

RECORDS OF SEVEN SMALL MAMMAL SPECIES
(INSECTIVORA, CHIROPTERA) NEW TO THE
KRUGER NATIONAL PARK

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Abstract – On a recent collecting expedition in the Kruger National Park, the occurrence of seven species of small mammals (one shrew and six bats) within the confines of this sanctuary was confirmed for the first time. One species (*Pipistrellus rusticus*) is reported for the first time from within the borders of the Transvaal, whereas another species (*Myotis bocagei*) is reported for the first time for the Republic of South Africa. The seven species are briefly discussed and the collections where the specimens have been accessioned are indicated.

Introduction

A detailed knowledge of the species diversity of both the faunal and the floral components of any nature reserve, is a prerequisite for an explicit management policy. Furthermore, without a basic understanding of geographical distribution patterns of taxa, their habitat requirements and of intraspecific interactions between animals as well as the interdependence between the animal and its environment, any management scheme could be no more than a calculated guess. The research program of the National Parks Board of Trustees has therefore, since its inception been geared towards the enhancement of an enlightened management program in which

computer modelling, radio tracking and sophisticated aerial censusing procedures are routine.

Pienaar (1963, 1964) has reported on deliberate mammal surveys in the Kruger National Park (KNP) over a period of six years and predicted (1964) that several additional small mammal species could in future be recorded from the Park. This forecast subsequently proved true when a further four species were documented, *i.e.* the Bat-eared fox (Pienaar 1970), Midas' free-tailed bat (Pienaar 1972), Rüppell's horseshoe bat (Rautenbach 1975), and the Aloe bat (Schlitter & Rautenbach 1977). Pienaar (1972) drew attention to the fact that several species known to occur in close proximity to the KNP, may in time be disclosed as residents of this sanctuary.

During an intensive survey of small mammals in May 1979, seven species not previously known from the KNP, have been listed and these finds are discussed in this paper. These records swell the total number of mammal species for the Park to 133, which also includes the grey rhebuck *Pelea capreolus* (Forster 1790) recently re-introduced on the Khandizwe plateau near Malelane.

Material and Methods

Regular collecting techniques and equipment have been deployed in the collection of the species discussed here. The only difference to regular procedures was one of intensity. The number of mistnets (72 m long, 20 mm mesh) strung was doubled in contrast to the serial stringing normally employed. Contrary to our usual bat netting procedures, the same area was netted for eight consecutive nights in one instance. This procedure bore fruit in that four of the six bat species considered here, were only accrued as from the third night. The shrew species referred to in this report, was trapped in Sherman live traps for which it seems to have a marked predilection and which were set in the typical and rather restricted habitat of the shrew.

Co-ordinates of the localities mentioned in the text, are as follows: Matukwaladam, 5 km NW Punda Milia (22°41'S; 30°57'E); Mr. H. Mockford's orchard on the Levubu River at Pafuri (22°26'S; 31°19'E); Chikwarakwara (22°22'S; 31°07'E); on the Njelele River (22°55'S; 30°18'E); Krabbefontein, Soutpansberg (ca 23°03'S; 29°54'E); and Skukuza (24°59'S; 31°35'E).

Results

Crocidura mariquensis (A. Smith, 1844) (Black musk shrew/Swart skeerbek), has a very specific preference for a permanent marshy environment, where it can occur at fairly high population densities. It is reasonably widespread in the Transvaal on the plateau west of the escarpment wher-

ever suitable habitat exists. However, in the lowveld it was formerly known from a single specimen only, taken at Nelspruit. A chain of permanent marshes formed by perennial springs in the vicinity of Matukwalandam, 5 km northwest of Punda Milia in the far north of the KNP, yielded a series of nine specimens. This is the first record of its occurrence in the Park and the second record for the Transvaal lowveld. All nine specimens were trapped by placing Sherman live traps on soggy marshland amongst dense semi-aquatic vegetation. Eight specimens are housed in the Transvaal Museum mammal collection. Their accession numbers are TM 29931–33, TM 29944–45, TM 29947–48, and TM 29959. The ninth specimen was catalogued as TM 29960. It has been placed in the Skukuza reference collection of the National Parks Board, and given the accession number SOR. NKW 16.

Smithers (*in litt.*) collected *Rousettus aegyptiacus* (E. Geoffroy, 1810) (Egyptian fruit bat/Egiptiese vrugtevlermuis) from Chikwarakwara in Zimbabwe/Rhodesia, situated a short distance upstream from Pafuri on the Limpopo River. It was therefore not unexpected to collect five specimens in Mr. Mockford's orchard within the riparian forest on the banks of the Levubu River at its confluence with the Limpopo. The Egyptian fruit bat characteristically roosts by day in caves. By night it flies in search of fruiting trees. It is not known what distances it is capable of travelling each night. The nearest known roosting caves in the Transvaal are the Matlapitsi caves near Ofcalaco, some 200 km SW of Pafuri. Since it is unlikely that *R. aegyptiacus* can travel the return distance between Matlapitsi caves and Pafuri every night, we surmise that another, as yet undiscovered, roosting cave exists in the vicinity of Pafuri. Five specimens were collected during May 1979. Three were deposited in the Transvaal Museum mammal collection. Their accession numbers are TM 29859, TM 29870 and TM 29878 respectively. Two additional specimens are housed in the central reference collection of the National Parks Board at Skukuza, and their accession numbers are CHIR. NKW 116 and CHIR. NKW 119.

Myotis bocagei (Peters, 1870) (Rufous mouse-eared bat/Rooi langhaar vlermuis) is better known from central and northern Africa (Hayman & Hill 1971). Smithers & Lobão Tello (1976) record the species for the first time in the southern African subregion in Moçambique near Vila Gouveia, close to the 18° South latitude. A series of 12 specimens was netted in the Mockford orchard (Pafuri). During June 1979, a single specimen was netted at Skukuza. This represents a southwards range extension from Vila Gouveia of ca. 800 kilometres. This is also the first record of the species within the borders of the Republic of South Africa. Twelve of these specimens are now housed in the Transvaal Museum collection. Their accession numbers are TM 29843–44, TM 29855–56, TM29880–81, TM29888–90 and TM29900–01 and TM30064. The 13th specimen is housed in the reference collection of the National Parks Board at Skukuza, with the accession number CHIR. NKW 125.

One specimen of *Pipistrellus kuhli* (Natterer, 1817) (Kuhl's pipistrelle/Kuhl se vlermuis) was netted over a dam at Skukuza. This is the first re-

cord of occurrence for this species in the KNP. The specimen is deposited in the Transvaal Museum collection, its accession number being TM 30061.

Two specimens of the rare bat *Pipistrellus rusticus* (Tomes, 1861) (Rusty bat/Roeskleurvlermuis) were netted at Pafuri in the Mockford orchard. These are, to the best of our knowledge, the first specimens from the Transvaal to be housed in local collections. Roberts (1951) and Ellerman, Morisson-Scott & Hayman (1953) refer to specimens taken at Pretoria, Hectorspruit and Tzaneen. Presumably this material is housed in the British Museum of Natural History. The accession numbers of our specimens are TM 29854 and CHIR. NKW 127.

We are following Ryan (1966) and Koopman (1971) in regarding *Glauconycteris* as a subgenus of *Chalinolobus*. There are only four specimens of *Chalinolobus (Glauconycteris) variegata* (Tomes, 1861) (Butterfly bat/Vlindervlermuis) known from the Transvaal. The first is an undated specimen in the Transvaal Museum collection from Krabbefontein, Soutpansberg. A second specimen was procured in 1978 during daylight hours in the Mockford orchard where it was roosting amongst the dense foliage of a lichee tree (CHIR. NKW 105). This was the first record of occurrence for this species in the Kruger National Park. Subsequently two additional specimens were accrued in May 1979 while netting in the Mockford orchard (TM 29882 and TM 29899). TM 29882 was donated to the reference collection at Skukuza, where it has been re-accessioned under the number CHIR. NKW 124. Smithers (*in litt.*) has also recorded the species in Zimbabwe/Rhodesia at Chikwarakwara. The distribution loci referred to in this paper represent the southernmost limits of the range of an essentially central African species.

A single specimen of *Kerivoula argentata* Tomes, 1861 (Damara woolly bat/Damara wolhaarvlermuis) has been netted during May 1979 in the Mockford orchard. It has been accessioned as TM 29839, whereafter it was reaccessioned as CHIR. NKW 126 when the specimen was donated to the National Parks Board reference collection. This is not only the first record of occurrence of this species for the KNP but also for the Transvaal. This rare species is also known from Maputaland and Moçambique in the southern African subregion. Pienaar (1964) mentions the possibility that *K. lanosa* (A. Smith, 1847) (which includes *K. harrisoni* Thomas, 1901 as a synonym (Hill 1977)) may also occur in the Kruger National Park. This is likely since Roberts collected a specimen of this species (TM 8864) on the 9th October 1938 from the Njelele River, ca 60 km West of Kruger National Park.

Discussion

The seven species discussed here, brings the total number of mammal species occurring within the KNP, to a total of 133. This means that 75% of the total mammal fauna complement of the Transvaal (176 species), or

40% of the total terrestrial mammal fauna of the southern African subregion (*ca* 330 species), are represented and afforded protection in an area of only *ca* 2 000 000 hectares. This makes the KNP, as far as is known, one of the areas with the highest species richness in the sub-continent compared to areas of approximate equal size (*vide* O.F.S., 81 species (Lynch 1975); Maputaland, 101 species (Rautenbach, Skinner & Nel *in press*); southern Cape between the Gouritz and Sondags Rivers, 88 species (Rautenbach, Swanepoel, Nel & Dippenaar *in prep.*))

The KNP is also one of the best surveyed and intensively studied regions in Africa. The fact that new records of occurrence for mammal species within the reserve are still being recorded, reflects on both the inadequacy of survey methods, and the magnitude of the survey task still in hand in a southern African context in particular. Based on available distribution records in the Transvaal Museum, it is also possible to predict that additional species of small mammals, particularly bats, will in time be shown to occur within this sanctuary.

In view of the predominance of bats discussed in this report, some general remarks pertaining to these mammals, seem appropriate. Bats, and in particular Microchiroptera, are as a rule difficult to locate and to collect. Collecting techniques are generally crude and inefficient for Afrotropical bats. The result inevitably leads to under-representation of most bat species in study collections. The latter situation in turn reflects poorly on our limited knowledge of the taxonomy and general biology of this group. The dearth of scientists concentrating their time and energy to in-depth studies on bats, is also a contributory factor to the below-average state of cognizance presently applicable to this large and diversified order.

Rautenbach (1978) points out that the Chiroptera shows a remarkably strong affinity with the Southern Savanna Woodland biotic zone. The trends in southern African mammals to decline in species richness from north to south (Rautenbach *op. cit.*), and from east to west (Nel 1975), are more pronounced in bats than in any other mammalian order. Unfortunately too little information is available at present, to allow a critical analysis of the trend exclusively for bats, or to enable one to speculate on causes for this more accentuated phenomenon in southern African bats. However, it is evident that while the northern KNP harbours one of the biggest assemblages of mammalian species diversity, it is also the area containing the highest known number of bats per unit area, if not for southern Africa then certainly for the Republic of South Africa. Unpublished data available in the Transvaal Museum indicate that as many as 30 of the 37 bats species recorded for the entire Transvaal (or of the 75 species occurring in the entire subcontinent) can be shown to range into the northern sector of the KNP between the Letaba and Limpopo Rivers.

Experience gained by an association with, and participation in the activities of the Transvaal Museum Bat Banding Committee by one of us (I. L. R.) over a period of 12 years, indicates that the Microchiroptera has a far lower incidence of species which supposedly migrate than was formerly assumed. In fact, we believe in time it will become evident that medium (*ca*

50 km) or long distance (100 km) seasonal migrations for species are more the exception than the rule. For a growing number of species where known populations are revisited regularly, we found evidence of a permanent and very local predilection in home ranges and refuges. This applies to *Scotophilus*, *Eptesicus*, *Hipposideros* and the Molossidae.

Furthermore, we are beginning to understand from the bat banding records, that cave-frequenting bats in general are sensitive to human disturbance. Cave dwelling bat populations studied over a period of 17 years, can be shown to decline at a rate proportionate to the human disturbance factor. It is not presently known what happens to those individuals which leave a colony after a disturbance. The entire problem is currently receiving critical attention.

It is therefore evident that owing to our inadequate knowledge on bats in general, that positive conservation and management measures could be no more than a blanket protection policy. In view of the particularly high species richness of the KNP in general, and of the northern sector in particular, bats should be afforded maximum protection. Concurrently, further research on bats is encouraged, provided no unnecessary disturbance to the resident populations is enhanced.

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