THE SERVAL *FELIS SERVAL* SCHREBER, 1776

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ABSTRACT. — Serval are medium sized spotted cats restricted by their habitat requirements to well watered terrain. Their distribution on a continent wide basis is examined on records from literature which reveals that there has been a shrinkage in their range in the Cape Province of South Africa where, formerly occurring in the Somerset West area, they are now found only as far west as the Tsitsikama Coastal National Park. While their distribution has been locally modified by development they are resilient and commonly occur in peri-urban and urban areas of cities such as Salisbury, Rhodesia. Examination of a series of 46 specimens from 600 km² in Rhodesia shows that within a population from a limited area there is a wide variation in the characters which have been used to distinguish subspecies. Their hunting technique is described and the stomach contents of 65 specimens from the Salisbury District analysed. While there is scant data from two months of the year, there are indications that in the northern parts of the South African Subregion the young are born in the warm wet summer months of about September to April with a peak towards the latter part of this period.


ABSTRAK. — Die tierboskat is 'n medium-grootte kat wat deur sy habitat benodigd het om in well watered water. In die Kaapprovinsie het sy verspreiding gekrimp tot slegs die Tsitsikama-seekus Nasionale Park na die weste. Alhoewel verspreiding lokaal verander het, is die tierboskat plooibaar en kom algemeen voor in buitestedelike en stedelike gebiede van stede soos Salisbury. Onderzoek van 'n serie van 48 eksemplare vanuit 600 km² in Rhodesië het aan die lig gebring dat 'n groot variasie bestaan in die kenmerke wat gebruik word. Die besondere jagtegniek word beskryf, waar die moedermuis *Praomys natalensis* en die Angoni vleirots *Otomys angoniensis* dié diët oorheers. Ander klein dieragtigheid wat voelleicht voorkom, het ook in die diët van tierboskatte in die Salisbury-district, Rhodesië, voorgekom. Die kleintjies word gewoonlik in die somer, vanaf November tot April, gebore.


INTRODUCTION

An examination of literature on mammals on a continent wide basis reveals that, whereas it is possible today to plot with some degree of accuracy the distribution of the serval *Felis serval* from faunistic lists and other sources, only Dorst and Dandelot (1970) attempt to map this information and then only south of the Sahara. Since this date a great deal of information has become available on their ecology in the South African Subregion which allows of a more accurate picture than was available to these authors. There is a tendency for statements made in the past to perpetuate themselves in literature by repetition and it is hoped that as far as this species is concerned such statements as “the serval inhabits the whole of Africa” that it occurs “everywhere in South Africa” from “Algeria to the Cape” or that “it is of sporadic occurrence in the south, south central and coastal regions of South West Africa” will, with the growth of our knowledge, not be repeated.

In the earlier days of mammal collecting in the Subregion great emphasis was placed on pelage colour or pattern leading to the creation of numerous subspecies. As more adequate material becomes available it is possible to view these characters within populations from limited areas and so to better understand the variation that is apparent within them and against this the value of the characters used to create some of these subspecies. Only when adequate series are available from a number of localities and we can compare cranial and other measurements will we be able to properly assess the value of the described subspecies. This stage has not been reached and there seems little point in minute subdivision.

As far as habitat requirements are concerned there is general agreement that throughout their range serval are a savanna species associated with well watered habitat (Shortridge 1934, Bourgoin 1955, Ansell 1950, Bere 1962, Maherley 1963, Smithers 1966, 1971, 1976, Dorst and Dandelot 1970). They are particularly associated with reed beds, tall stands of *Hyparrhenia* and other grass or tangled underbrush adjacent to streams, swamps or vleis, where they lie up in the shelter of underbrush or tall grass during the heat of the day.

On habits, food and breeding, less has been published. Here the sections dealing with these include, however, citations of reliable and interesting information as well as some from the author’s own experience. This information may help to prevent repetition of such statements that have appeared in literature that they eat “monkeys” and are “found on the branches or in the hollow interiors of forest trees”, the latter possible but certainly atypical.

METHODS AND TECHNIQUES

The information provided in this paper is drawn from the author’s experience of the species in the field and the handling of 65 specimens collected or submitted to the Queen Victoria Museum, Salisbury, in which District they are widespread and common. Where information is drawn from literature the citation is given.

All the stomach contents were analysed by the author himself, the contents being removed, segregated into their component parts, the mammalian and bird material identified by the author, the Reptilia and Insecta by authorities to whom due acknowledgement is made in the appropriate section of the paper. The results of this analysis are presented in the form of percentage occurrence, that is the number of times a food item occurs in the 65 stomachs analysed, expressed as a percentage.

As the serval tends to chop murids into sections, without mastication, identification in some cases could...
be made on the basis of the scaling and length of the tail coupled with the size and configuration of the feet, the colour or marking of the pelage, the length of the hair after washing, drying and carding and, in some cases, the colour and size of the ears. The configuration of the teeth, both molars and incisors, was particularly useful in the identification of species with grooving as opposed to plain incisors, molariform as opposed to laminate molars. Material was compared with the skulls and skins of named Museum specimens both dry and preserved.

Avian material presented problems as it appeared to be subjected to more thorough mastication and in many cases consisted of feathers only. These were dried, carded and the material compared with Museum specimens. While identification was possible in some cases, in others it was only possible to say they originated from a small species. In the case of the jungle towl the serval was shot the following night returning to the remains.

The reproductive status of females was assessed by a macroscopic examination of the preserved reproductive tract, the number and position of foetuses being recorded in relation to their situation in the left or right uterine horns.

The opportunity to view captive serval in the possession of Mrs M. Schmolke, Mr L. Penny and Mrs N. McLeod all of Salisbury has been most valuable in an appreciation of some of its habits as set out in the text.

DESCRIPTION

The serval (Fig. 1) is well adapted to its mode of life. It has long legs and a long neck raising the individual high off the ground. This is to the advantage of a species which hunts in a habitat of long grass, allowing it a wide view of the surrounding ground. The large sensitive ears indicate a keen sense of hearing which assists it in locating prey, otherwise hidden from sight, or in hunting in dim light or after dark.

Adults stand about 60 cm at the shoulder, males weighing up to 14 kg, females 10 kg. The pelage consists of a dense coating of soft underfur about 3 to 4 cm long interspersed with slightly longer annulated guard hair which gives the fur a harsh feel. The background colour varies from off-white to a dark gold or dark yellow,
often darker on the dorsal surface of the body, the underparts lighter in colour, often white, with black spots. The body is characteristically marked with black spots and bars. Three or four black bars arise on the top of the head and continue on to the shoulders, the remainder of the body with distinct black spots of varying size tending to coalesce into lines down the mid back. The top half of the limbs is distinctly banded or spotted with black, the markings breaking up into small spots towards the feet.

The tail is short in comparison to the length of the head and body and has a black tip with six or seven black annulations.

The large rounded tipped ears are characteristically black on the back with broad transverse white bands towards the tips.

The claws of the front feet are sharp and curved forming effective hooks, useful in forking out prey from crevices and holes. The dew-claws are powerful and are used in holding larger prey and when they climb trees, which they will do, albeit only under stress. The claws of the hind feet are generally shorter and more sectorial than those on the front.

The skull is characteristically feline, high and rounded (Fig. 2); the tooth formula:

\[ \text{P}1/1 \quad \text{C}1/1 \quad \text{P}2/2 \quad \text{M}3/2 \quad \text{M}3/3 \]

The canines are sharp and heavily built, ideal for delivering the killing bite. The upper fourth premolar, forming the upper part of the carnassial mechanism, has a cutting edge through its length, the lower third premolar, its counterpart in the lower jaw, is also adapted to cutting. The single molar in the upper jaw is greatly reduced with no counterpart in the lower jaw which, together with the sectorial carnassial mechanism, indicates adaptation to cutting rather than masticating the food.

Six subspecies have been described from the Southern African Subregion: *Felis s. serval* Schreber 1776 from the Cape of Good Hope; *Felis s. beirae* Wroughton 1910 from Beira, Mozambique; *Felis s. robertsi* Roberts 1926 from Fairfield, Rustenburg district, Transvaal; *Felis s. hamiltoni* Roberts 1931 from Mbabat river (= Timbavati river), Kruger National Park, Transvaal; *Felis s. mababiensis* Roberts 1932 from Mahabe Flats, Ngamiland, northern Bechuanaland (Botswana) and *Felis s. ingridi* Lundholm 1955 from Inyanga, Rhodesia.

In the original descriptions emphasis is placed on the size of the spots, the status of the median dorsal stripes, and the ground colour of the upperparts. *F.s. beirae* is characterised by being small spotted, the median dorsal stripes much broken up and the background colour of the upperparts "clay colour". In *F.s. robertsi* the median dorsal stripes are more broken up than in *F.s. hamiltoni* and it is paler in colour. In *F.s. hamiltoni* the spots are intermediate in size between those of *F.s. beirae*, *F.s. robertsi* and *F.s. serval*, the upperparts being shaded with rusty yellow.

*F.s. mababiensis* is closest to *F.s. robertsi*, the spots and stripes broken up but slightly larger and broader, the ground colour of the underparts cinnamon-buff. *F.s. ingridi* differs from the remainder in having fewer, larger and more elongated spots. The ground colour of the upperpart is reddish-ochre and between the median stripes along the centre of the back there is a tinge of black. Other specimens from the Inyanga and Umtali Districts, however, show that the colour and markings are not constant features.

Throughout these descriptions emphasis is placed on the size of the spots, the status of the median dorsal stripes and the ground colour of the upperparts. The size of the specimens is also used, it being stated that they are severally either larger than or smaller than other subspecies in spite of the fact that in some cases only one specimen is available. In the case of *F.s. hamiltoni*, Roberts had only three specimens on which to base his measurements.

It is clear that there is considerable variation in most measurements indicating that it would be dangerous to draw conclusions from small samples.

A sample of 23 male and 23 female servals in the collection of the National Museums and Monuments of Rhodesia, originating from a limited area of only some 600 km² in the vicinity of Salisbury, Rhodesia, was examined.

The specimens were chosen from the larger range available on the basis of having full adult dentition, a hindfoot s/u length of 180 in the case of males and 165 in females and weights in both cases of over 8,6 kg. These were considered to be adults.

Figure 3 illustrates the variation in pelage pattern and background colour of the upperparts seen in 12 of the specimens examined. The spots in T53 and T148 are

![FIG. 2. Skull of an adult male serval illustrating the small upper second premolar and the tiny molar teeth.](image-url)
FIG. 3. Twelve adult specimens of the serval from 600 km² of the Salisbury district, Rhodesia, to illustrate variation in spotting and barring within a population in a limited area.
small and contrast markedly with 040 and G496 in which they are large. In 040 some of the spots are elongated and two or more spots coalesce. In G496 and 040 the outside median dorsal bars are broad and continue on to the shoulders and down on to the flanks, in 040 with a distinct break and in G496 semi continuous. This is in contrast with QVM854 in which these bars are narrow or T53 in which they are of medium width and broken into short bars and spots.

The median dorsal stripes may be apparent on the back, at the level of the rump, as in 040, where three broad stripes are seen or T148 where only the central stripe is present, while in T53 and T190 it is replaced by spots.

The ground colour in the series varies from 040 where it is buffy white; T190 in which it is buffy tinged rusty yellow; T148 rusty yellow; T103 dark rusty yellow, sprinkled with black hairs and T81 the darkest of all, dark reddish ochre liberally suffused with black hairs. In the lighter coloured specimens the spots and bars stand out in marked contrast, in the darker they tend to be obscured.

It is apparent that there is a great amount of variation in the patterns of barring and spotting as well as in the ground colour of individuals from a limited area.

Of the specimens in the sample, T53 from Calgary Farm, Salisbury, might well in fact be assigned to F.s. beira. Hollister (1913) noted that a specimen in the collection of the United States National Museum from Concession Hill, which is a mere 85 km from Calgary Farm, might likewise be assigned to this subspecies but none of the other specimens conform to this pattern.

There are specimens in the remainder of the series of 46 that could well, on account of the rusty yellow of the dorsal median band and the breakdown of the median dorsal stripes, be assigned to F.s. robertsi. There are again specimens with a buffy yellowish ground colour in which the black spots stand out clearly against this pale background, a character assigned to F.s. serval.

Unfortunately, there is, at the moment, no comparable series from other parts of Southern Africa against which to compare a series of skull measurements or other morphometric characters which might do much to resolve the status of the subspecies. In view of the great variation in the present series of characters widely used to distinguish the subspecies, their value is doubtful and none are recognized within the South African Subregion.

The servaline or small spotted serval, F. brachyura, Wagner, 1841 (= F. servaline Ogilvy, 1838 (Preoccupied)) of West Africa was long considered a distinct species. In the servaline the spots are minute, giving it a speckled appearance. Allen (1924) notes that they are now known to be merely varieties, the species being dimorphic in pattern. Allen (1924) does not accept this and maintains the servaline as a distinct species, nevertheless most authorities since then have accepted that the servaline is merely an aberrant form of F. serval (Rosevear 1953, Ansell 1960, Dorst and Dandelot 1970). Aberrant forms of this type are well known in the spotted cats as is exemplified by the "King" Cheetah Acinonyx rex, a form of A. jubatus (Ellerman, Morrison-Scott and Hayman 1953) and forms of the leopard Panthera pardus (Ansell 1967).

DISTRIBUTION
Although the serval Felis serval has been recorded from such widely separated localities in continental Africa as Morocco and the "Cape of Good Hope" its habitat requirements are such as to restrict its distribution locally within this area (Fig. 4).

North and Northeastern Africa
Heim de Balzac (1948) records that the serval still exists in Morocco and Monteil (1951) mentions skins, that closely fitted the serval, from Ouarkziz, south of Aoumet Tarkoz. Panouse (1957), however, claims that they had not been sighted in Morocco with certainty. Good evidence that they still exist comes with the report of Pocock (1966) who records that, during the Trinity College, Dublin, expedition of 1966, a serval was seen crossing the road near Bine-el-Ouidane, confirming its existence at least in the High Atlas mountains.

Ellerman and Morrison-Scott record the serval in North Africa only from the vicinity of Constantine, Algeria, on the basis of F.s. constantina Forster, (1780). Blondel (in litt.) states that it is a relict species in the humid forests of eastern Algeria. In this country it was at one time more widespread as Loche (1867) records it in three provinces, but its present status is uncertain.

Pocock (1955) and Gouttenoire (1954) record the species from Tunisia but there are no records of its occurrence in Libya (Hufnagl 1972) or the United Arab Republic and whether they ever occurred is not known but, because of the nature of the terrain, this seems unlikely.

South of the Sahara
South of the Sahara servals are much more widespread, being listed from most countries from Senegal in the west to Somalia in the east, and southward to the Republic of South Africa.

There are specimens in the British Museum (Nat. Hist.) from Senegal; and they are recorded from Mali...
HABITS

Predominantly nocturnal, they will hunt after sun-up in the morning until 08h00 or 09h00 or in the late afternoon, but this diurnal activity is unusual. Normally a solitary species, pairs move and hunt together after mating and females with growing young up to a weight of 3 kg have been recorded, suggesting that the family unit remains together for a considerable period. The male is not in evidence during this time.

Long legged and fast runners over short distances they are difficult to follow at night as, caught in the beam of a dazzling light, they move off quickly to a considerable distance before pausing to look around.

This behaviour is different from the African wild cat that will crouch and slink away short distances, frequently looking back.

While sight is unquestionably used while hunting, their acute hearing and large ears allow for the acute pinpointing of the movement of prey in the undergrowth. Once located it is either pounced upon, with both front feet or slapped with a hammerlike blow of one. They will also quarter the ground in a series of high leaps which flushes prey, which is quickly pounced on. With this technique sight is brought into play, but, if the prey is not caught and slips away, they will stand motionless until it moves, when it is located by sound and killed by a blow of the front paw. Birds or even grasshoppers flushed from cover are leaped at and either slapped between the front paws or clawed out of the air. In the execution of this capture technique, which the serval shares with the caracal, the individual may spring from the ground, the body in a near vertical position reaching heights of up to about 3 m with the front feet.

Serval wander widely at night and although the extent of their home range has not been accurately determined, they are known, from following spoor, to move at least 3-4 km during the night. Like other small carnivores they tend to move on established paths or roads to reach their hunting areas often preferring to use these longer routes rather than more direct ones through rough country. In their search for vlei rats Otomys spp. they will hunt in swampy or other wet areas, sometimes among aquatic grasses where the water is 5-8 cm deep, conditions avoided by the wild cat, F. libycas.

On being disturbed they will make for the nearest tall grass or reed cover or take to adjacent hillsides where there is good cover of underbrush or tall grass. The serval drops its scats fortuitously along roads or paths, usually choosing a patch of short grass or a shallow depression. Having defaecated, they make little or no effort to cover the scats, this not amounting to more than a few quick scratches with the back feet, which may not even powder the scat. No attempt is made to use the front feet, the behaviour very different from the wild cat which excavates a depression and carefully covers the scat by scraping with the front feet. Although the scat may vary with the size of the individual, and be up to 20 mm in diameter, they are quite characteristic when dry being light grey in colour, bound together by the hair of the rodents it has waten, with a light grey powdery admixture which may be caused by the end products of the digestion of bones. Most bones are digested but often teeth can be recovered, which in some cases (Otomys spp., Tatera spp.) give useful clues to the species involved.

The spoor is rounded, the hind foot spoor slightly larger than the front which is unusual. In its near relative the caracal, F. caracal, this situation is reversed. This is due to the slightly lighter build of the foreparts of the serval. Each digital padmark is round, and, except under unusual circumstances, there is no sign of claw marks. Sometimes, however, especially on the hind feet, the digital pads show usefull clues to the species involved.

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TABLE 2. Distribution of gravid, non-gravid and lactating female serval in a sample of 50 specimens from the Salisbury District, Rhodesia

<table>
<thead>
<tr>
<th>Months</th>
<th>J</th>
<th>F</th>
<th>M</th>
<th>A</th>
<th>M</th>
<th>J</th>
<th>A</th>
<th>S</th>
<th>O</th>
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<tbody>
<tr>
<td>Total number</td>
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<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>8</td>
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<td>1</td>
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<td>1</td>
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<td>0</td>
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<td>3</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Gravid</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
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<td>1</td>
</tr>
<tr>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>2</td>
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</tbody>
</table>

BREEDING

In the northern parts of the Subregion, gravid females have been taken in November, January to March and July and lactating females in November (Table 2). Unfortunately, no material is available from April and May but four juveniles at weight of between 600 and 650g were taken in May and June. The gestation period is given as 68 to 72 days (Jones 1952). The three foetuses carried by the female taken on the 4th July were naked and small, at a weight of 70 to 90 g, it might reasonably be expected that she would litter down about September.

Stevenson-Hamilton (1912) records a litter of three during this month in the Transvaal. The foetuses of the female taken on the 1st March were well developed and sparsely haired, at a weight of 142 to 145 g, and might be expected to be born about April.

Juveniles of weights of 3.5 kg have been taken in June; 2.7, 3.2 and 3.4 in July and 4.1 and 4.5 kg in August. Pienaar (1964) records half grown young (a few months old) in the Kruger National Park in May and August. On this basis the young appear to be born during the warm summer months of about September through to April. In Rhodesia judging from the numbers of gravid females occurring in January and February there may be a peak towards the end of the summer months which would coincide with the rise in the annual cycle of murid numbers with the increase in availability of grass and other seeds.

Table 2 shows the distribution through the year of gravid and lactating females from a sample of 50 specimens taken from the northern parts of the South African Subregion.

The mean number of foetuses found in a sample of seven was 2.5 with a range of from one to three, implantation being irregular. The litters are born on the ground in well sheltered places. Females with young are very sensitive and will move the litter one by one if disturbed. They care for the young for a considerable time after they become mobile.

When a mowing machine, operating in grassland on Calgary Farm, Salisbury, overran a breeding site, a juvenile female at 650 g was killed (L57 Queen Victoria Museum), the female was seen to carry off another in its mouth and run off at high speed. Juveniles at weight of up to 3.4 kg have been collected from family parties accompanied by adults (A579 Queen Victoria Museum). A juvenile at 3 kg was trapped, the female remaining in attendance until the trap was closely approached.

Foetuses are naked up to a mass of about 90 g, pigmentation of the skin clearly marking the location of the black spots and bars at about 150 g. When the foetus nears full term it develops a covering of short, soft woolly hair which shows the black markings, albeit indistinctly. The newborn young retain the soft woolly hair, the background colour of which is greyer than in the adult.

In captivity, serval F.serval/African wild cat F. libyca hybrids are known. Mrs M. Schmolkes' male serval, at two years old, first mated with her female wild cat at nine months old, the gestation period of the hybrid litter being 63 days. Several litters were eventually produced by these parents, the young having to be hand reared.

The hybrids had the black body spots of the serval on the grey background of the wild cat, the tail length and markings that of the wild cat but with the large ovoid ears of the serval: broad and open at the base rising to the rounded apices, with the characteristic black backs with the white band across them.

FEEDING

The serval is mainly a predator of small mammals. Dorst and Dandelot (1970) list duiker and oribi as prey but it seems highly unlikely that the serval is capable of

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TABLE 3. Analyses of the contents of 65 serval stomachs from the Salisbury District, Rhodesia

<table>
<thead>
<tr>
<th>Mammals</th>
<th>Birds</th>
<th>Reptiles</th>
<th>Insects</th>
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<td>% occurrence</td>
<td>% occurrence</td>
<td>Species</td>
<td>% occurrence</td>
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<td></td>
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</tr>
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<td>Prainsonia natalensis</td>
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<td>Mus minutoides</td>
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<td>Aethomys chrysophilus</td>
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<td>Dendromys mystacalis</td>
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<td>Lepus saxatilis</td>
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<tr>
<td>Rhadomyos pumilio</td>
<td>2</td>
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<tr>
<td>Thryonomys swinderianus</td>
<td>2</td>
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TOTAL: 65 specimens.
tackling such large prey unless newly born or very young.

An analysis of the stomach contents of 65 serval collected in the Salisbury District, Rhodesia is presented in Table 3. It is evident that Muridae are the most important food item, this being shown by the high percentage occurrence and the variety of species eaten.

Two species have the highest occurrence value, the multimammate mouse *Praomys natalensis* and the Angoni vlei rat *Otomys angoniensis*, at 48% each. The multimammate mouse is the most common species found in the area and had a wide habitat tolerance. The Angoni vlei rat, on the other hand, has restricted habitat requirements, generally being confined to areas of wet grassland, vleis and reed beds, a habitat type with which serval are associated throughout their distributional range.

Trap transects, with timed pick-ups, have shown that multimammate mice are predominantly nocturnal being particularly active just after sundown, with some activity before sunrise. They are seldom taken after 07h00, the nocturnal activity commencing just after sundown, at about 18h30 and tailing off about midnight.

Angoni vlei rats on the other hand exhibit considerable diurnal activity, although they will also move after dark.

Several authors have reported them from owl pellets (Davis 1959, Pienaar 1961, Coetsee 1963, Benson 1965, Vernon 1972) and an examination of casts of the long crested eagle, *Lophaetus occipitalis*, which is a purely diurnal feeder, in the area from which the servals were collected, show that Angoni vlei rats rank high in their diet. Angoni vlei rats do not enter traps freely and, of the series quoted by Smithers (1971), 25 were taken during daylight hours with a .22 and dust shot by choosing a situation, where there were numerous runs, on the swampy fringes of the Chobe River and shooting them. This technique has been used by the author in Rhodesia with success. The diurnal four striped mouse *Hemimys pinetitor* has a very low percentage occurrence as they are not so freely available to a nocturnal predator. Musk shrews *Crocidura spp.*, which occupy the same habitat as the Angoni vlei rats, were an unusual food seldom encountered in carnivore stomachs. As murids are cut up by the teeth into five or six parts and swallowed, identification is relatively simple and it is possible, in the majority of cases, to ascertain how many have been eaten. Full adult serval stomachs containing only this food item have revealed meals of up to 12 multimammate mice.

Birds, with a percentage occurrence of 17, are the next most important food item. Their remains were more difficult to identify and normally consisted of feathers only. Seemingly they are subjected to a more thorough mastication than murids.

Eight of the 11 records were the feathers of small birds, probably weavers; a further record was that of a red billed quelea *Quelea quelea*. In two cases, where the serval was killed while raiding, there were the remains of a duckling and a jungle fowl, the latter from an ornamental bird garden.

The insects consisted almost entirely of grasshoppers, locusts and crickets. Broad leafed green grass was found in 11% of stomachs. This has no food value, but is eaten for its mechanical action in aiding the digestive system.

It was impossible to determine whether the cane rats were adult or juveniles, but a full grown cane rat weighing up to 11 kg is formidable prey and it is thought likely that the serval would take juveniles only.

**DISCUSSION**

Examination of the continental distribution of the serval *Felis serval* highlights their habitat requirements in their association with well watered terrain and their absence from desert, semi-desert and forest. At the extremes of their distributional range in north Africa and the Cape Province there has been a shrinkage of their limits within historical times, but only within narrow limits and in general their range remains static. They are resilient in the face of human development and persist, except under conditions of intense alteration of their habitat, such as the growth of towns and cities. Agricultural development, in the creation of favourable conditions for the increase in numbers of murids which form their principal food, have improved their habitat in parts of their range.

Rosevear (1974) from examination of the West African material in the British Museum (Nat. Hist.) came to the conclusion that, while the extremes were clearly recognisable one from another, there were so many forms between them that it was unthinkable to provide distinctive names and recommended that nomenclature subdivision of the species be avoided.

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REFERENCES


