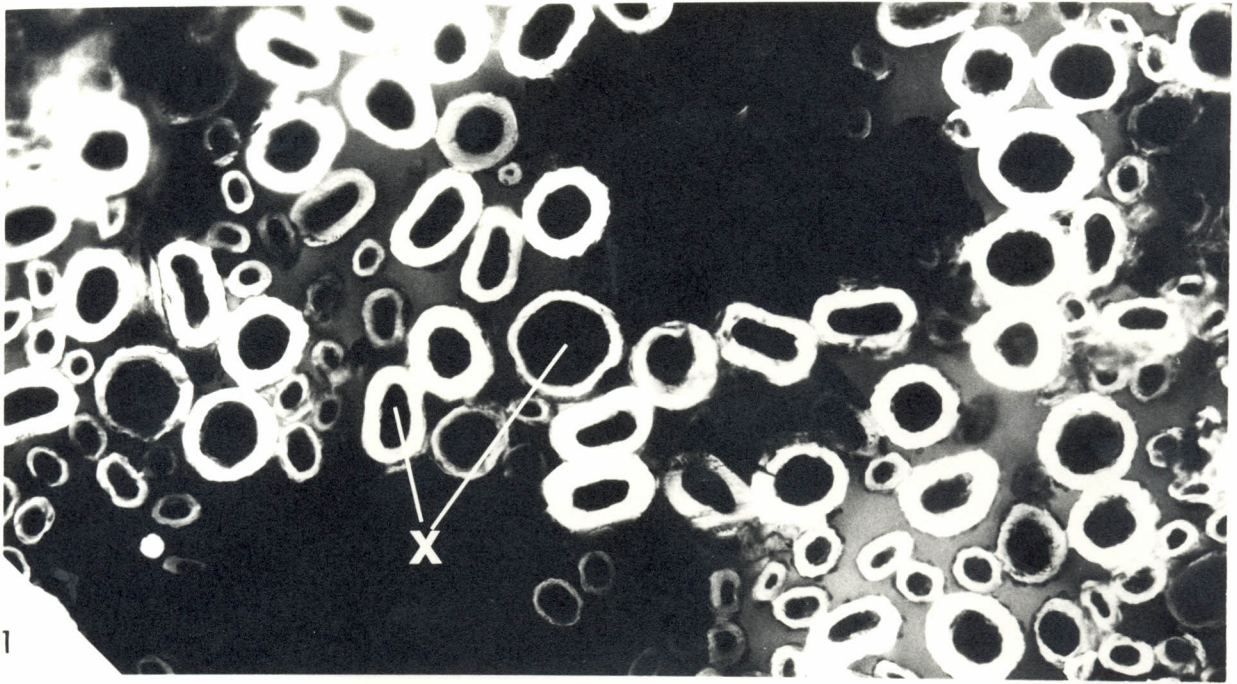
Circles and oblongs with medium medullas (1x). Some dumb-bells and, some concavo-convex with medium medullas (2z). Colour: red, yellow, black and beige.

Underfur -

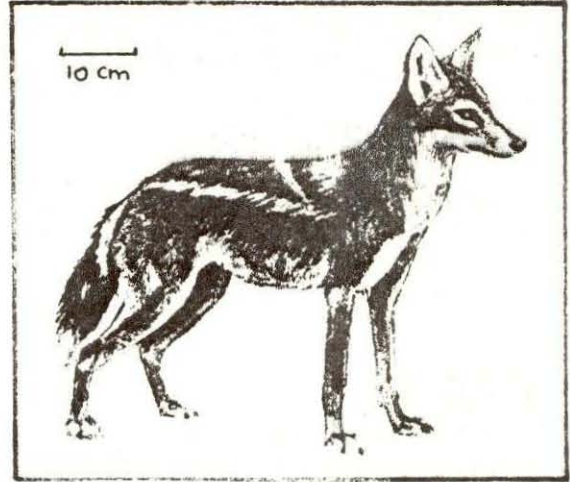
Circles and oblongs with medium medulla. Oblongs with large medulla.

Cuticular scale patterns :

Coronal at base (3), petal along shaft (4), waved mosaic towards tip. Scale margins: smooth, except in mosaic. Distance apart of scales: distant in petal, near in mosaic.



SIDE-STRIPED JACKAL



Family:

CANIDAE



Canis adustus

Sundevall, 1846

DISTRIBUTION:

Northern Natal, eastern and northern Transvaal, Mozambique, Rhodesia and northern Botswana, and north-eastern Namibia.

HABITAT:

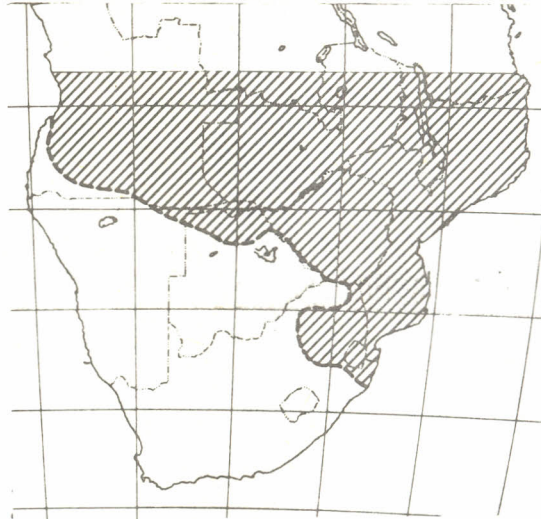
Open savannah and even mountains.

HABITS:

Nocturnal. More so than *Canis mesomelas*. Lives singly or in small packs. Shy.

Diet: essentially a scavenger where carrion available, but also feeds on birds, insects and vegetable matter.

Side-striped Jackal



HAIR

GENERAL DESCRIPTION OF FUR:

Greyish brown, darker on upper parts, lighter on sides. Whitish line along flanks from shoulder to tail bordered by black on lower line. Underparts whitish/grey. Tail bushy, blackish white-tipped.

INDIVIDUAL HAIRS:

Length: $35,11 \pm 4,72$ mm

Colour: White tipped black. Black banded white. Black. Beige (5).

Cross-sections:

Guard hairs -

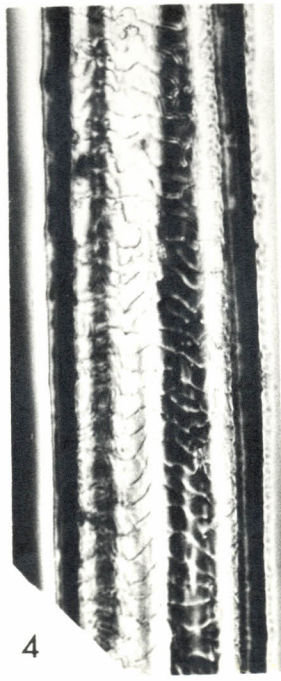
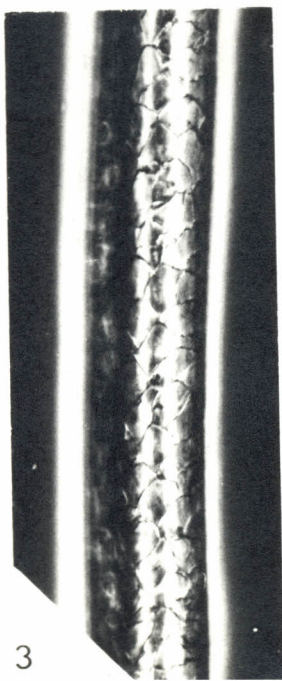
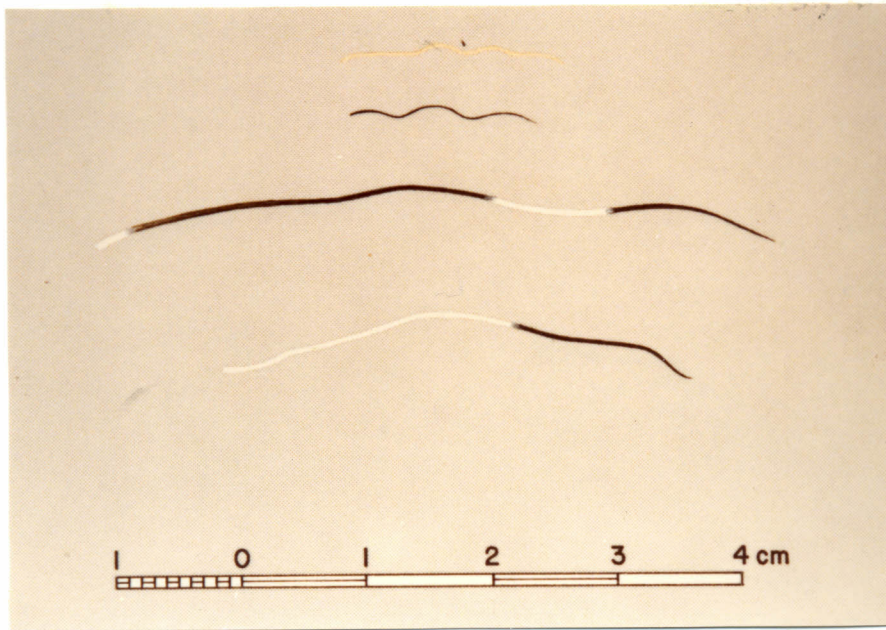
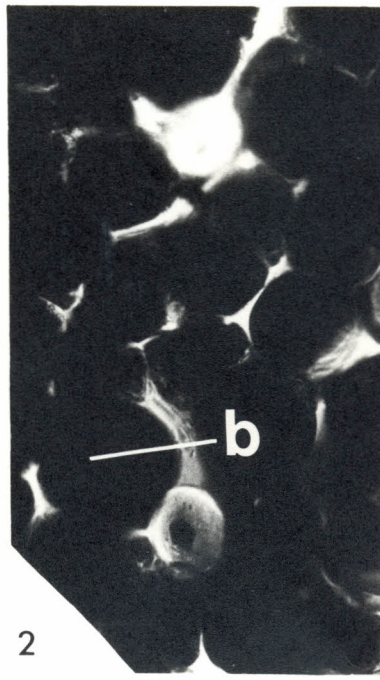
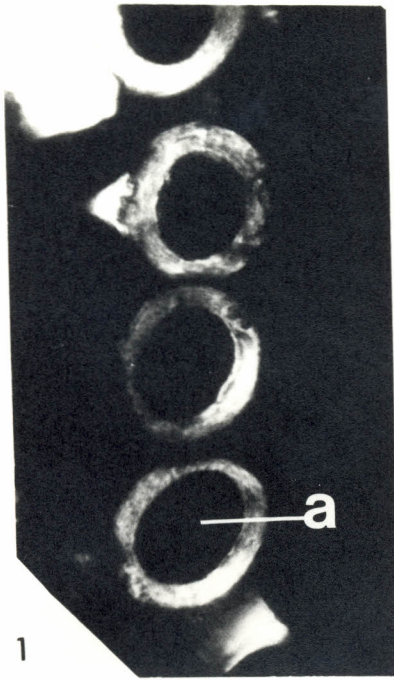
Circles and ovals, medium medulla (1a), large medulla (2b). Colour: black and white.

Underfur -

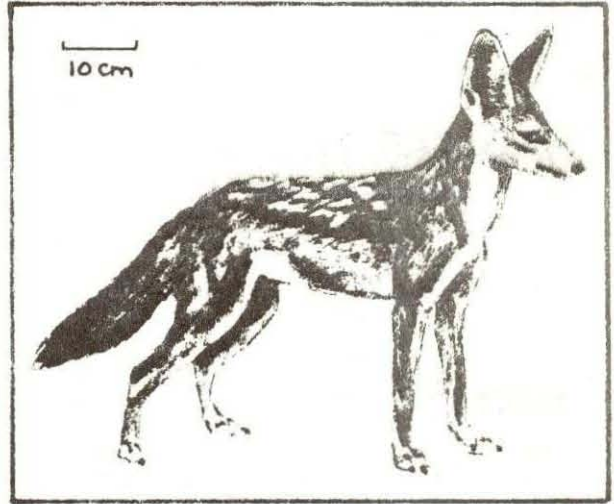
Circles, large and medium medulla.

Cuticular scale patterns:

Petal, (3) waved mosaic at tip (4). Scale margins: smooth in petal, rippled in waved mosaic. Distance apart of scales: distant in petal, near in waved mosaic.



BLACK-BACKED JACKAL



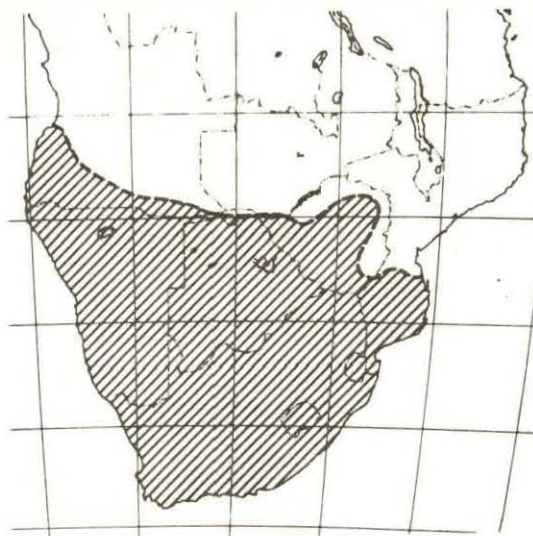
Black-backed Jackal

DISTRIBUTION :

Throughout southern African sub-region.

HABITAT :

Open savannah and light woodland.

**HABITS :**

Mainly nocturnal but often seen in daylight. Solitary but aggregations at killings.

Diet: hares, rodents, birds eggs, reptiles, insects; but it is also a scavenger attracted to other carnivore kills.

HAIR**GENERAL DESCRIPTION OF FUR :**

Head, greyish, sandy coloured on muzzle and cheek. Broad conspicuous dark mantle on upperparts from neck to tail, black and white, sharply contrasted to rufous colour on flanks. Tail bushy, black and white.

INDIVIDUAL HAIRS :

Length : $36,41 \pm 9,16$ mm

Colour : Black banded white. Black. Rufous merging white (4).

Cross-sections :*Guard hairs -*

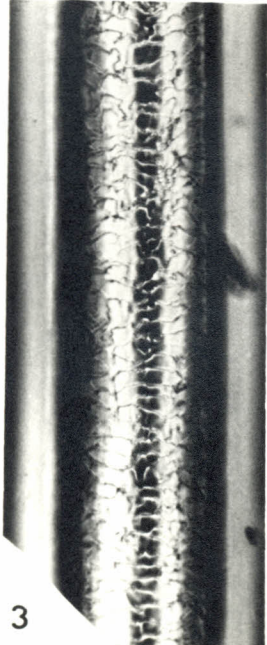
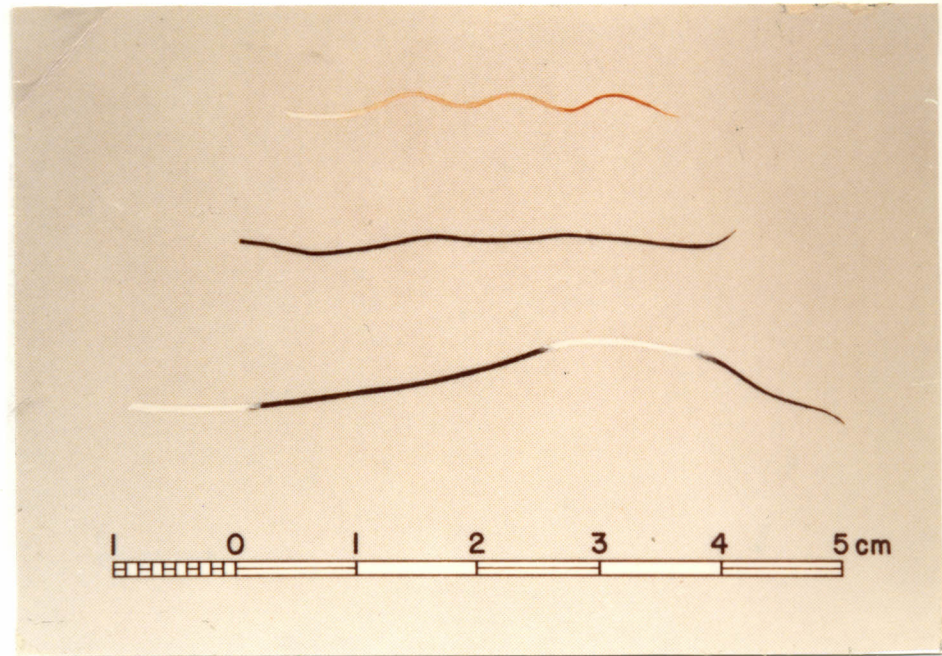
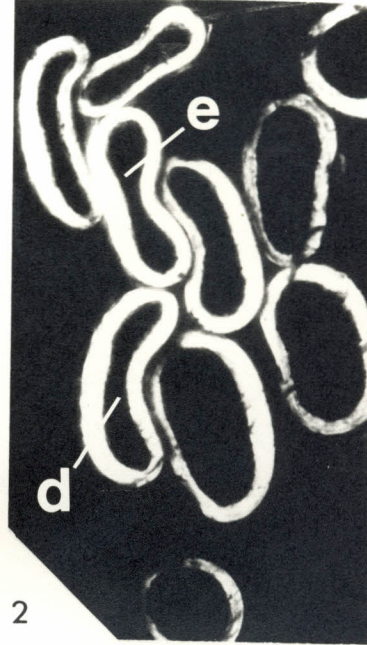
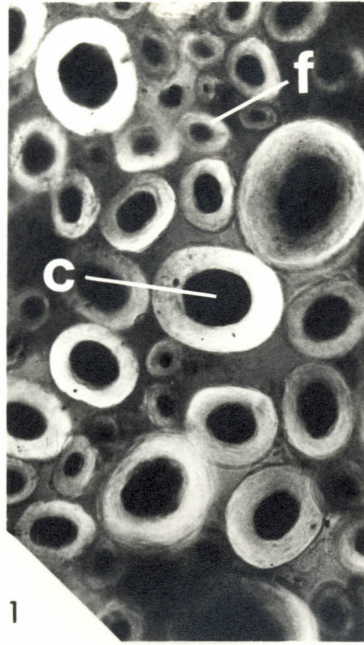
Cortex thick and distinctive (not as wide as in wild dog). Circles medium medulla (1c) concavo-convex (2d) and also 'Dumb-bell' shapes (2e). Medium medulla.

Underfur -

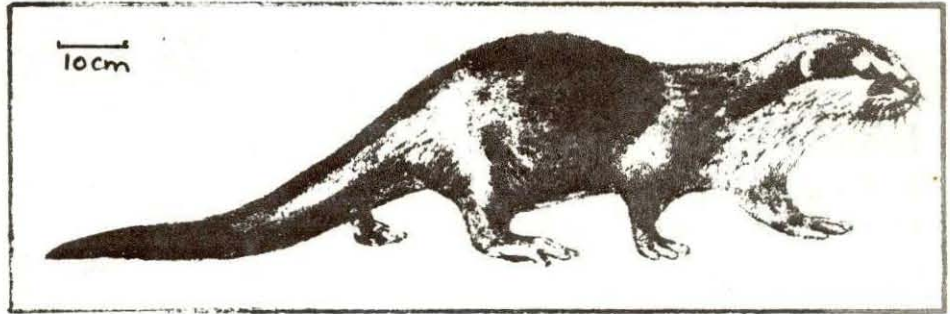
Circles, distinctive cortex (1f).

Cuticular scale patterns :

Waved mosaic (3). Scale margins: rippled-crenate. Distance apart of scales: near.



CAPE CLAWLESS OTTER



DISTRIBUTION:

Northern Natal, Swaziland, Transvaal
 Mozambique, Rhodesia, eastern and
 northern Botswana, north-eastern
 Namibia.

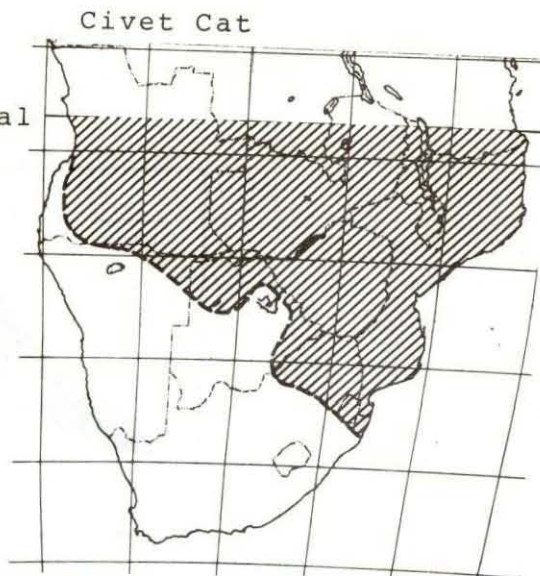
HABITAT:

All types of savannah, sometimes
 dense forest.

HABITS:

Nocturnal. Solitary. Well-developed musk glands. Omnivorous.
 Not an efficient killer.

Diet: carrion and a variety of prey including rodents, birds,
 eggs, small game, lizards and frogs and insects.

**HAIR****GENERAL DESCRIPTION OF FUR:**

Long, coarse bristly hairs, light-grey forehead and white muzzle.
 From neck to tail, line of shaggy black hairs. Ground colour -
 grey buffish with black spots in rows along body and across tail.

INDIVIDUAL HAIRS:

Length : $72,0 \pm 2,79$ mm

Colour : Entirely black. Black banded off-white, or
 off-white base. Entirely sepia or sepia
 tipped light brown (4).

Cross-sections:*Guard hairs -*

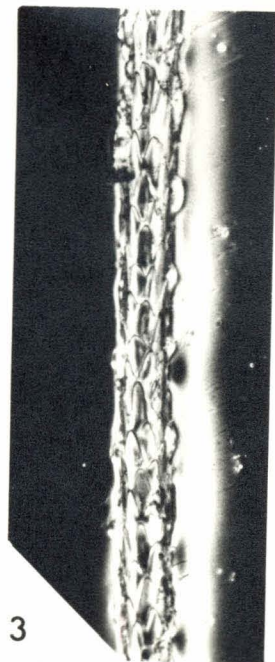
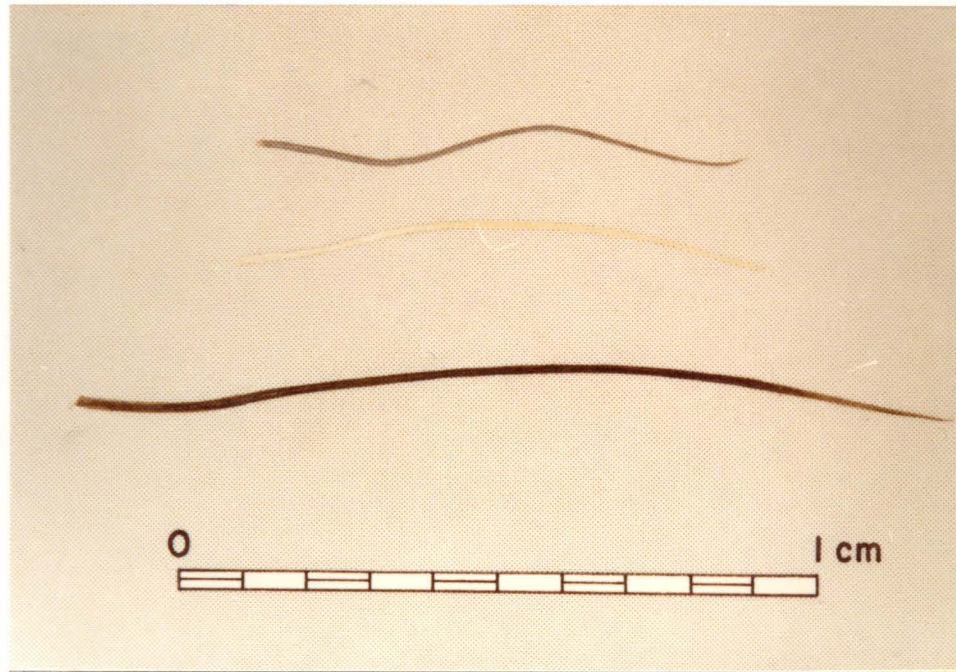
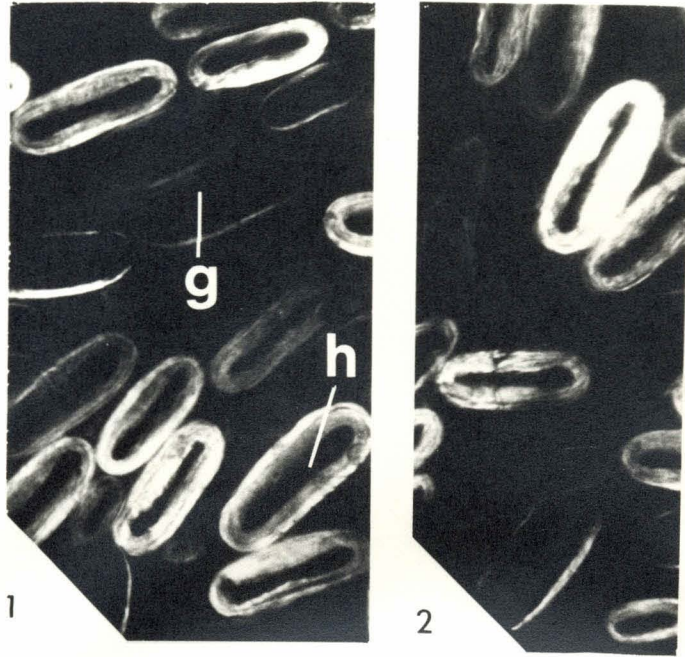
Large circles, medium medulla (1t). Some large circles with
 clearly pigmented cortex (1u).

Underfur -

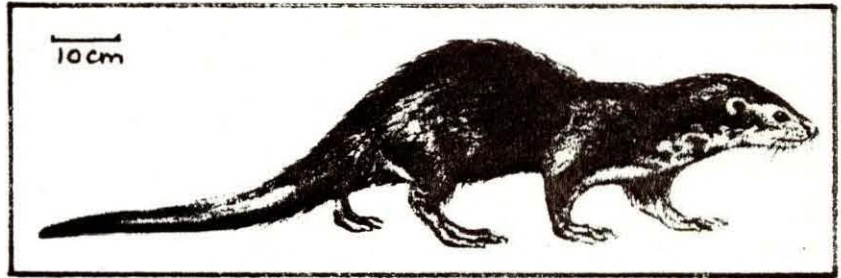
Small circles some with small medulla, and some with large
 medulla.

Cuticular scale patterns:

Petal, almost diamond petal along shaft (2) changing to fairly
 regular waved mosaic towards tip (3). Scale margins: smooth in
 petal, slightly rippled in mosaic. Distance apart of scales:
 distant in petal, near in waved mosaic.



SPOTTED-NECKED OTTER



Family:

MUSTELLIDAE

Lutra maculicollis

Lichtenstein, 1835



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Spotted-necked otter

DISTRIBUTION:

Eastern Cape Province, Natal, Orange Free State, Lesotho, Swaziland, Mozambique, northern Botswana and Namibia. Also found along parts of Orange river (not shown on map).

HABITAT:

Larger streams, rivers, and lakes and mountain streams with rapid flow.

HABITS:

Mainly nocturnal. Shy and seldom seen. Solitary or in small groups. More aquatic than *Aonyx capensis*.

Diet: fish, amphibians and fresh water animals.



HAIR

GENERAL DESCRIPTION OF FUR:

Upper parts dark brown/chestnut, conspicuously mottled with brown spots. Underparts paler.

INDIVIDUAL HAIRS:

Length : 13,63 ± 2,86 mm

Colour : Sepia (7).

Cross-sections:

Guard hairs -

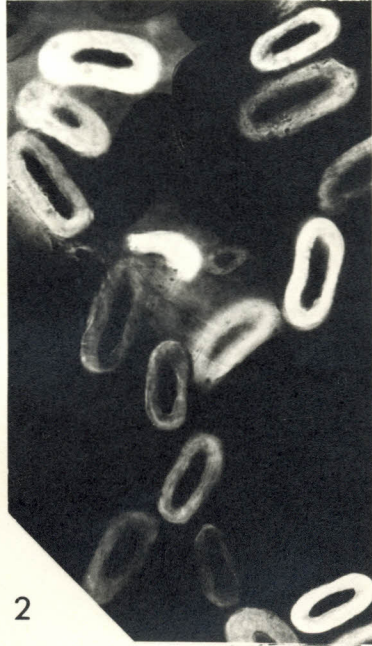
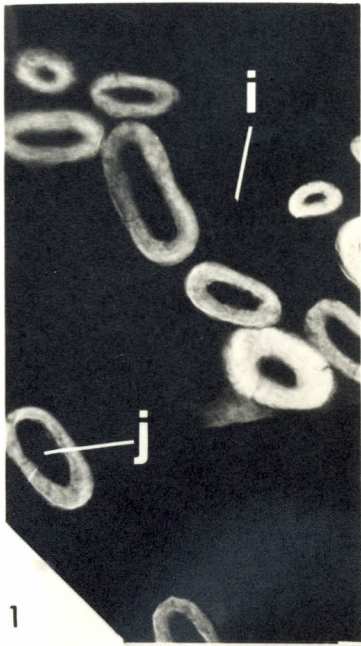
Oblong with large medulla (1i) and (3) or medium medulla (1j) and (4).

Underfur -

Sparse; round or oblong with medium size medulla.

Cuticular scale patterns:

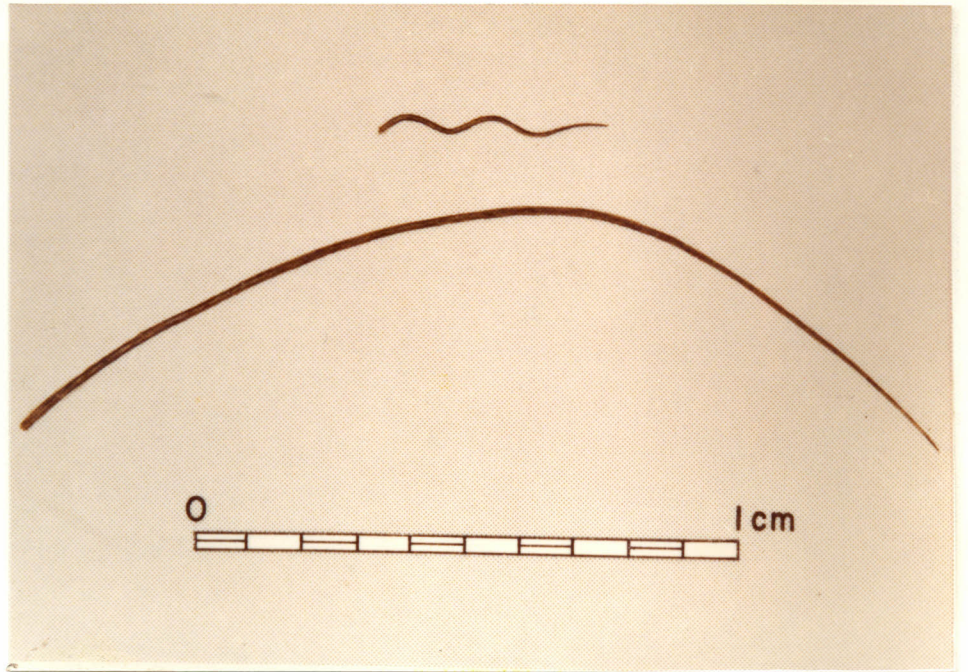
Lanceolate pectinate along entire length of hair (5) and (6), except at extreme tip when waved mosaic. Scale margins, smooth. Distance apart of scales: distant except in mosaic when near/close.



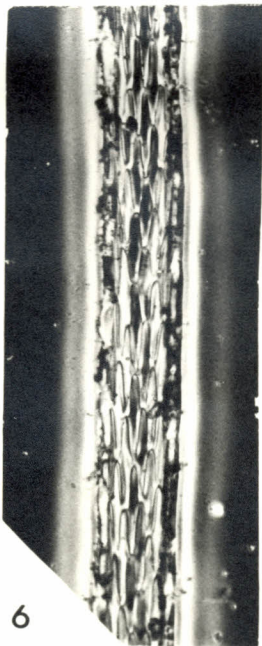
3



4



5



6