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TRANSVAAL MUSEUM

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Above: Orange form of a male Sundevall's leaf-nosed bat (*Hipposideros caffer* (Sundevall, 1846)), caught in the Ubombo Mts. Nature Reserve, northern KwaZulu Natal, South Africa, December 2001.
– **E.C.J. Seamark**

Notes from the Editor:

I wish to take this time to thank the editorial board for all their support, encouragement and advise during the development and start-up of the newsletter. For 2005, ABCN is fortunate to have the support of additional persons who have joined the editorial board (see pg. 11), it is hoped with a wider field of experience the newsletter will grow accordingly.

Last year, saw a major learning curve for me mainly, trying to understand the risks between virus infections and firewall protection. It is hoped that the Transvaal Museum site will be fully operational and accessible throughout 2005 and into the future, and wish to acknowledge Marion Burger for all her assistance. In this regard I wish to also thank Valerie Craig, who has set up a second site in the USA, within the flying fur website.

- **Ernest C.J. Seamark**

Research and Conservation Activities

Bugs from African bats and their roosting sites wanted

By: Dr. Klaus Reinhardt, R. Naylor, Dr. Michael T. Siva-Jothy (Department of Animal and Plant Sciences, The University of Sheffield, Sheffield S10 2TN, U.K. Email K.Reinhardt@sheffield.ac.uk)

We are investigating the phylogenetic relationships among the bed bug or bat bug family (Cimicidae). Because the gene sequencing is difficult when using dried museum specimens we rely on freshly caught samples. Researchers discovering bugs on bats, in bat caves or in other roosts are kindly asked to send specimens to our lab. In return we will be able to provide a morphological identification of the bat parasite, will acknowledge all contributors in the relevant publications/presentations and will provide reprints of those papers to contributors. The bugs can be sent by letter or parcel in any condition, but alive or in concentrated ethanol (70-100%) would be best. Please also add the usual record notes (date, locality, collector, bat host species, contact address if possible).

Most current information on bug distribution is from the 1960s, with very few recent records. Because we also study ecological and behavioural aspects of these bugs (presently *Afrocimex constrictus* from *Rousettus aegyptiacus* roosts in Kenya) we would be very grateful if researchers would let us know about large colonies of any bat bug species.

Right: The human bed bug, *Cimex lectularius*. All cimicid species on African bats will have a similar appearance. Some will have longer legs, others shorter legs. Body cover with hairs and bristles is also likely to vary. Some species can be expected to sit in huge bands on the roof of the caves, others will be more likely found on the body of the bats.

Scientific Contributions

African Bat Conservation News publishes brief notes concerning the biology of bats, new geographical distributions (preferably at least 100 km from the nearest previously published record), sparsely annotated species lists resulting from local surveys including roost counts and echolocation and sonograms of bat species occurring on the African continent and adjacent regions, including the Arabian peninsula, Madagascar, and other surrounding islands in the Indian and Atlantic oceans.

Continued existence of Martienssen's Mastiff Bat, *Otomops martiensseni* (Matschie 1897) (Molossidae) on Mt. Suswa, Kenya

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Keys words: *Otomops*, population changes, migration potential, reproduction

It was only in 1963 that lava tubes, certainly known for long time by local inhabitants, were first reported from Kenya on and around Mt. Suswa (Glover *et al.* 1964). This volcano, the *Ol Doinyo Nyukie* of the Massai, lies in the Kedong Valley which is part of the Gregory Rift Valley. A series of 45 collapse holes, in an area of less than 278 ha, have been counted on the eastern side of Mt. Suswa, at 1828-1860 m a.s.l., and "there may be others" (Glover *et al.* 1964: fig. 3). Indeed, Arkell (1973) mentioned further caves discovered, with large accumulation of bat guano (Mutere 1973), and indicated the total number of such lava caves as "well over 45".

At the time of the first cave explorations on Mt. Suswa, *Otomops martiensseni* (Matschie 1897) was very common although in certain caves only (GLOVER *et al.* 1964, KING 1971). Its presence in the area is documented by seven specimens collected on 20th March 1963, 3rd and 5th August 1963, and on 18th October 1964 (HARRISON 1965). WILLIAMS (1967) recorded large colonies in deep, remote caves on Mt. Suswa and it was estimated that the lava tunnel network in this area harboured hundreds of these bats (HAYMAN 1967, HAYMAN & HILL 1971).

Figure 1: *Otomops martiensseni* colony in one of the Mt. Suswa caves, Kedong Valley, Naivasha Distr., Kenya- **Michael T. Siva-Jothy**, (15th February 2004).

Figure 2: *Otomops martiensseni* pup at tin one of the Mt. Suswa caves, Kedong Valley, Naivasha Distr., Kenya.- **Richard A. Naylor**, (15th February 2004).

In 1967, MUTERE (1968) collected 54 specimens from Mt. Suswa. Numerous data on the presence of *O. martiensseni* in Mt. Suswa Cave 18A (see GLOVER et al. 1964: fig. 3 map, pl. 8b) were supplied by MUTERE (1973: tab. 8-9) and BEAUCOURNU & KOCK (1996) for the period from March 1970 to 14th May 1971. MUTERE (1973) estimated hundreds of these bats in Cave 18A although they fluctuated in numbers over the study period. A census of them was not really feasible, as counting them was impossible. A discussion in 1970 by D.K. with C.J. PENNYCUICK, then at the Zoology Department, University of Nairobi, of possibilities to calculate this *O. martiensseni* population lead to no feasible method available at those days and that place.

KINGDON (1974) observed that "the few colonies that have been found contain many hundreds of bats packed close together; … the lava tunnels on Mt. Suswa shelter particularly large numbers". In 1977, TIMBERLAKE (1977) confirmed *O. martiensseni* as the major bat species of Suswa Cave 18, forming a "very crowded colony". The continued presence of this bat is documented by two specimens out of 14 collected by H. STEPHAN on 29th April 1979 (SMF 57456-7; BARON *et al.* 1996a). In 1982 the Mt. Suswa population in Cave 18, and in connected lava tubes, was still regarded as one of the largest known colonies (SIMONS 1982). In June 1985, LEWIS (1985) found the floor of one cave, used as set by film makers, spoiled by the garbage and litter they had left behind: Nonetheless, hundreds of *O. martiensseni* were still present.

Later, KINGDON (1997) estimated, that *O. martiensseni* congregated in the tens of thousands in their breeding caves (of which only two were known in Kenya at that time). According to our observations (D.K.) and the above mentioned published data the breeding colony at Mt Suswa in 1970-1971 ranked second in size to the one reproducing in the Ithundu (Kimakia) lava tube (02°21'31"S - 37°42'50"E, map sheet SA-37-10 Kibwezi), Kajiado Distr., Kenya. Both were larger than any other known colony of *O. martiensseni*.

In the following years *Otomops* was neither collected nor recorded. One reason was perhaps that the species occurrence at this site was so well known to the Cave Exploration Group of Kenya that members continuing to discover further caves did not consider it neccessary to reconfirm its presence. However, one and a half decades after the last documented visit by LEWIS (1985), HUTSON *et al.* (2001: 167) reported that the large *O. martiensseni* colonies in Kenya, particularly on Mt. Suswa, "have all but disappeared" (no date given). Although we do not know in which caves the population decline reported by Hutson *et al*. (2001) had been observed, we are now in a position to refute this general assessment of the status of *O. martiensseni* in the caves on Mt Suswa.

We (K.R., R.N. and M.S-J.) visited Mt. Suswa on 15 February 2004 to search for bat ectoparasites. In one of the caves we found a patch of *ca*. 25 m^2 in size that was tightly packed with *O. martiensseni* (Fig.1). The number of individuals per m^2 was estimated to be *ca*. 600: consequently we calculated approximately 10-15 thousand individuals to be present. The most accessible cave entrance was situated at 01°07'55.0"S 36°24'16.8"E. The cave was not identified by the numbering system introduced by

GLOVER *et al.* (1964: fig. 3). However approximately 150 metres east of the cave entrance we encountered two roof collapses (coordinates: 01°07'58.0"S 36°24'22.9"E) (a detailed cave map can be obtained from K.R.). *Otomops* was found *ca.* 45 m from these roof collapses deeper into the larva tube.

Adults bats were not disturbed but reproduction of the colony was evidenced by the presence of at least one live naked young that had fallen to the ground (Fig. 2), contrasting with MUTERE's (1973: tab. 8-9) observations, who found two late pregnancies only in January, however none in February.

There are several non-exclusive reasons for the apparent absence of *O. martiensseni* after 1985. In the ecosystem of Mt. Suswa potential predators have always been close to the roost of *O. martiensseni*, such as lion (*Panthera leo*), leopard (*Panthera pardus*), spotted hyaena (*Crocuta crocuta*), civet cat (*Civettictis civetta*), baboon (*Papio anubis*) (GLOVER *et al*. 1964). However, most of them would only prey on bats that hung low down on the walls or that had fallen to the ground. During our 2004 visit there was clear evidence of current leopard and baboon activity within the caves. Barn owls (*Tyto alba*) are also documented predators of *Otomops* (skulls from owl pellets at the Senckenberg Museum: SMF 37918-9, 41169-87, from Cave 18A, 2nd and 14th May 1970). However, it is unlikely that the presence of an owl would induce the desertion of a breeding site.

Bat fleas parasitising *Otomops* increase to tremendous numbers at certain periods of the year. For example, on 20th February 1971, 662 *Araeopsylla scitula* (ROTHSCHILD 1909), were removed from a single juvenile *O. martiensseni* (BEAUCOURNU & KOCK 1996). The adult fleas have to drain so much blood from their hosts that it drips from the fleas' abdomen onto the floor where the fleas' larvae fed upon it. However, even under this extreme parasite pressure on the bats the roosting site was not abandoned.

MUTERE (1973) has sampled 2276 specimens from Mt. Suswa (plus 2768 from Ithundu) over a period of 24 months (see his fig. 8), representing a monthly average of 189-190 (respectively 230-231 for Ithundu) bats removed. This is considered negligible compared to the number of juveniles found dead on the cave floor and the enormous number of adults present. Personal observations (D.K.) during this sampling period indicated fewer *Otomops* in Cave 18A during June 1970, but a large population in November following, despite bats being removed on a monthly basis since March 1970.

Even the presumed heavy disturbance of a bat colony during film work (LEWIS 1985) did not initiate the bats' emigration. Likewise, guano mining by the Kenya Guano Ltd of JIM W. SIMONS (MUTERE 1973) had no apparent adverse effect on the bat populations in Cave 18A or in Ithundu (mining since 1966: SIMONS 1982). LONG (1995) considered mining activities as a possible disturbance of the bat population, perhaps by alteration of the physical characteristics and microclimate of the cave "to the point that the bats abandon them, at least temporarily". A decrease in recruitment percentage from 11% to 2% from 1971 to 1972 at Ithundu (reported by MUTERE 1973) may reflect this disturbance. However, in both caves the colonies remained present during guano mining and after mining had ceased and no change in microclimate was felt in the huge lava tunnel 18A (D.K.). Casual tourist visitors would have caused even less disturbance, as the bats' normal roosting site is rather high on the ceiling.

Although recoveries of banded bats (SIMONS 1974: n=612, marked by F. MUTERE by November 1970) are so rare that they do not document migratory habits, the fluctuations in numbers of *O. martiensseni* lead MUTERE (1973) to contemplate that these bats were capable of migration (also assumed by VERSCHUREN 1957). Likewise, KINGDON (1997) stated that breeding caves were being vacated *en masse* on a seasonal or periodic, supported by own observations (D.K.) of fewer *Otomops* in Cave 18A during June and a large population in November.

In fact, the assumed migratory habit, respectively the abilities possessed by *O. martiensseni* to do so, is supported by certain morphological characters (BARON *et al*. 1996b): its brain suggests that *Otomops* has more advanced motor skills and lives in a more complex environment than other molossids. Also, the very high red cell account, high haemoglobin content and the high vascularization of the liver, indicate a high metabolic rate (KINOTI 1973), usually found in strong and competent flyers capable of covering considerable distance. Its recorded flight speed of ca 5m/sec (Norberg 1976) to 9.5m/sec about 20m above ground (RYDELL & YALDEN 1997) enables this bat to range some 18 to 34km/h. Such a speed brings it easily to the Kenya highlands east and west of Mt. Suswa during the noctural foraging bouts. In these highlands, which are intensively used for agriculture, but also more locally, *O. martiensseni* will eat moths for food, contaminated by insecticides. This in turn may have a negative effect on individual life expectancy and overall reproductive success, lowering its population density to eventual disappearance.

Taken together, these arguments suggest that the species may periodically depart from breeding sites and thus may not be found in certain caves, or may be easily overlooked when investigating caves not normally inhabited by *O. martiensseni*, despite their large numbers present elsewhere nearby.

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Recording of the call of the Peak-saddle Horseshoe Bat (*Rhinolophus blasii* Peters, 1867) from Swaziland

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Keywords: *Rhinolophus blasii*, echolocation call, distribution, Swaziland

The Peak-saddle Horseshoe Bat (*Rhinolophus blasii* Peters, 1867) is poorly known in southern Africa. In South Africa, the species has been collected from just a handful of sites in the former Transvaal (RAUTENBACH 1982), and in KwaZulu-Natal (TAYLOR 1998). It was not recorded from Swaziland by MONADJEM (1998). The echolocation call of this species has not previously been recorded from southern Africa (TAYLOR 2000).

On the 27th October 2002, a brief visit was made to the abandoned Lomati Gold Mine in northern Swaziland (approximately 25º 49´ S; 31º 17´ E; 520 m a.s.l). During this visit, the mine was observed to support at least several hundred *Rhinolophus clivosus* Cretzschmar, 1828. Two specimens were captured and deposited into the collections of the Durban Natural Science Museum (DNSM 7893 and DNSM 7894). In addition to numerically dominant *R. clivosus*, a single female specimen of *Rhinolophus blasii* was collected and also deposited into the collections of the Durban Natural Science Museum (DNSM 7897). This constitutes the first record of this species from Swaziland.

The female was lactating and had a small offspring (weighing 2.7 g) attached. Judging by its small size, the offspring had almost certainly been born within two weeks prior to the date of collection i.e. around mid-October. This appears to be the only information available on the breeding season of this bat in Southern Africa (SKINNER & SMITHERS 1990).

Recordings of the echolocation calls of *Rhinolophus* species were made using the ANABAT II bat detector (Titley Electronics, Ballina, Australia) by holding each bat above the detector. Calls were analysed using ANALOOK software (version 4.8). Only calls that were clearly defined were analysed. Parameters that were recorded included minimum and maximum frequency, frequency at the knee (F_k), the characteristic frequency (F_c), duration and call rate. F_k is the point at which the slope of the call changes from the steep initial down sweep to the flatter portion of the call. In contrast F_c is the point of minimum frequency in a down-sweeping call or conversely in calls with an up-sweeping trend, the point of maximum frequency.

The call parameters of the three species of *Rhinolophus* are presented in Table 1. The maximum frequency corresponds with the

Table 2. Echolocation call parameters of three species of *Rhinolophus* bats from Swaziland. Frequencies (F) are all quoted in kHz.

Species	n	Maximum F	Minimum F	Characteristic F	F at the knee	Duration (ms)
Rhinolophus clivosus	1	92.1	90.6	90.9	91.4	15
Rhinolophus blasii	1	86.1	85.9	85.9	86.0	25
Rhinolophus simulator	2	82.6-84.2	80.7-81.6	81.3-82.0	82.2-83.9	19

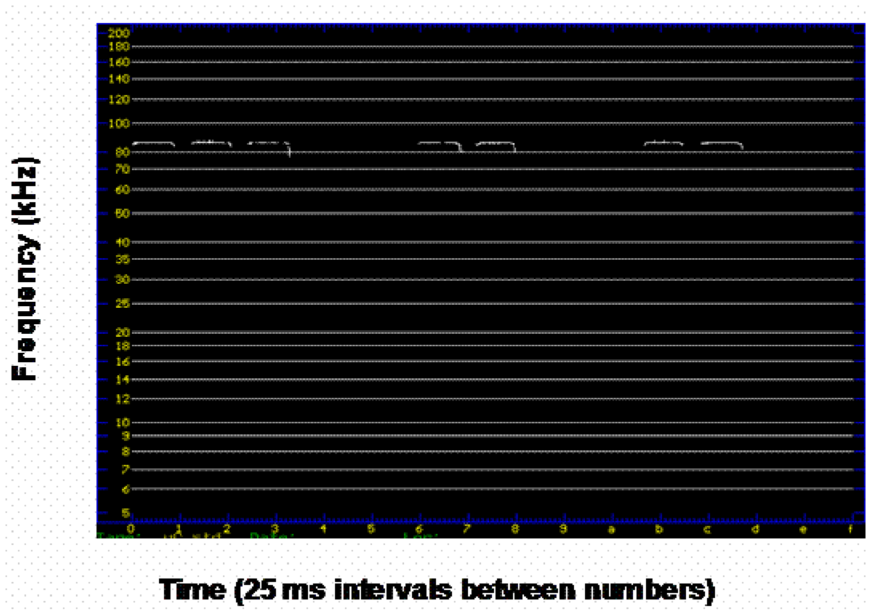

Figure 1. ANABAT recording of the call of *Rhinolophus blasii* recorded from Swaziland.

constant frequency component of their calls. The maximum frequency of *R. clivosus* was 92.1 kHz, and is slightly lower than the 93.6 kHz reported for the "dominant frequent" of same species in neighbouring South Africa recorded using a Pettersson D980 bat detector (TAYLOR 1999).

The maximum frequency of *R. blasii* was recorded at 86.1 kHz (Figure 1). However, I have also recorded *R. simulator* K. Andersen, 1904 (DNSM 7898 and DNSM 7899) from Swaziland using the ANABAT II detector (see Table 1). The maximum frequency of two specimens recorded from central Swaziland was 82.6 kHz and 84.2 kHz, which is similar to the 83 kHz recorded by the Pettersson detector (TAYLOR 2000). It would, therefore, appear that the echolocation call of *R. blasii* is higher in frequency than *R. simulator,* but lower than *R. clivosus*.

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Bat survey in the Cederberg Wilderness Area, Western Cape, South Africa (28 January - 3 February 1999)

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Keywords: *Myotis tricolor*, *Cistugo lesueuri*, *Neoromicia capensis*, *Eptesicus hottentotus*, *Leaphotis namibensis*, *Miniopterus schreibersii*, *Tadarida aegyptiaca*, *Sauromys petrophilus*, *Rhinolophus capensis*, Cederberg Mountains.

Four species of bat have been reported for the Cederberg Wilderness Area (Rautenbach and Nel 1980), a total of nine from within and surrounding the Cederberg region (Skinner and Smithers 1990, Taylor 2000). We sampled one new location (Crystal Pools) in the Wilderness area of the Cederberg Mountains, and confirmed the presence of nine species of bats for the region.

The bats reported here were caught between 28 January and 3 February 1999, within the Cederberg area of the Western Cape Province (Algeria State Forest: campsite 32°22.472S, 19°03.708E – Figure 1; Kliphuis: campsite, 32°08.183S, 19°00.197E; and Crystal Pools, 32°21.045S, 19°07.933E). The area has a Mediterranean climatic cycle in the Fynbos biome, with wet winters and dry summers (Taylor 1996). The annual rainfall at Algeria Forest Station is 647 mm, night temperatures in winter frequently drop below freezing, while temperatures frequently rise to 25°C or 30°C and extremes of over 40°C in January and February are not uncommon.

We caught bats using 12 m nylon mist nets, 2,5 m high. Three nets were set over or next to water on a pulley system, one above the other, the top pocket overlapping with the bottom pocket of the net above, for a total height of 7 m. Field identifications were conducted using the key in Meester *et al* (1986), in conjunction with Skinner and Smithers (1990) to provide species identifications. At each locality, representatives were taken as voucher specimens, and are housed in the Iziko (previously South African) museum (SAMC). Before release, mass, forearm, head length and tibia measurements were recorded (Table 1).

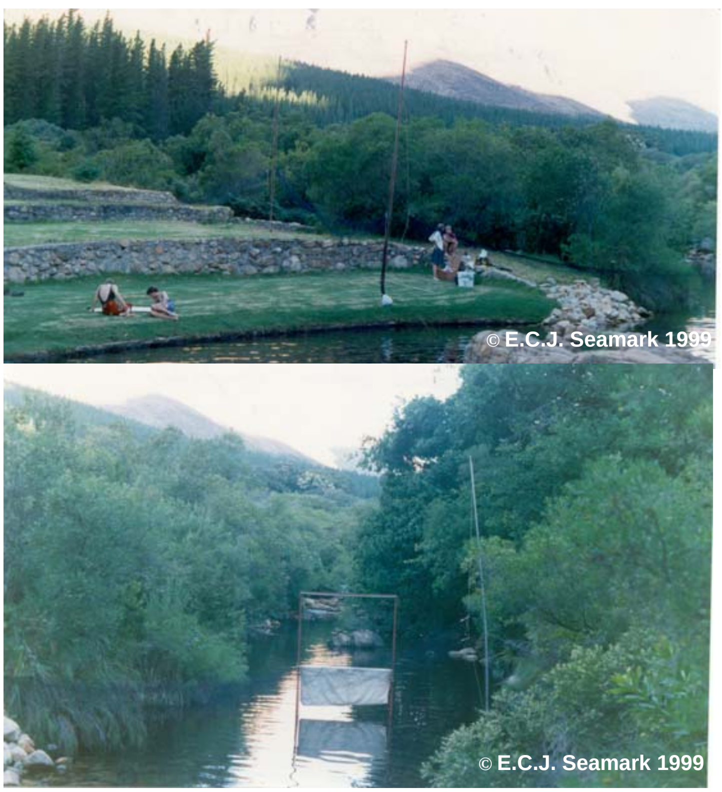

Figure 1 above: Algeria State Forest: campsite 32°22.472S, 19°03.708E, Western Cape Province, South Africa.

Myotis tricolor **(Temminck, 1832)**
One sub-scrotal (testes 8mm long, 5mm wide) male *M. tricolor* (SAMC 41451) was caught at Algeria State Forest in the lowest pocket of a mist net set over a small stream, lined with vegetation. When caught, its weight lowered it into the water, as the bottom strand of the net was touching the water. This behaviour of low flying over running water, beside vegetation has been observed in Ithala Game Reserve, KwaZulu Natal (Seamark and Kearney 2004).

Cistugo lesueuri **Roberts, 1919**
C. lesueuri was caught at two localities (Algeria and Kliphuis (SAMC 41458)), including one male and two post-lactating females. They seem to forage at the same time as *Neoromicia capensis*, one individual being caught between 20h00 – 20h20. This species can easily be confused with *N. capensis*. However, we observed that *C. lesueuri* had an unusual behaviour when held in the hand. An individuals would to pull it's head within its shoulders, leaving only a ring of skin where the head was, which has not been observed in any *N. capensis*. D. Jacobs and C. Schoemann (*pers comm*.) have not noticed this behaviour when handling *Cistugo*. J. Watson (*pers. comm*.) has observed that when caught in a mist net, *Cistugo* lay still, not as *N. capensis*, which fight.

Neoromicia capensis **(A. Smith, 1829)**
We caught *N. capensis* at two localities (Algeria (SAMC 41452) and Kliphuis (SAMC 41457)), including three sub-scrotal males (testes 5 mm long and 3 mm wide) and one sub-adult male (epiphisals were not fused (mass 4g, forearm 33.6, head length 15.5, tibia 12.9)). These bats were caught between 20h00-20h50, together with *C. lesueuri*. Both Algeria State Forest and Kliphuis are close to buildings, known as roosts of *N. capensis*.

Table 1: Field measurements (mm) and mass (g) of nine species of bats, caught in the Cederberg region, Western Cape, South Africa. Forearm (Fa), head length (HL) and tibia (Tib), nose-leaf width (NW).

Species		Mass	Fa	HL	Tib / NW*
		X (n) Range	X (n) Range	X (n) Range	X (n) Range
Myotis triclor	Male	10.5 (1) 10.5	47.2 (1) 47.2	20.4 (1) 20.4	20.7 (1) 20.7
Cistugo lesueuri	Male	5.5 (1) 5.5	35.0 (1) 35.0	16.6 (1) 16.6	14.5 (1) 14.5
	Female	5.0 (2) 5.0	35.4 (2) 34.4-36.4	16.2 (2) 16.2	14.1 (2) 14.0-14.1
Neoromica capensis	Male	6.9 (3) 6.4-7.6	33.9 (3) 32.9-34.4	17.3 (3) 16.7-17.5	13.3 (3) 13.0-13.6
Eptesicus hottentotus	Male	17.5 (2) 17.0-18.0	49.8 (2) 49.0-50.7	18.0 (1) 18.0	21.4 (1) 21.4
	Female	20.2 (4) 18.5-22.0	51.0 (4) 49.7-52.2	23.3 (3) 21.4-24.4	22.2 (3) 22.0-22.5
Laephotis namibensis	Male	7.9 (2) 7.9	38.4 (2) 38.0-38.8	18.0 (2) 16.4-19.7	16.2 (2) 16.0-16.5
	Female	8.4 (1) 8.4	40.2 (1) 40.2	19.5 (1) 19.5	16.6 (1) 16.6
Miniopterus schreibersii	Male	11.5 (3) 11.0-12.0	46.8 (3) 46.2-47.7	18.1 (3) 18.0-18.4	20.7 (3) 20.4-20.9
Tadarida aegyptiaca	Male	13.0 (6) 12.0-15.5	44.9 (6) 43.8-46.0	22.3 (2) 22.1-22.5	-
Sauromys petrophilus	Male	9.3 (36) 7.6-11.5	38.2 (36) 36.7-40.7	-	-
	Female	8.4 (2) 8.3-8.6	38.0 (2) 38.0-38.1	-	-
Rhinolophus capensis	Male	10.5 (1) 10.5	49.3 (1) 49.3	22.0 (1) 22.0	8.7 (1)* 8.7

Table 2: Number of individuals captured at each site: ALG- Algeria State Forest; KLIP- Kliphuis; CRY- Crystal Pools; CED- all samples combined for the Cederberg region. NNN- Number of netting nights. Brackets indicating individuals not captured in mist nets.

	ASF	KLIP	CRY	CED
NNN	4	1	1	6
S. petrophilus	16	13	9	38
T. aegyptiaca	2	-	4	6
C. leuseueri	1	2	-	3
N. capensis	3	1	-	4
E. hottentotus	2	1	3	6
L. namibensis	3	-	-	3
My. tricolor	1	-	-	1
Min. schreibersii	-	1	2	3
R. capensis	(1)	-	-	(1)
Species richness	8	5	4	9

***Eptesicus hottentotus* (A. Smith, 1833)**
E. hottentotus were caught at all three localities (SAMC 41416, SAMC 41418- 41419), including two males and four adult females. These bats were caught between 20h45-21h52 in sections of the nets that were not over water, but on the edge of the water body.

***Laephotis namibensis* Setzer, 1971**
Rautenbach and Nel (1978, 1980) first reported *Laephotis wintoni* Thomas, 1901, from the region and Rautenbach (*pers. comm.*) in Skinner and Smithers (1990) suggested that it was *L. namibensis*. We caught *L. namibensis* at Algeria State Forest (SAMC 41415, SAMC 41417) including two sub-scrotal males and one post-lactating female were caught. Two were caught on the first night at 20h30 and 21h12 respectively, and the other on the second night at 21h40 suggesting that *L. namibensis* is a relatively late flyer. All three individuals were caught in the same net set over water, in the bottom pocket, some individuals' weight lowering them into the water. *L. namibensis* seemed to fly down the centre of the stream, as they were caught in the centre of the stream.

***Miniopterus schreibersii* (Kuhl, 1819)**
M. schreibersii was previously recorded at Algeria State Forest (Transvaal Museum records). We caught three male *M. schreibersii* at Kliphuis (SAMC 41459) and Crystal Pools (SAMC 41464), typically late in the evening, one individual being caught at 21h40.

***Tadarida aegyptiaca* (E. Geoffroy, 1818)**
Six male *T. aegyptiaca* were caught between Algeria (SAMC 41453) and Crystal Pools (SAMC 41460, SAMC 41461, SAMC 41463). Specimens examined showed yellow fat at base of ribs and hips, suggesting an increase in body fats before winter.

***Sauromys petrophilus* (Roberts, 1917)**
Thirty-six male and two female *S. petrophilus* were caught at all three localities (SAMC 41454, 41456, 41462), comprising 63.3% of the species composition for this survey.

***Rhinolophus capensis* Lichtenstein, 1823**
We regularly observed *R. capensis* at night using the eves of buildings around the Algeria Forest station and the presence of culled insect parts and droppings in the mornings suggested that these were used as night roosts. One scrotal (testis 3mm long and 2 mm wide) male (SAMC 41455) was caught in a hand net at such a roost.

Species richness
The total bat species richness for the Cederberg area is nine species, lower than the 18 species estimated by Gelderblom *et al* (1995) for the fynbos biome, but can be explained in that species richness is correlated with the area surveyed (Findley 1993). Table 2 indicates the number of each species caught, for all three sites, including combined results for the Cederberg region (all sites combined).

This survey confirmed the presence of nine species of bats, within the Cederberg region, of the Western Cape, South Africa. Additional surveys within the fynbos biome are needed to further understand and compare the different sites and prioritize areas for conservation importance to bat diversity.

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RECENT LITERATURE

PAPERS

BICKHAM, J. W., PATTON, J. C., SCHLITTER, D. A., RAUTENBACH, I. L. & HONEYCUTT, R. L., 2004. Molecular phylogenetics, karyotypic diversity, and partition of the genus *Myotis* (Chiroptera: Vespertilionidae). *Mol. Phylog. Evol.* 33(2): 333-338.

ABSTRACT: Nucleotide sequences of the mitochondrial cytochrome b gene are reported from bats of the genus Myotis including species of the endemic southern African subgenus *Cistugo*, *Myotis* (*Cistugo*) *sebrai* and *Myotis* (*Cistugo*) *lesueuri*. We also examined *Myotis annectans* from Southeast Asia, and *Myotis macropus* from Australia. The two species of *Cistugo* and *Myotis annectans* represent the only species of *Myotis* to differ in chromosome number from the common 2n = 44 found in >40 species. Our results show that the two species of *Cistugo* are more divergent from the other species of *Myotis* than several other well-recognized genera and we recommend elevating *Cistugo* to full generic rank. *Myotis annectans* groups well within *Myotis*, clustering with other Southeast Asian and Japanese species, and thus represents the only species of *Myotis* known to have diverged from the common 2n = 44 karyotype. *Myotis macropus* clusters within a clade that includes Southeast Asian species.

BOLLEN, A., VAN ELSACKER, L. & GANZHORN, J. U., 2004. Relations between fruits and disperser assemblages in a Malagasy littoral forest: A community-level approach. *Journal of Tropical Ecology* 20: 599–612.

ABSTRACT: Interactions among fleshy fruits and frugivore assemblages are presented from a 1-y study in the littoral forest of Sainte Luce, south-eastern Madagascar. This community-level approach allowed us to determine food selection by all consumer species and to evaluate the role different frugivores play in seed dispersal and predation. For this, interactions between 136 consumed fruit species and 13 frugivorous species were studied. Fruit and seed size were the most important physical factors determining food selection of all consumer species. Nutritionally birds favoured and mammals avoided lipid-rich fruits. For *Cheirogaleus* spp., that go into torpor, there was a trend to select sugar-rich fruit pulp. However, for numerous fruit traits the consumer species had no clear feeding preferences and they seemed to be quite flexible, eating whatever was available. This might be related to unpredictable fruit availability and low fruit productivity in the littoral forest, which may also partially explain the low number of frugivores present. Nevertheless frugivores have different impacts on seed dispersal. *Eulemur fulvus collaris* is particularly important for the dispersal of large-seeded species, while frugivorous birds and flying foxes ensure plant regeneration between and outside forest fragments. In terms of conservation, heterogeneous seed transport is particularly important for this severely degraded littoral forest.

Key words: *Alectroenas madagascariensis*, *Cheirogaleus*, *Coracopsis nigra*, *Eulemur fulvus collaris*, frugivory, *Hypsipetes madagascariensis*, *Microcebus rufus*, *Pteropus rufus*, rodents, seed dispersal.

GOODMAN, S. M. & RANIVO, J., 2004. The taxonomic status of *Neoromicia somalicus malagasyensis*. *Mammalian Biol.* 69(6): 434-438.

HUTCHEON, J. M. & GARLAND JR., T., 2004. Are megabats big? *Journal of Mammalian Evolution* 11(3-4): 257-277.

ABSTRACT: Traditionally, bats (Order Chiroptera) are divided into two suborders, Megachiroptera (“megabats”) and Microchiroptera, and this nomenclature suggests a consistent difference in body size. To test whether megabats are, in fact, significantly larger than other bats, we compared them with respect to average body mass (log transformed), using both conventional and phylogenetic statistics. Because bat phylogeny is controversial, including the position of megabats, we employed several analyses. First, we derived two generic-level topologies for 101 genera, one with megabats as the sister of all other bats (“morphological” tree), the other with megabats as the sister of one specific group of microbats, the Rhinolophoidea (“molecular” tree). Second, we used a recently published “supertree” that allowed us to analyze body mass data for 656 species. In addition, because the way body mass has evolved is generally unknown, we employed several sets of arbitrary branch lengths on both topologies, as well as transformations of the branches intended to mimic particular models of character evolution. Irrespective of the topology or branch lengths used, log body mass showed highly significant phylogenetic signal for both generic and species-level analyses (all P[le] 0.001). Conventional statistics indicated that megabats were indeed larger than other bats (P [Lt] 0.001). Phylogenetic analyses supported this difference only when performed with certain branch lengths, thus demonstrating that careful consideration of the branch lengths used in a comparative analysis can enhance statistical power. A conventional Levene's test indicated that log body mass was more variable in megabats as compared with other bats (P=0.075 for generic-level data set, P [Lt] 0.001 for species-level). A phylogenetic equivalent, which gauges the amount of morphospace occupied (or average minimum rate of evolution) relative to topology and branch lengths specified, indicated no significant difference for the generic analyses, but did indicate a difference for some of the species-level analyses. The ancestral bat is estimated to have been approximately 20–23 g in body mass (95% confidence interval approximately 9–51 g).

HUTCHEON, J. M. & KIRSCH, J. A. W., 2004. Camping in a different tree: Results of molecular systematic studies of bats using DNA-DNA hybridization. *Journal of Mammalian Evolution* 11(1): 17-47.

ABSTRACT: We examined taxa from 13 of the 17 chiropteran families, using single-copy DNA hybridization. Five taxa that either represented points of controversy in systematics or were members of problematic families were included in the experiment. The resulting data were used to build phylogenetic trees of 14 and 19 taxa, and by combining this study's data with those from two previous studies, a supertree of 36 taxa was constructed. The trees based on the three different matrices are compared and contrasted, and a phylogenetic hypothesis supporting the association of the rhinolophoid and the pteropodid groups of bats is presented. On the basis of this study, we conclude that the phylogenetically correct placement of the family Nycteridae is in a clade that does not include their putative relatives, the Rhinolophoidea. Our results suggest that the Emballonuridae, while a monophyletic group, are well embedded within the Yangochiroptera, and do not comprise the sister taxon to all other microbats. This study supports earlier DNA-hybridization results with respect to the placement of Mystacinidae within the Noctilionoidea, replicating those earlier findings. Finally, we determine that *Miniopterus* may well warrant recognition as a family distinct from the Vespertilionidae in which it is usually placed.

LAVRENCHENKO, L. A., KRUSKOP, S. V. & MOROZOV, P. N., 2004. Notes on the bats (Chiroptera) collected by the joint Ethiopian-Russian Biological Expedition, with remarks on their systematics, distribution, and ecology. *Bonn. zool. Beitr.* 52(1/2): 127-147.

ABSTRACT: New records are reported for 30 species of Ethiopian bats collected by the Joint Ethiopian-Russian Biological Expedition. *Myonycteris torquata* and *Pipistrellus aero* are recorded for the first time from Ethiopia. Principal new localities are reported for ten species, including *Stenonycteris lanosus*, *Lissonycteris angolensis*, *Hypsignathus monstrosus*, *Micropteropus pusillus*, *Nycteris thebaica*, *Triaenops persicus*, *Myotis scotti*, *M. welwitschii*, *Pipistrellus rusticus* and *Laephotis wintoni*. Selected external and cranial measurements, information on habitat associations and reproduction are given for most species. Generally, the local faunas of Microchiroptera of Ethiopian montane forests are impoverished. Nevertheless, both of the only known endemic species, *Myotis scotti* and *Plecotus balensis*, being putative derivatives of Palaearctic lineages, inhabit this environment. A checklist of 77 bat species known to date from the territory of Ethiopia is provided in the Appendix.
Key words. Chiroptera, systematics, biogeography, biodiversity, Ethiopia.

WEBALA, P. W., OGUGE, N. O. & BEKELE, A., 2004. Bat species diversity and distribution in three vegetation communities of Meru National Park, Kenya. *Afr. J. Ecol.* 42(3): 171-179.

ABSTRACT: Diversity and distribution of bats was determined in four vegetation types in and around Meru National Park, Kenya between September 2000 and February 2001. Bat-habitat studies were based on plant species dominance, cover and farming activities. Bats were captured using standard mist nets (18 m long x 2 m high) erected on poles averaging 3 m. Vegetation was broadly grouped as *Acacia* or *Combretum* wooded grassland, or *Acacia-Commiphora* bushland and studied using the Braun-Blanquet method. Analysis of floristic similarity showed five vegetation species assemblages in the three broad categories. Four hundred and ninety-five bats representing eleven genera in seven families were recorded. These were *Epomophorus labiatus*, *E. wahlbergi*, *Cardioderma cor*, *Lavia frons*, *Myotis welwitschii*, *Scotoecus hirundo*, *S. leucogaster*, *Pipistrellus kuhlii*, *Mops condylurus*, *Chaerephon bemmeleni*, *Mormopterus* sp., *Hipposideros caffer*, *H. commersoni*, *Nycteris arge* and *Rhinolophus landeri*. This was the first record of *N. arge*, *M. welwitschii*, *C. bemmeleni* and a *Mormopterus* species in eastern Kenya. The *Combretum* community was most equitable (E = 0.51) with nine bat species records, while farming areas had only four. The low species richness and increased dominance of a few generalist species on farms may be indicative of different levels of disturbance.

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