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Inside this issue:

Above: Lactating female Yellow house bat, *Scotophilus dinganii* (A. Smith, 1833), caught in Marloth Park, South Africa, 3 January 2007 (field number SMG-15772).

Notes from the Editor:

This, the 11th issue of African Bat Conservation News could not have been possible without the continued support and encouragement of the scientific editorial board (see list on page 9). I thank them all for their guidance over the past year. All members of the scientific editorial board in 2006 have agree to stand again in 2007. They will be joined by Dr. Victor Van Cakenberghe (University of Antwerp), who has a vast experience in taxonomy of African bats, is working on a world-wide taxonomic revision of vespertilionids, and is also the senior managing editor of the African Chiroptera Report/ Database project (see ABCN 10: 3-4).

African Bat Conservation News has been growing slowly in support over the past two and a half years with a total of nine non-scientific and 12 scientific contributions (see Table 1). A target for the newsletter would be to see this number increase to about 20 scientific papers per year (i.e. about five per issue).

There has also been an increase over the past year in the number of articles on bats in Africa published in other scientific publications. As this issue was going to press, I was flooded with abstracts to recently published papers. Due to time constraints in contacting the authors to request any images and additional information to accompany the abstracts, these will only appear in the July issue. I would encourage anyone who has publications on African bats, too keep the newsletter in mind and if possible send any images and captions (please remember to include credits for images), that could be used to illustrated the abstract when it is listed in the "Recent Literature" section.

To get around the problem of listing recent literature on African bats more timeously, I have created a new page on the African Bats website (www.Africanbats.org) that provides a list of recent literature (currently going back to 2005). In instances where a PDF document of the paper is located on the web, hyperlinks will be created to these sites. If you are aware of sites where any of the references can be downloaded please let me know so that I can create the necessary links.

During 2006, and already in the first month of 2007, there have been a number of new bat species descriptions published in the literature. This appears to be the result of researchers critically reappraising previously described

Table 1. A breakdown of the number of non-scientific and scientific (peer-reviewed) articles submitted to the newsletter over the past two and a half years.

Year (# issues)	# Non-scientific contributions	# Scientific contributions
2004 (2)	3	1
2005 (4)	2	5
2006 (4)	4	6

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www.Africanbats.org

http://flyingfur.typepad.com/abcn/abcn.html

taxonomic groups across the entire distribution range of species, and the combination of morphological and molecular techniques. It is possible that with more studies of this nature we are going to see an "explosion" of new bat species in Africa. From a conservation perspective - are we prepared for the possibility of a large increase in the number of bat species?

Another area of interest, and yet possible concern, is the increase in the literature of bat associated zoonoses that in some cases appear to be transferable to humans (i.e. Ebola, rabies-related Duvenhage virus, and Hendra and Nipah viruses). In searching the literature dealing with bat zoonoses, I was concerned by instances of human infection where it is suspected a bat was the responsible agent for the infection, but the species of bat remained unknown. Unfortunately, in the public eye this could unnecessarily incriminate all bat species and populations. Such press would be untimely given that the good work by bat conservation groups around the world has seen a growing trend in bat watching and increased understanding and tolerance of bats.

It would seem then the time is appropriate for large scale surveys to assess the degree of spread of zoonoses in bat species and populations. Without such information it will be difficult to development strategies to effectively manage possible threats to human health. However, maybe it would be wise, even prior to having such results, but considering what is currently known, to start to consider management actions that reduce contact between bats and humans. My view, that may not be shared by others, and may be considered an over-reaction, is that areas where bat human contact is greatest is in all likely hood an "unnatural" situation, and that we should rather be striving to improve conservation of bats *in situ*.

- Ernest C.J. Seamark

RESEARCH AND CONSERVATION

RESOLVING RELATIONSHIPS BETWEEN SPECIES OF LONG-EARED BATS FROM THE GENUS *LAEPHOTIS* USING DNA SEQUENCE DATA AND 3D GEOMETRIC MORPHOMETRICS

By: Teresa C. Kearney[1] and Wieslaw Bogdanowicz[2]

[1] Vertebrate Department, Transvaal Museum, P.O. Box 413, Pretoria, 0002, South Africa. [2] Museum and Institute of Zoology, Polish Academy of Science, Wilcza 64, 00-679 Warszawa, Poland.

Funds have been allocated from the Poland/SA International Science Co-operation Grant (South African National Research Foundation under Grant number 2075460) to support a project over the next two years, in which Prof. Wieslaw Bogdanowicz (Museum and Institute of Zoology, Polish Academy of Sciences, Poland) and Dr. Teresa Kearney (Transvaal Museum, South Africa) will collaborate on a project entitled "Resolving relationships between species of long-eared bats from the genus *Laephotis* using DNA sequence data and 3D geometric morphometrics". The intention is to bring together, in Prof. Bogdanowicz's laboratory, as many of the existing museum vouchers and tissues for *Laephotis* from different museums and collections around the world, to run molecular and 3D geometric morphometric analyses that will hopefully enable a clearer definition of the species relationships in *Laephotis*. Traditional morphometric analyses of cranial measurements (see KEARNEY and SEAMARK 2005) were unable to resolve species distinctions between *L. wintoni* and *L. namibensis*, and between *L. angolensis* and *L. botswanae*, and it was suggested further techniques would be required to clarify the relationships between the taxa. Fieldwork will also be undertaken to try and collect more vouchers, and echolocation recordings of as many of the different species as possible. If you know of any *Laephotis* vouchers or tissue not referred to in (KEARNEY and SEAMARK 2005), your assistance in bringing them to the attention of either Prof. Wieslaw Bogdanowicz (wieslawb@miiz.waw.pl) or Dr. Teresa Kearney (kearney@nfi.co.za) for use in the project would be appreciated.

Reference

KEARNEY, T. C., and SEAMARK, E. C. J., 2005. Morphometric analysis of cranial and external characters of *Laephotis* Thomas, 1901 (Mammalia: Chiroptera: Vespertilionidae) from southern Africa. *Annals of the Transvaal Museum*, **42**: 71–87.

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.

ROUSETTUS MADAGASCARIENSIS GRANDIDIER 1929 FEEDING ON *DIMOCARPUS LONGAN* IN MADAGASCAR

By : *Radosoa A. Andrianaivoarivelo[1,2], Olga R, Ramilijaona[1] and Daudet Andriafidison[1,2]

[1]Département de Biologie Animale, Faculté des Sciences, Université d'Antananarivo, B.P. 906, Antananarivo (101), Madagascar.
[2]Madagasikara Voakajy, B.P. 5181, Antananarivo (101), Madagascar.
*Email: voakajy@wanadoo.mg.

Key words: foraging, litchi, *Rousettus*, seed dispersal, Madagascar

Madagascar's fruit bat community is comprised of three endemic species (*Pteropus rufus* E. Geoffroy St.-Hilaire, 1803, *Eidolon dupreanum* (Schegel, 1867) and *Rousettus madagascariensis* G. Grandidier, 1929). The demand for bushmeat is a well-documented threat to the larger bats, *P. rufus* and *E. dupreanum* (MACKINNON *et al.* 2003), and there is now growing evidence that the small (forearm = 70.5 ± 3.5 mm SD, mass = 63.52 ± 10.1 g SD, n =17) *R. madagascariensis* is also subject to hunting pressure (GOLDEN 2005). The impact of the destruction of native forests on Malagasy fruit bats is not fully understood, and even though all species can use domesticated fruits during some seasons, they all also feed on flowers and fruits of native forest plants (HUTCHEON 2003).

Madagascar's fruit bats provide important ecological services as seed dispersers and pollinators although the role of *R. madagascariensis* has yet to be thoroughly explored in this respect. There are few published observations of foraging by Malagasy fruit bats as most dietary studies have focused on faecal analysis. Some data, however, are available for *P. rufus* and *E. dupreanum* (ANDRIAFIDISON *et al*. 2006; BOLLEN & VAN ELSACKER 2002; RAKOTONIRAINY 2001), but few for *R. madagascariensis.* To our knowledge the only such published data on the diet of this taxon include observations of bats feeding extensively on banana (*Musa*, Musaceae) and litchi (*Litchi chinensis*¸ Sapindaceae) fruits near Tolagnaro in the south-east of the island (GOODMAN 1999).

As part of a study on the ecology of *R. madagascariensis*, we visited Anosibe An'ala (19°23'S, 48° 20'E), Province of Toamasina, in the central east. Our observations, between 20 and 23 February 2006, were made near the village of Vohibola in a landscape with scattered fragments of mid-altitude humid forest, pseudo-steppe and agricultural areas. In addition to rice and various root crops, a wide variety of introduced fruits are also cultivated, such as the Sapindaceae *Litchi chinensis* and *Dimocarpus longan* and four species of Myrtaceae *Syzygium jambolanum* (makoba), *Eugenia jambolana* (rotra), *Syzygium jambos* (jamborzano) and *Psidium cattleianum* (guava).There was no *Nephelium lappaceum* (Sapindaceae, litchi poilu), another cultivated litchi in Madagascar, at the study site. We made a preliminary assessment of bat activity by mist netting *R. madagascariensis* near the base of the fruiting trees. We then directly observed the bats and recorded them with an infrared video camera as they fed on ripe fruits.

D. longan is distinct from *L. chinensis* in colouration (Fig.

Figure 1a: Fruit of *Litchi chinensis*.

Figure 1b: Fruit of *Dimocarpus longan*

1), morphology and size (fruit size *D. longan*: mass = 7.0 ± 1.67 g SD, length = 21.8 ± 1.45 mm SD, n = 7; fruit size *L. chinensis*: mass= 20.3 ± 2.01 g SD, length = 33.6 ± 1.45 mm SD, n = 20). We selected one of the *D. longan* trees, which we estimated to have 3,000-4,000 ripe fruits, as our focal sampling unit.

We netted 17 *R. madagascariensis* near two fruiting *D. longan* trees. Bats arrived at the tree around 19:55, approximately 90 minutes after sunset, and observations were made until 04:00 the following morning, approximately 60 minutes before sunrise, when the bats departed for their day roosts. It appeared that peak activity was reached soon after the arrival of the first bats, giving the impression that the bats travelled synchronously from the roost to the feeding site. We located a single roost 18 km from the study site in a dark cave, although the bats that we observed may have travelled from a different roost site. We estimated that 100 *R. madagascariensis* were using the focal trees and they used two main feeding strategies. For the first foraging method, bats would hover near a clump of ripe fruits before removing one with their teeth, placing it in their mouth and flying to a nearby feeding perch, where in an upside down position the fleshy white drupe was swallowed and the seed and husk discarded. The bats dropped some of the fruits before alighting on their perch. At one feeding perch in a mango tree 40 m from the focal *D. longan* tree, we counted 45 discarded seeds (size of measured seeds: n = 7, weight 1.8 ± 0.36 g SD, length = 14.1 ± 1.38 mm SD) in a single night. The second foraging method consisted of the bats landing on a branch, suspended upside down by their feet, and feeding on up to 20 fruits sequentially during a given bout. We counted approximately 800 bat-damaged fruits underneath the tree on the morning of 21 February.

R. madagascariensis, which weighs on average 60-70g, carried fruits weighing 11-14% of their body mass, 40 m or more from the fruiting tree. We found seedlings of *D. longan* up to 250 m from the mature trees, possibly indicating the maximum distance covered by a fruit-carrying bat. This mode of seed dispersal has been noted previously for *R. madagascariensis* feeding on *L. chinensis* (GOODMAN 1999). As most studies on the diet of Malagasy pteropodids have relied on the collection of faecal material from under day roosts, or sometimes at nocturnal feeding sites, the dispersal of fruits during short foraging flights has been largely overlooked.

Litchis, largely *L. chinensis*, are an important international export commodity in eastern Madagascar and fruit bats are sometimes persecuted for their perceived role in consuming large numbers of fruits. Although *D. longan* is not an important crop in economic terms on the island, at our study site it provided an important food source for the family that planted the trees in 1984. Up to ten bats per night were killed during the fruiting season by the family to protect their fruits. Given that there appears to be a conflict between human livelihood and bat conservation further studies are needed to quantify the impact of fruit bats on litchis in Madagascar.

Acknowledgments

The research was funded by the Disney Wildlife Conservation Fund, BP Conservation Programme and Darwin Initiative. Permission to conduct the research was given by the Department of Waters and Forests, Ministry of the Environment. Thanks to Christophe Rahaingonirina, Sylvèstre Raharimbola, Rado Andriamihaja for assistance in the field and Jimmy Chan for permission to study the *D. longan* trees. Richard Jenkins and Paul Racey made helpful comments on earlier versions of the manuscript. We thank Steven Goodman, Robert Barclay and an anonymous referee for reviewing the article.

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RAKOTONIRAINY, E. O. 2001. Etude de la bio écologie de la communauté de vertèbres frugivores de la foret littorale de Sud Est de Madagascar (Tolagnaro) : Observation sue *Ficus* spp. (MORACEAE), en vue de la conservation et de la réhabilitation de cet écosystème. *Mémoire DEA. Département de Biologie Animale.* Université d'Antananarivo. 64 pp.

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RECENT LITERATURE

PUBLISHED PAPERS

GOODMAN, S. M., CARDIFF, S. G., RANIVO, J., RUSSELL, A. L., and YODER, A. D., 2006. A new species of *Emballonura* (Chiroptera: Emballonuridae) from the dry regions of Madagascar. *American Museum Novitates*(3538): 1-24.

We describe a new species of bat in the genus *Emballonura* (Chiroptera: Emballonuridae), *E. tiavato*, from the dry forest regions of Madagascar. This species is distinguished from the only other member of this genus found on the island, *E. atrata*, and extralimital species based on a variety of external and cranial characteristics. Details of the distribution, phylogeny, and natural history of the two species of Malagasy *Emballonura* are presented.

Above: The newly described *Emballonura tiavato* taken in forest of Anjajavy, Madagascar.— Steve Goodman

Below: The Madagascar sheath-tailed bat (*Emballonura atrata*) — Midongy-Sud National Park— Steve Goodman

GERLACH, J., and TAYLOR, M., 2006. Habitat use, roost characteristics and diet of the Seychelles sheath-tailed bat *Coleura seychellensis*. *Acta Chiropterologica* 8(1): 129-139.

The Seychelles sheath-tailed bat *Coleura seychellensis* is a Critically Endangered species endemic to the Seychelles island of Mahé and Silhouette, with historical records from Praslin and La Digue islands. Published descriptions exist for only one active roost containing 32 bats. The present study located the species only in coastal boulder field caves with stable cool temperatures and access into palm woodland or marsh habitat. At one roost gaps in the woodland are used for foraging and the natural woodland appears to be important for the conservation of the species primarily as foraging habitat. A second roost on Silhouette island has been located near a large, insect rich marsh habitat. Faecal analysis demonstrated that this site *C. seychellensis* feeds predominantly on marsh associated Ceratopogonidae (Diptera), in contrast to Curculionidae (Coleoptera) in palm woodland. This dietary plasticity indicates that food is not limiting for this species. The decline in this species may have been caused by habitat alteration caused by invasive plants obstructing roost entrances; conservation of the species requires active habitat management.
Keywords: *Coleura seycellensis*; conservation; Emballonuridae; foraging; roost characteristics; Silhouette.

GOODMAN, S. M., RATRIMOMANARIVO, F. H., and RANDRIANANDRIANINA, F. H., 2006. A new species of *Scotophilus* (Chiroptera: Vespertilionidae) from western Madagascar. *Acta Chiropterologica* 8(1): 21-37.

We describe a new species of *Scotophilus* (Vespertilionidae) from western Madagascar. This bat differs from the other members of this genus known from the island, Africa, and Asia based on its notably diminutive size, pelage coloration, and tragus shape and length. *Scotophilus* sp. nov. is known from seven different specimens taken at three different sites in the central western portion of the island, in zones with anthropogenic savanna dominated by palms (*Bismarckia nobilis*) and dry deciduous forest. The holotype was collected in the palm leaf roof of a thatched dwelling, which is the first evidence of the synanthropic occurrence of a member of this genus on Madagascar. Four species of *Scotophilus* are now known to occur on Madagascar of which three are endemic.
Keywords: new species; *Scotophilus*; Vespertilionidae; western Madagascar.

HADJISTERKOTIS, E., 2006. The destruction and conservation of the Egyptian fruit bat *Rousettus aegyptiacus* in Cyprus: A historic review. *Journal of Wildlife Research* 52(4): 282-287.

In Cyprus, there are 16 species of bats most of which are threatened with extinction. With the exception of the megachiropteran Egyptian fruit bat *Rousettus aegyptiacus* that feeds on fruit, the rest of them are insectivorous microchiropterans. The fruit bat was declared as a pest by the Department of Agriculture of the Ministry of Agriculture, Natural Resources and Environment of Cyprus since the early 1900s. To reduce the number of this "pest", the above-mentioned Department, since 1927, used fumigation, shooting, and the purchase of dead bats. Fumigating and closing caves not only destroyed fruit bats by direct poisoning, but the entire cave ecosystems, including highly beneficial and protected insectivorous species. The first attempt to protect bats on the island was in 1988 with law No. 24 of 1988, ratifying the Convention on the Conservation of European Wildlife and Natural Habitats, 82/72/EEC. This convention protects all microchiroptera species except *Pipistrellus pipistrellus* that is strictly protected. *R. aegyptiacus* is rare, with small populations that are not at present endangered or vulnerable but at risk. Cyprus recently became a member state of the European Union. This provided the opportunity to include *R. aegyptiacus* in the Annexes II and IV of the council directive 92/42/EEC of May 21, 1993 on the conservation of natural habitats and of wild fauna and flora, which will guarantee the long-range protection and survival of this species.
Keywords: conservation

HEFFNER, R. S., KOAY, G., and HEFFNER, H. E., 2006. Hearing in large (*Eidolon helvum*) and small (*Cynopterus brachyotis*) non-echolocating fruit bats. *Hearing Research* 22(1-2): 17-25.

Abstract: Comparing the hearing abilities of echolocating and non-echolocating bats can provide insight into the effect of echolocation on more basic hearing abilities. Toward this end, we determined the audiograms of two species of non-echolocating bats, the straw-colored fruit bat (*Eidolon helvum*), a large (230-350 g) African fruit bat, and the dog-faced fruit bat (*Cynopterus brachyotis*), a small (30-45 g) bat native to India and Southeast Asia. A conditioned suppression/avoidance procedure with a fruit juice reward was used for testing. At 60 dB SPL, the hearing range of *E. helvum* extends from 1.38 to 41 kHz with best sensitivity at 8 kHz; the hearing range of *C. brachyotis* extends from 2.63 to 70 kHz with best sensitivity at 10 kHz. As with all other bats tested so far, neither species was able to hear below 500 Hz, suggesting that they may not use a time code for perceiving pitch. Comparison of the high-frequency hearing abilities of echolocating and non-echolocating bats suggests that the use of laryngeal echolocation has resulted in additional selective pressure to hear high frequencies. However, the typical high-frequency sensitivity of small non-echolocating mammals would have been sufficient to support initial echolocation in the early evolution of bats, a finding that supports the possibility of multiple origins of echolocation.

HOFFER, S. R., VAN DEN BUSSCHE, R. A., and HORÁCEK, I., 2006. Genetic status of the American *Pipistrellus* (Vespertilionidae) with description of new genus. *Journal of Mammalogy* 87(5): 981-992.

Abstract: Although traditionally placed in the genus *Pipistrellus*, studies since the mid-1900s have shown that the western pipistrelle (*P. hesperus*) and eastern pipistrelle (*P. subflavus*), the only 2 representatives of *Pipistrellus*-like bats in the Western Hemisphere, do not share a most recent common ancestry with true *Pipistrellus* or each other. More than 20 years ago, authors recommended taxonomic revision for the American pipistrelles by placing *subflavus* in a separate genus called *Perimyotis*, and *hesperus* in a another separate genus called "*Parastrellus*." Recently, a comprehensive study of the molecular phylogenetics of vespertilionid bats affirmed these suggested revisions. However, the name "*Parastrellus*" is currently unavailable according to the *International Code of Zoological Nomenclature* because no formal description of the genus has been provided. In this study, we provide additional morphological and genetic data demonstrating the marked divergence among *hesperus*, *subflavus*, *Pipistrellus*, and other *Pipistrellus*-like genera, and provide a formal description of a new generic namefor the nominal species *P. hesperus*.
Keywords: 12S ribosomal RNA; classification; cytochrome b; morphology; *Perimyotis subflavus*; phylogenetics; *Pipistrellus hesperus*; Vespertilionidae.

KORINE, C., VATNICK, I., VAN TETS, I. G., and PINSHOW, B., 2006. The influence of ambient temperature and the energy and protein content of food on nitrogenous excretion in the Egyptian fruit bat (*Rousettus aegyptiacus*). *Physiological & Biochemical Zoology* 79(5): 957-964.

Abstract: The diets of frugivorous and nectarivorous vertebrates contain much water and generally have high energy but low protein contents. Therefore, we tested the prediction that to save energy under conditions of high energy demands and high water intake, frugivorous Egyptian fruit bats (*Rousettus aegyptiacus*) will increase both the absolute quantity and the proportion of ammonia in their urine. We also examined whether such changes occur when protein intake is low and water intake is high. We did three feeding trials. In trials 1 and 2, bats were fed one of four liquid diets containing constant soy protein concentrations but varying in sucrose concentration and were kept at ambient temperatures (T-a) of 30°C and 12°C respectively. In trial 3, bats were kept at T-a = 12°C and fed one of four liquid diets with equal sucrose concentrations but varying protein concentrations. In trial 1, food intake at a sucrose concentration of 256 mmol/kg H_2O was initially high but decreased to a constant rate with further increases in sucrose concentration, while in trial 2, food intake decreased exponentially with increasing sucrose concentration. As predicted, at 12°C with varying sucrose concentration, both the absolute quantity and the fraction of ammonia in the bats' urine increased significantly with food intake ($P < 0.02$), while the absolute quantity of urea and the fraction of urea nitrogen excreted decreased significantly with food intake significant effect on nitrogen excretion at T-a = 30°C. Varying protein concentration had no significant effect on nitrogen excretion at T-a = 12°C. We suggest that Egyptian fruit bats can increase ammonia excretion in response to increased energetic demands, and we calculate that they can save energy equal to similar to 2% of their daily metabolic rate by doing so.

MAROM, S., KORINE, C., WOJCIECHOWSKI, M. S., TRACY, C. R., and PINSHOW, B., 2006. Energy metabolism and evaporative water loss in the European free-tailed bat and Hemprich's long-eared bat (Microchiroptera): Species sympatric in the Negev Desert. *Physiological & Biochemical Zoology* 79(5): 944-956.

Abstract: We compared the thermoregulatory abilities of two insectivorous bat species, *Tadarida teniotis* (mean body mass 32 g) and *Otonycteris hemprichii* (mean body mass 25 g), that are of different phylogenetic origins and zoogeographic distributions but are sympatric in the Negev Desert. At night, both were normothermic. By day, both were torpid when exposed to ambient temperatures (T-a) below 25°C, with concomitant adjustments in metabolic rate (MR). *Otonycteris hemprichii* entered torpor at higher T-a than *T. teniotis*, and, when torpid, their body temperatures (T-b) were 1°-2°C and 5°-8°C above T-a, respectively; MR was correspondingly reduced. At night, the lower critical temperature of *T. teniotis* was 31.5°C, and that of *O. hemprichii* was 33°C. Mean nocturnal thermoneutral MR of *T. teniotis* was 37% greater than that of *O. hemprichii*. At high T-a, evaporative water loss (EWL) increased markedly in both species, but it was significantly higher in *T. teniotis* above 38°C. In both species, the dry heat transfer coefficient (thermal conductance) followed the expected pattern for small mammals, by day and by night. Total EWL was notably low in normothermic and torpid animals of both species, much lower than values reported for other bats, indicating efficient water conservation mechanisms in the study species. Comparing thermoregulatory abilities suggests that *O. hemprichii* is better adapted to hot, arid environments than *T. teniotis* , which may explain its wider desert distribution. By both standard and phylogenetically informed ANCOVA, we found no differences in basal metabolic rate (BMR) between desert and nondesert species of insectivorous bats, substantiating previous studies suggesting that low BMR is a characteristic common to insectivorous bats in general.

MONADJEM, A., 2006. Survival and roost-site selection in the African bat *Nycteris thebaica*. *Belgian Journal of Zoology* 135(Suppl.): 103-107.

Survival and mortality of African bats is poorly known. A banding study of a population of *Nycteris thebaica*, roosting in 15 road culverts in north-eastern Swaziland, was initiated in 1998. Since then, a total of 799 bats have been banded including five cohorts of same-aged individuals of known age. Cohort life-tables and survivorship curves were calculated using these data. For both males and females, survivorship was low in the first year, but increased thereafter. Approximately 15% of females and 10% of males banded as juveniles in 1998 and 1999 survived to three years of age. Of female bats banded as adults in July 1998 (n = 39), 23% had survived to January 2003 (4.5 years). The corresponding value for males (n = 6) was zero. Of 28 male bats banded in 1998, only one (4%) was recaptured after four years. Female values probably reflect true survival and mortality, whereas, dispersal and movement complicate the values for males. Female *Nycteris thebaica* did not randomly select roosting sites. The 15 culverts were occupied by six discrete groups of female bats. The presence of male bats at the study site was irregular, with movements of 9 km having been recorded by one particular individual.

REINHARDT, K., and JACOBS, D. S., 2006. Abundance of *Cacodmus villosus* (Stal, 1855) (Heteroptera: Cimicidae) on its host, *Neoromicia capensis* (Chiroptera: Vespertillionidae). *African Entomology* 14(2): 398-400.

SÁNCHEZ, F., KORINE, C., STEEGHS, M., LAARHOVEN, L.-J., CRISTESCU, S. M., HARREN, F. J. M., DUDLEY, R., and PINSHOW, B., 2006. Ethanol and methanol as possible odor cues for Egyptian fruit bats (*Rousettus aegyptiacus*). *Journal of Chemical Ecology* 32(6): 1289-1300.

Frugivorous bats from the Old and New World use odor cues to locate and assess fruit condition. We hypothesized that Egyptian fruit bats (*Rousettus aegyptiacus*) use as odor cues those volatile compounds that increase in emission rate as fruit ripens. We examined whether the smell of fermentation products may indicate the degree of ripeness to fruit bats. We analyzed volatile compounds in the headspace (the gas space above a fruit in a closed container) of dates (*Phoenix dactylifera*) and rusty figs (*Ficus rubiginosa*), both of which are consumed by fruit bats, to elucidate which compounds originate from fermentative pathways and to determine which change in emission rate during ripening. Ethanol, acetaldehyde, and acetic acid were the only volatile compounds detected as products of fermentation in both fruits. In dates, emission rates of these compounds increased during maturation, whereas in rusty figs, they decreased or remained constant. Methanol, although not a fermentation product, increased

in emission rate during ripening in both fruits. We found that *R. aegyptiacus* was neither attracted nor deterred by the smell of methanol at any of the concentrations used. Although the odor of ethanol emanating from food containing concentrations similar to those found in ripe fruit did not attract the bats, at relatively high concentrations (>= 1%), the smell of ethanol deterred them. Thus, ethanol at high concentrations may serve as a signal for bats to avoid overripe, unpalatable fruit.

SPITZENBERGER, F., STRELKOV, P. P., WINKLER, H., and HARING, E., 2006. A preliminary revision of genus *Plecotus* (Chiroptera, Vespertillionidae) based on genetic and morphological results. *Zoologica Scripta* 35: 187-230.

The phylogenetic relationships within the genus *Plecotus* were assessed using molecular as well as morphological methods. With only three species missing, our study is based on an almost comprehensive taxonomic sampling. The genetic analysis comprised 151 individuals from throughout the range. Sequences of two mitochondrial sections, parts of the 16S rRNA gene (16S) and of the control region (CR) were analysed. The morphological analysis of cranial and external characters comprised 697 individuals, including 10 holotypes and one lectotype. Data from 15 craniometric characters of 442 specimens were used in the multivariate analyses. The molecular data identified nine primary clades representing 11 species, 10 of which could be assigned to described taxa, whereas one was described as a new species, *Plecotus strelkovi* Spitzenberger sp. nov. The tree based on 16S revealed two major lineages, one consisting of only one primary clade restricted to the Mediterranean, the other consisting of eight primary clades representing Eurasian taxa. The morphological analysis revealed five additional species, two of them not described. Together with the recently described *P. taivanus*, *P. sardus* and *P. balensis*, which were not included in our analysis, the genus *Plecotus* comprises at least 19 more or less cryptic species. Phylogenetic and phenetic analyses resulted in similar but not completely concordant arrangements of the species. The proposed classification relies mainly on the tree based on 16S sequences. The current distribution indicates that 16 species can be linked to arboreal refugia, three to eremial refugia. We assume that speciation within the gleaning, rather slow flying long-eared bats is due to a multitude of disruption and isolation processes within a formerly continuous range of the broad-leaved Arcto-Tertiary forest in which *Plecotus* probably originated. An exact calibrated molecular dating of the splits is not possible. The Early Oligocene age of the presumed ancestor of the Plecotini and a correlation of the molecular diversifications with palaeogeographic reconstructions suggest that the divergence of the two major lineages may have occurred already during the Middle Miocene, 14.5 Mya.

Notes: Supplemental data available at http://www.nhm-wien.ac.at/NHM/1Zoo/first_zoological_department/web/mammalia/sshp_22e.html

VAN DER MERWE, M., 2006. Amniogenesis in the African yellow bat, *Scotophilus dinganii*. *African Zoology* 41(2): 234-239.

The African yellow house bat, *Scotophilus dinganii* was found to be seasonally monestrus, carrying a single foetus in each of the two uterine horns of the bicornuate uterus. Implantation was superficial, with amniogenesis initiated early during embryogenesis. The amnion in *S. dinganii* was a schizamnion, and it is deduced that its formation was preceded by cavitation of the inner cell mass, with formation of the definitive amniotic cavity, where the floor of the cavity eventually formed the embryonic disc and its roof the ectodermal part of the true or definitive.

Keywords: African yellow bat; amnion formation; schizamnion; *Scotophilus*; Vespertilionidae.

NOTICE BOARD

Conferences

1st International South-East Asian Bat Conference

To be held at: Club Andaman Resort Beach Hotel, Patong, Phuket, Thailand, 7-10 May 2007.

Further information: www.sc.psu.ac.th/bats

21st Annual Conference of the Society for Conservation Biology

To be held at: Port Elizabeth, South Africa, 1-5 July 2007

33rd Meeting of the Zoological Society of Southern Africa

To be held at: Potchefstroom, South Africa, 8-11 July 2007

Further information: "*The sixth extinction - conserving zoological biodiversity*" [http://www.natural-events.com/ZSSA]

10th International African Small Mammal Symposium

To be held at: International Institute of Tropical Agriculture, Abomey-Calavi, Benin (West Africa), 20-25 August 2007

Future planning

- 37th Annual North American Symposium on Bat Research, tentatively scheduled for Mexico in 2007. [http://www.nasbr.org]
- 14th International Bat Research Conference, Merida, Mexico, Late August 2007. [May coincide with the 37th Annual North American Symposium on Bat Research].
- 11th European Bat Research Symposium, Cluj-Napoca, Romania, August 2008.
- 12th European Bat Research Symposium, Lithuania, August 2011.

Call for contributions

African Bat Conservation News publishes short communications, life history notes, geographical distributions, bat surveys, echolocation & sonograms, recent and past literature, short book reviews, announcement of workshops and news items.

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Issues will be published Quarterly (January, April, July, October).
Deadlines for scientific contributions (1 November, 1 February, 1 May, 1 August).
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General contributions should be sent to the editor: EditorABCN@Africanbats.org
Scientific Contributions should be sent to: ScientificEditorABCN@Africanbats.org