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African Bat Conservation News

Inside this issue:

Above: Cape serotine bat (*Neoromicia capensis*) from the Ngala lodge area, Kruger National Park, South Africa in August 2002—**ECJ Seamark**.

Notes from the Editor:

This issue of African Bat Conservation News marks its first year in existance and takes the opportunity to highlight the World Database on Protected Areas 2005 which was launched in November 2004. The GIS related database can be used as the foundation for the examination of possible protected networks for different species of bats within Africa. It could be used to draw to the attention of protected area managers important bat species and sites that are in need of special management and or sites that are in need of protection but are currently outside the formal protected area network.

Many if not all protected areas (both formal and informal), have lists of species (fauna and flora) which occur within these areas. What one must keep in mind when examining these lists of species, is that many of the listed species have not necessarily been found within the area, but the area is located within the known distribution range of a species, therefore it is assumed to occur within the protected area. Unfortunately many of these protected area species list are compiled into National lists of species that fall under protected area conservation. As the lists may be inaccurate, species thought to be protected may not be protected.

Download sites for ABCN:

http://www.nfi.org.za/mammal/abcn/ABCN.htm

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

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Issues/questions that should be kept in mind, even if a species has been found to occur in a protected area, especially for bats:

- Is this species a permanent or temporary resident?
- Is the home range of the species totally enclosed by the protected area (e.g. for bats is the day roost (including those of maternity and hibernacula), night roost and feeding area within the protected area)? Day roosts may be found outside the protected area, in which case the species is utilizing the protected area only for feeding and possibly night roosting.
- What species truly exisit within these protected areas? Species identified must be associated with voucher material within recognised institutions. Over what seasons or years, were these collected?
- Are important roosts (maternity, hibernacula or long-term/permanent) found within the protected area network? If yes, are they recognized as important and under special management?
- How effective is the present protected area network, for the purposes of protecting and conserving bat species in Africa? See CHAPE *ET AL. (*2005) for general comments on protected area effectiveness.

Representatives of 190 countries at the 2002 Johannesburg World Summit on Sustainable Development committed themselves to "...*achieving by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional, and national level.*" (UNEP, "Report on the sixth Meeting of the Conference of the Parties to the Convention on Biological Diversity (UNEP/CBD/COP/6/20/Part 2) Strategic Plan Decision VI/26" (CBD, 2002): www.biodiv.org/doc/meetings/cop/cop-06/official/cop-06-20-part2-en.pdf).

How can we present our knowledge in ways that are useful to decision-makers and in time to contribute to achieving the 2010 target?

BALMFORD *ET AL*. (2005) suggest the "... *2010 target provides the scientific community the challenge to engage in exciting fundamental science and to participate in what is likely to be the most significant conservation agreement of the early 21st century. Models, indicators, data, and monitoring techniques must be open to scrutiny. Interdiciplinary collaboration will be essential to strengthen the scientific rigor of the indicators, to enhance their relevance to policy, and to raise public awareness of their usefulness. Scientists must act in four key ways:*

i) work with the Convention of Biological Diversity (CBD) Secretariat and its partners to develop, review, and use the indicators already identified by the CBD Conference of Parties; (see Table 1 on page 3)

ii) develop research and monitoring programs;

iii) share information and experience regarding development and implementation of monitoring programs, data management, and sharing; and

iv) promote increased availability of funds for long-term research and monitoring programs."

Coverage of Protected Areas under the Components of biological diversity is one of the listed indicators for the 2010 assessment, recognised by the CBD (see Table 1). The WDPA 2005 is one tool which will be used to measure this indicator. But one must keep the following in mind :-

CHAPE ET AL. (2005):- "...*measuring the number and extent of protected areas only provides a unidimensional indicator of political commitment to biodiversity conservation. Data on the geographic location and spatial extent of protected areas will not provide information on a key determinant for meeting global biodiversity targets: 'effectiveness' in conserving biodiversity. Although tools are being devised to assess management effectiveness, there is no global accepted metric. ….Nevertheless, the numerical, spatial and geographic attributes of protected areas can be further enhanced by investigation of the biodiversity coverage of these protected areas, using species, habitats or biogeographic classifications*."

This newsletter should be seen as a resource to capture and compile information on bat species and important sites. What specific indicators can we used to assist in measuring the 2010 targets in relation to bat species? One area that may be missed by the indicators suggested by the CBD is that of Karst (caves) systems. Cave roosting bats are known to be keystone species within these very unique "island" ecosystems.— **Ernest Seamark**

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References

CHAPE, S., HARRISON, J., SPALDING, M., AND I. LYSENKO., I., 2005. Measuring the extent and effectiveness of protected areas as an indicator for meeting global biodiversity targets. *Philosophical Transactions of the Royal Society B* 360: 443-455.

BALMFORD, A., BENNUN, L., TEN BRINK, B., COOPER, D., COTE, I. M., CRANE, P., DOBSON, A., DUDLEY, N., DUTTON, I., GREEN, R. E., GREGORY, R. D., HARRISON, J., KENNEDY, E. T., KREMEN, C., LEADER-WILLIAMS, N., LOVEJOY, T. E., MACE, G., MAY, R., MAYAUX, P., MORLING, P., PHILLIPS, J., REDFORD, K., RICKETTS, T. H., RODRIGUEZ, J. P., SANJAYAN, M., SCEI, P. J., VAN JAARSVELD, A., AND WALTHER, B. A., 2005. The Convention on Biological Diversity's 2010 target. *Science* 307: 212-13.

Table 1: The CBD framework for assessing progress. The 18 indicators already identified for immediate testing (bold) and future development (not bold) are shown plus indicators suggested by the Royal society workshop and potentially available by 2010. Workshop recommendations can be viewed at www.twentyten.net. (BALMFORD *ET AL*. (2005))

CONVENTION ON BIOLOGICAL DIVERSITY'S FRAMEWORK FOR ASSESSMENT BY 2010	
Identified indicators	**Proposed indicators**
Components of biological diversity	
• **Forest area** • **Trends in abundance and distribution of selected species** • **Coverage of protected areas** • Change in status of threatened species • Trends in genetic diversity of domesticated plants and animals • Extent and location of mangroves and seagrass and macroalgal beds • Management effectiveness of protected areas • Investment in protected areas	• Condition of forests • Extent and condition of shrublands, grasslands, and deserts • Extent of wetlands and large water bodies • Catchment conditions – extent of riparian vegetation • Percent live coral cover • Extent and condition of estuaries
Sustainable use	
• Area of forest, agriculture, and aquaculture under sustainable management • Proportion of production derived from sustainable sources	
Threats to biodiversity	
• **Nitrogen deposition** • Number and cost of alien invasions	• Marine fishing effort • Road-free area • Epidemic outbreaks among wild species
Ecosystem integrity, goods, and services	
• **Marine trophic index** • **Water quality in inland waters** • Freshwater trophic index • Connectivity and fragmentation of ecosystems • Incidence of human-induced ecosystem failure • Health and well-being of people in biodiversity-dependent communities • Biodiversity use in food and medicine • Fish harvest per unit effort • Timber and fuelwood harvest per unit effort	• Number of dams • Sediment load in rivers • Percent population without potable water • Carbon storage in ecosystems • Market share of nature-based tourism • Hit rates for biodiversity-related website • Pesticide use per unit agricultural harvest • Agricultural harvest per unit effort
Traditional knowledge, innovations, and practices	
• **Status and trends of linguistic diversity and numbers of speakers of indigenous languages**	
Resource transfers	
• **Official development assistance in support of CBD**	

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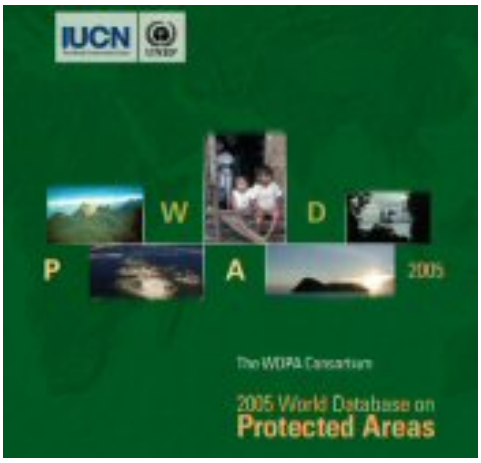
RESEARCH AND CONSERVATION ACTIVITIES

World Database on Protected Areas 2005

http://sea.unep-wcmc.org/wdbpa

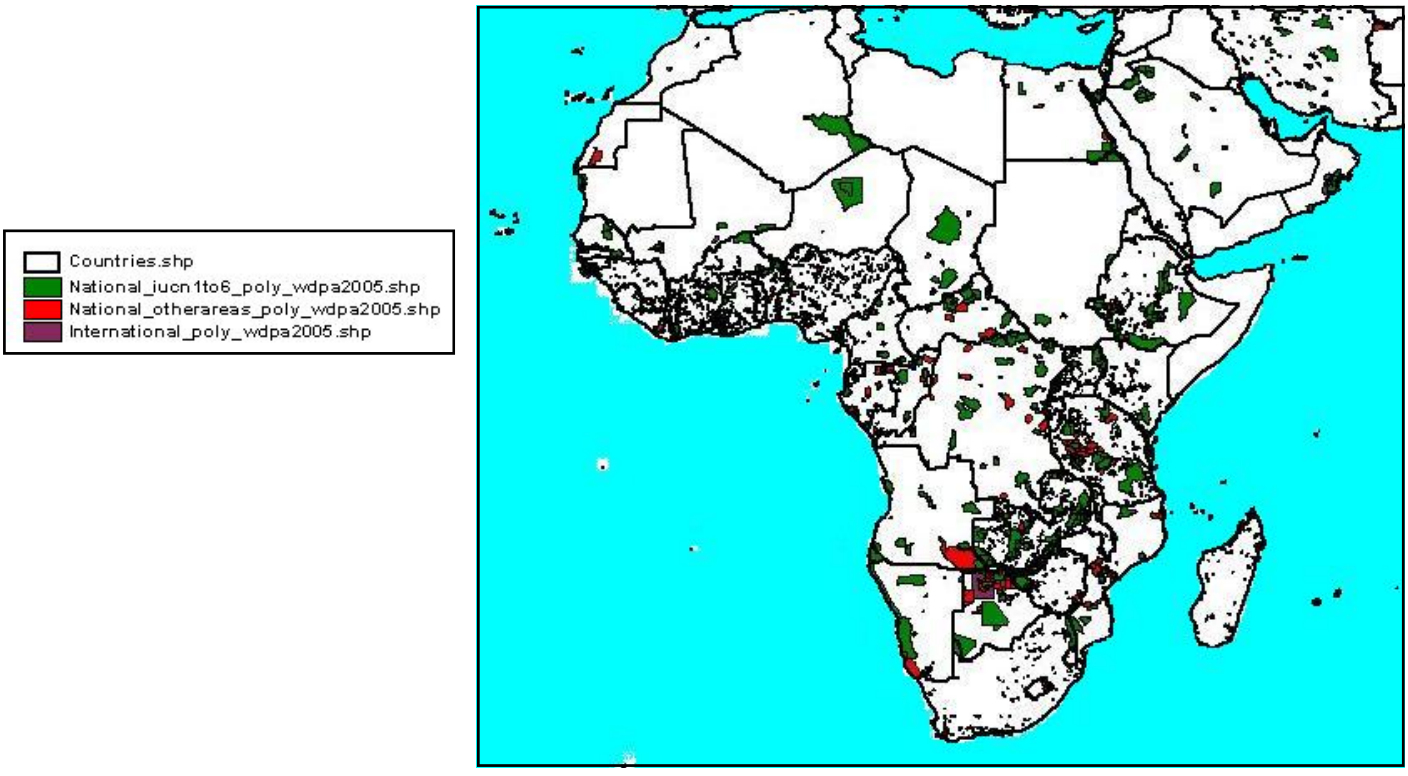


World Database on Protected Areas 2005 was launched at the World Conservation Congress in Bangkok, Thailand in November 2004. This CD-ROM has been prepared on behalf of the World Database on Protected Areas Consortium (WDPA) by the Centre for Applied Biodiversity Science (CABS) at Conservation International (CI). It is based on the October 2004 version of the database released by the WDPA Consortium. Additional tables on the current update status of the database were provided by the United Nations Environment Programme– World Conservation Monitoring Centre (UNEP-WCMC). Both the IT Division / Conservation Knowledge Department and the Geographic Information Systems (GIS) Laboratory at CABS have actively pursued this production in a record time.

The World Database on Protected Areas (WDPA) is the core database representing protected areas at a global scale including -where available- GIS- compatible point and boundary files. Compiled from multiple sources, the WDPA is the most complete compilation of protected areas data ever developed.

The WDPA plays a critical role in measuring progress toward globally goals and targets and will function "...as a key support mechanism in the assessment and monitoring of protected area status and trends taking into account paragraph 4 of decision VI/7 C of the Conference of the Parties to the Convention on Biological Diversity, as well as national and regional databases on protected areas..."

These major international goals and targets include the UN Millennium Development Goals, the 2010 targets identified by the 2002 World Summit on Sustainable Development (WSSD), the Durban Action Plan agreed at the World Parks Congress in 2003, and the CBD Programme of Work on Protected Areas agreed at the CBD 7th Conference of the Parties (COP7) held in February 2004.



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DATA CONTENTS

WDPA 2005 contains a special version of the World Database on Protected Areas. This version is a snapshot of the central database maintained at UNEP - World Conservation monitoring Centre that has been modified for facilitating its use with the tools provided or with general purposes GIS systems. The changes to the data structure (explained in the section on Metadata and Data Preparation) have for objective to optimize the database space requirements and to ease access to all the data available for each protected area.

The contents of each of the layers as well as the structure of each table and field definitions are presented in the WDPA Data Layers section. A detailed list of updates performed on the database since WDPA 2004 can be found in the "Changes..." section. Finally, as there is frequent mention and use of the IUCN Protected Areas categories and of the WCPA Regions as defined by the World Commission on Protected Areas, we have devoted 2 sections for this information.

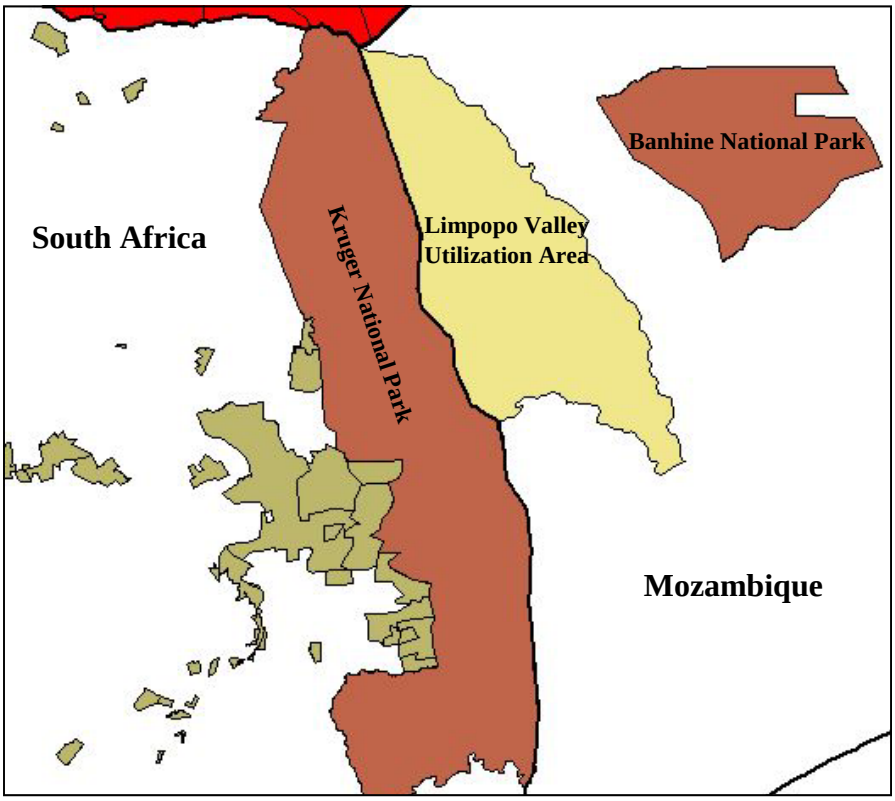
ABOUT DATA QUALITY

This version of the database represents a substantial advance over prior versions: there have been improvements in both data quality and completeness. The database has been cleaned to avoid duplication of records and a substantial number of new records has been integrated. Nevertheless, we also are aware of the current limitations of this dataset. These limitations can be linked to data gaps, inaccuracies either of the geographic or attribute data, access to this database, and limitations in being able to track a larger body of information and knowledge concerning protected areas. This is a work in progress and it still requires further attention, resources and expertise.

Data gaps are the result of an un-even coverage of data across the world. We are still missing data from some countries but we have seen a marked interest for national agencies and organizations to participate in this effort and contribute new datasets.

Data completeness is the result of data records with missing fields or types of data. One important case is the lack of boundary data (polygons) for many protected areas. In some other cases, there is no GIS data available locally or its resolution is coarse. Errors in the attribute data are also the result of evolving data over time that has not been updated or of differences among data sources.

Geographic inaccuracies are also important. These are the result of differences in the source documents, the use of conflicting base maps, or the result of mixing data digitized at very different scales. These can only be solved with



Left: Kruger National Park (IUCN category II) in the north-eastern South Africa, with Mozambique to the east, and Zimbabwe to the north, and Swaziland to the south. Kruger National Park is boarded in Mozambique by the Limpopo Valley Utilization Area (IUCN category VI), with the Banhine National Park (IUCN category II) further east. Within South Africa, many smaller private nature reserves boarder the Kruger National Park and most of these reserves have been classified as IUCN category IV management areas.

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better and newer data sources.

Other errors can be attributable to operator errors: misspelling of names, inaccurate numbers, etc. Finally, the database presents some limitations for analyses because of the way the data are collected and kept. For example, many coastal protected areas include in their area estimates both a marine and a terrestrial portion but the present database is incapable in tracking these 2 different areas. These last kinds of problems can only be addressed by a better database structure, challenge we hope to solve by the next version of WDPA.

We have made our best effort to address these issues: this is the best global database of protected areas although it might not yet be as good as we would like it to be. Please help improve it: check the feedback section and provide your help and expertise.

WDPA DATA LAYERS

The 2005 version of the WDPA has been greatly optimized to reduce the size of the database given the limitations of the CD-ROM format.

This CD-ROM contains a total of seven map layers of Protected Areas information in shape file format, point and polygon, and other six base layers to provide a geographical reference for visualizing the protected areas data.

All IUCN Protected Areas (points and polygons) have been classified based on their IUCN Protected Areas Category. International sites are classified following the site type (*i.e.,* the International Convention or Agreement and Regional Directive Agreements).

The table below provides a description of all the Protected Area data layers and its availability status in the project file.

Shapefile Designation	Type	Description
Base Layers	Various	Several data layers in image or vector format that provide context for visualizing Protected Areas data. These include topography, hydrology, cities and roads, country boundaries
Country Boundaries	Polygon	Outline of country boundaries, including the coastline
National IUCN Protected Areas Boundaries	Polygon	Boundary outline of National Protected Areas of IUCN categories I through VI. You might want to activate this layer when working at a detailed scale.
Main Cities	Point	Country capitals and larger cities
Populated Places	Point	All populated places, from large cities to small towns or villages densities
National: IUCN Protected Areas: Points	Point	Established Protected Areas of IUCN categories I through VI
National: IUCN Protected Areas: Polygons	Polygon	
National: Other Areas: Points	Point	"Other Protected Areas," or reserves that may not be recognized at the national level (for example, indigenous reserves, private reserves, etc.). This layer also includes proposed protected areas, or those that have not yet been officially recognized, as well as other areas that lack the IUCN category information.
National: Other Areas: Polygons	Polygon	
International Sites: Points	Point	Sites recognized under international (global) conventions or agreements: Biosphere Reserves, RAMSAR and World Heritage Sites
International Sites: Polygons	Polygon	
Regional Sites: Points	Point	Sites recognized by regional agreements: , European Biogenetic Reserves, Bird Directive and Habitat Directive Sites, Barcelona and Helsinki Conventions
Regional Sites: Polygons	Polygon	
Elevation and Rivers	Image	Image layer showing topographic variations every 500 meters and main rivers
Roads	Image	Image layer showing roads classified into main roads and other
Land Area	Polygon	Land area of the Earth

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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.

RECENT LITERATURE

PUBLISHED PAPERS

BAT RESEARCH NEWS (2004) vol. 45 issue: 4

BONACCORSO, F. J., WINKELMANN, J. R., DEACON, A. & MACFADYEN, S., 2004. On the distribution of *Ficus sycomorus* and movements of *Epomophorus* fruit bats in Kruger National Park, South Africa. *Bat Research News* 45(4): 205-206.

CARDIFF, S. G., GOODMAN, S. M. & SIMMONS, N. B., 2004. Cave selection by bats in Ankarana, northern Madagascar. *Bat Research News* 45(4): 209-210.

GIANNINI, N. P. & SIMMONS, N. B., 2004. Higher-level phylogeny of Chiroptera based on direct optimization of ten genes. *Bat Research News* 45(4): 221-222.

GUILLEN, A., 2004. Molecular systematics and biogeography of the Paleotropical chiropteran family Hipposideridae. *Bat Research News* 45(4): 223-224.

HOUCK, B. A., CHOCK, S. & MCCAMMOND, A., 2004. Play behavior in captive *Pteropus rodricensis*, the Rodrigues fruit bat. *Bat Research News* 45(4): 228.

RACEY, P., 2004. Ecology and conservation of Malagasy bats. *Bat Research News* 45(4): 254.

RICHTER, H. V. & CUMMING, G. S., 2004. Food availability and animal migrations: The peculiar behavior of the straw-colored fruit bat at Kasanka National Park, Zambia. *Bat Research News* 45(4): 257.

RUSSELL, A. L., PALKOVACS, E., GOODMAN, S. M., RANIVO, J. & YODER, A. D., 2004. A complex inter-species phylogeny reveals distinctive biogeographic patterns of diversification in triple nose-leaf bats (*Triaenops* spp.) in Madagascar. *Bat Research News* 45(4): 259.

RUSSELL, A. L., PALKOVACS, E., GOODMAN, S. M., RANIVO, J. & YODER, A. D., 2004. Trees on islands: Biogeographic patterns of diversification in Madagascar. *Bat Research News* 45(4): 260.

SIMMONS, N. B. & GIANNINI, N. P., 2004. A total-evidence phylogeny of megabats: Implications for understanding biogeography and dietary evolution. *Bat Research News* 45(4): 263.

WINKELMANN, J. R., BONACCORSO, F. J., FALK, E. & GORE, G., 2004. Roost selection and foraging movements of Peters' and Walhberg's epauletted fruit bats in Kruger National Park, South Africa. *Bat Research News* 45(4): 273-274.

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PHELSUMA (2004) vol. 12

For copies of PDF's of any of the following papers please email your request to
Dr. Justin Gerlach—Scientific Co-ordinator - Nature Protection Trust of Seychelles. Email: JstGerlach@aol.com.

BALL, N. 2004. A possible high-altitude roost of Seychelles sheath-tailed bats *Coleura seychellensis*. *Phelsuma* 12: 136—140.

BRANDIS, VON R. 2004. A summery of recent bat records from Aldabra atoll. *Phelsuma* 12: 133—135.

BURGESS, H. N. LEE. 2004. A behavioural study of the Silhouette sheath-tailed bat (*Coleura seychellensis*). *Phelsuma* 12: 69—77.

The behaviour of the Seychelles sheath-tailed bat *Coleura seychellensis* was studied in the largest known roost of the species at La Passe, Silhouette island. The population of bats using the roost numbered 32, the highest count recorded for the species. The roost comprises two small interconnected caves in a boulder field. The preferred roost was relatively dark and cool. Individuals appeared to show preferences for positions within the roost. A harem structure has been speculated to exist in this species, observations from the present study may support this but are inconclusive.
Keywords.— Seychelles, Chiroptera, Emabllonuidae

GERLACH, J. 2004. The bats of Silhouette Island, Seychelles. *Phelsuma* 12: 78—90.

A review of the status of the bats recorded on Silhouette island is presented. This is placed in the context of the conservation status of the bats on the granitic islands of Seychelles. Two species are present: the Seychelles fruit bat *Pteropus seychellensis* and the Seychelles sheath-tailed bat *Coleura seychellensis*. The Silhouette population of the fruit bat is estimated at approximately 2,000 (with a Seychelles total of approximately 8,500). One roost of the sheath-tailed bat is known on Silhouette, this contains 32 bats. This is the only roost to have been monitored regularly and is only one of two known in Seychelles. The fruit bat population appears to be stable, the sheath-tailed bat remains Critically Endangered.
Keywords.— Chiroptera, *Coleura seychellensis, Pteropus seychellensis*, Seychelles

HUTSON, A.M. 2004. The bats of Aldabra atoll, Seychelles*. Phelsuma* 12: 126—132.

JOUBERT, F. 2004. A preliminary investigation into the general ecology, status and habitat of the Seychelles sheath-tailed bat *Coleura seychellensis* (Emballonuridae). *Phelsuma* 12: 54—68.

An evaluation of the occurrence of the Seychelles sheath-tailed bat (*Coluera seychellensis*) on the islands of Mahé and Silhouette (Seychelles) was attempted. Abandoned caves were documented. The presence of C *seychellensis* was confirmed for Mahé and a previously unknown population was located and studied on Silhouette. Techniques for field study, habitat and diet analysis were successfully applied to *C. seychellensis.* Most of the results were limited but foraging, habitat and population are discussed and some conclusions are drawn.
Keywords.— foraging, biomass, echolocation, Silhouette

NYHAGEN, D.F. 2004. A study of the bat-fruit syndrome on Mauritius, Indian Ocean. *Phelsuma* 12: 118—125.

This study was conducted over a seven month period on Mauritius, Indian Ocean, and concerns the relationship between the endemic fruit bat *Pteropus niger* and 19 food plants upon which it feeds in regard to the bat-fruit syndrome. This is a set of fruit characteristics which suggest an adaptation to fruit bat dispersal noted throughout the world where fruit bats occur. This study has found some evidence of an adherence to the bat-fruit syndrome. Twenty-one percent of the food plants had five of seven characteristics in accordance with the syndrome, 32% had four, 21% had three, 21% had two and 5% of the species had one of the seven bat fruit characteristics. Although the concept of the bat-fruit syndrome is difficult to prove, some of these species may be classified as bat-fruit trees; a species of particular interest was *Labourdonniasia glauca.* Other food plants had only few traits in accordance with the bat-fruit syndrome, some of which appeared to be adapted to bird dispersal, suggesting a more diffuse relationship between these plants and their seed dispersers and a generalist or opportunistic feeding strategy of *P. niger*.
Keywords.— flying foxes, fruit syndrome, Megachiroptera, *Labourdonnaisia glauca*, *Pteropus niger*

O'BRIAN, J., T.J. HAYDEN 2004. The application of genetic research to the conservation of fruit bats in the western Indian Ocean. *Phelsuma* 12: 141—146

Keywords.— island fauna, Megachiroptera, phylogenetics, phylogeography, population genetics

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ROCAMORA, G., F. JOUBERT. 2004. The Seychelles sheath-tailed bat *Coleura seychellensis*: monitoring methodologies and recommended priority actions. *Phelsuma* 12: 48—53.

Extract from:— ROCAMORA, G. (ed). 1997: Rare and threatened species, sites and habitats monitoring programmes in Seychelles. Vol. 1: Monitoring methodologies and recommended priority actions. Ministry of Environment/ BirdLife International/ European Union.

The Seychelles sheath-tailed bat *Coleura seychellensis* is Critically Endangered with fewer than 30 individuals censused in 1996/1997. The surviving population is estimated to be as low as 50 to 100 individuals. Records from the last century and popular reports indicate that a strong decline in numbers and probably range has occurred. The species is present on Silhouette, Mahé, Praslin, and possibly already extinct on La Digue. Recommended monitoring comprises annual census of individuals along established transects using bat detectors, regular visits to all known caves and census of individuals, searches for roosting caves nearby repeated contacts with the species and assessment of the evolution of its distribution every 3 or 4 years. The main conservation actions required are legal protection for all known roosting caves and their immediate surroundings, control of introduced predators (barn owls and cats) in these areas, habitat protection within known feeding area and public sensitisation to help protecting the species and obtain information on feeding areas or roosting caves. Research into the biology and autecology of the Seychelles sheath-tailed bat is required, including basic information on feeding ecology and diet, habitat preference, movements, roosting habits and breeding ecology.

WAYLEN, K. 2004. Bats as bushmeat: a survey by Fauna & Flora International. *Phelsuma* 12: 147—148.

Other Journals

BORCHERT, M., S. MULANGU, R. SWANEPOEL, A. TSHOMBA, A. AFOUNDE, A. KULIDRI, J.-J. MUYEMBE-TAMFUM, AND P. VAN DER STUYFT., 2005. Pygmy populations seronegative for Marburg virus. *Emerging Infectious Diseases* 11(1): 174-177.

FERNSBY N. 2004., First South African Record of the Giant Yellow House Bat. *Journal of the Endangered Wildlife Trust* 50(4): 5.

GREENBAUM, E. & CARR, J. L., 2005. The herpetofauna of Upper Niger National Park, Guinea, West Africa. *Scientific Papers Natural History Museum, University of Kansas* (37): 1-21.

We conducted a preliminary survey of the herpetofauna in Upper Niger National Park at the end of the dry season in 2002. Museum holdings and literature records from localities within the park were combined with our data to obtain an overall picture of the herpetofauna. The park contains a mosaic of forest and savanna that straddles the Niger River. Twenty-two species of amphibians and 34 species of reptiles were recorded from the park; four species of amphibians and two of reptiles are the first records from Guinea. Seven species of reptiles are listed as threatened by the IUCN Red List or CITES, but according to the Global Amphibian Assessment, none of the amphibians is threatened. Stomach contents of an arboreal colubrid snake included a species of bat (*Mops condylurus*), which represents the first confirmed record from Guinea. Conservation of the park is paramount because: 1) it is the only protected area containing dry forest in Guinea; 2) gallery forest provides suitable habitat for amphibian, reptile, and mammal species otherwise restricted to tropical rainforest elsewhere in West Africa; and 3) several species of threatened reptiles endemic to West Africa are in the park.

HOLLAND, R. A., WATERS, D. A. & RAYNER, J. M. V., 2004. Echolocation signal structure in the megachiropteran bat Rousettus aegyptiacus Geoffroy 1810. *J. Exp. Biol.* 207(25): 4361-4369.

Rousettus aegyptiacus Geoffroy 1810 is a member of the only genus of megachiropteran bats to use vocal echolocation, but the structure of its brief, click-like signal is poorly described. Although thought to have a simple echolocation system compared to that of Microchiroptera, *R. aegyptiacus* is capable of good obstacle avoidance using its impulse sonar. The energy content of the signal was at least an order of magnitude smaller than in Microchiropteran bats and dolphins (approximately 4x10-8 J m-2). Measurement of the duration, amplitude and peak frequency demonstrate that the signals of this animal are broadly similar in structure and duration to those of dolphins. Gabor functions were used to model signals and to estimate signal parameters, and the quality of the Gabor function fit to the early part of the signal demonstrates that the echolocation signals of *R. aegyptiacus* match the minimum spectral spread for their duration and amplitude and are thus well matched to its best hearing sensitivity. However, the low energy content of the signals and short duration should make returning echoes difficult to detect. The performance of *R. aegyptiacus* in obstacle avoidance experiments using echolocation therefore remains something of a conundrum.

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NYHAGEN, D. F., TURNBULL, S. D., OLESEN, J. M. & JONES, C. G., 2005. An investigation into the role of the Mauritian flying fox, *Pteropus niger*, in forest regeneration. *Biol. Conservation* 122(3): 491-497.

This study was conducted over a 7-month period in the south-west of Mauritius and investigates the diet of the endemic flying fox *Pteropus niger* and its potential role as pollinator and seed disperser. The identification of food plants and seed dispersal events were made by direct observations of bats or indirectly by the analysis of ejecta found on the ground. *P. niger* was observed to visit 22 plant species for food of which 20 were visited for fruit, two for floral resources, and one for foliage (one species was visited for both fruit and floral resources). Two thousand thirty-two *P. niger* fruit ejecta from 16 species were collected containing 2460 seeds. Ejecta from eight of these species (including five endemic to Mauritius) contained seeds, all of which were mature and intact (with one possible exception) and some were germinating. Forty-seven observations were made of the dispersal of seeds in fruit, ejecta and faeces, including seeds from three endemic and one native plant species. All seeds in dispersed ejecta were found to be mature and undamaged by bats. Pollen smears from the lips of six dead and 12 captured bats showed that these animals carried a minimum of 18 pollen species. Each smear had an average of 2.2 pollen species and a pollen load of 17.7 grains. Our results suggest that *P. niger* plays an important role in maintaining plant diversity in the heavily fragmented landscape of Mauritius.

Above - Following pollen-load sampling and recording of morphometric data, *Pteropus niger* were released into a nearby tree.—**Dorte Friss Nyhagen.**

Above - Dorte Friis Nyhagen removing a *Pteropus niger* from a mist-netting session in Bel Ombre forest. When extracting *Pteropus niger* from mist-nets, care was taken that facial regions were not touched to avoid contamination of potential pollen load.—**Dorte Friss Nyhagen.**

Left - By applying sticky SEM-stubs to the lip region of *Pteropus niger* potential pollen load was sampled.—**Dorte Friss Nyhagen.**

VAN DER MERWE, M., & MOSTERT, T., 2005. Ovarian activity and early embryonic development in the rusty bat, *Pipistrellus rusticus*. *African Zoology* 40(1): 45-54.

Above - Rusty bat (*Pipistrellus rusticus*)

The reproduction pattern of the female rusty bat, Pipistrellus rusticus, was investigated by means of a histological examination of the ovarian follicles as well as early embryonic development. Bats were collected from two localities in Limpopo Province. Female rusty bats are seasonal monstrous breeders, initiating copulation in mid-autumn (April), storing sperm until the time of ovulation in late winter (August), and giving birth to twins in late spring (November). The period April until mid-August was characterized by sperm storage and increased follicular development. During mid-August the females ovulated and excess sperm were discarded. Females released between three and five ova, while a maximum of two embryos implanted successfully. Only a single embryo implanted per uterine horn. Embryo movement through the Fallopian tubes appeared to be a rapid process. Redundant embryos, were resorbed before implantation. The period from the end of August until mid-November was marked by pregnancy. Females invariably carried twins (one foetus in each uterine horn). Large-scale follicle atresion, and very low levels of follicle development, characterized the period end of August until March. High incidences of polyovular follicles were recorded for all months of the year. No obvious form of reproductive asymmetry was recorded in the rusty bat.

Key words: vespertilionid bat, ovarian cycle, embryogenesis, blastocyst.

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BAYEFSKY-ANAND, S., 2005. Effect of location and season on the arthropod prey of *Nycteris grandis* (Chiroptera: Nycteridae). *African Zoology* 40(1): 93-97.

Analysis of culled arthropod prey parts collected from beneath four feeding perches was used to assess prey taken by *Nycteris grandis* from November 1987 to May 1988. The perches were located along the Zambezi River in Mana Pools National Park in Zimbabwe. With the exception of an occasional solifugid, *N. grandis* ate mainly insects in addition to frogs and other small vertebrates. Three species of katydids and many species of moths were the most common prey. While bats using one feeding perch fed heavily on two species of cicadas at times, those at the other perches rarely did. There also were differences in the incidences of antlions, mantids and beetles in the diets of bats using different perches. Extensive samples from two feeding roosts about 2 km apart showed significant differences in prey composition. Smaller samples from two sites closer to one another showed similar patterns of the incidence of different prey.

Key words: *Nycteris grandis*, bat, prey, Zimbabwe, Mana Pools National Park, arthropod.

Above - Outside view of water tower site at Mana Pools National Park, Zimbabwe where litter of prey parts from *Nycteris grandis* were collected (image taken by Brock Fenton probably in 1987).

Above - *Nycteris grandis* in the water tower at Mana Pools National Park, Zimbabwe. Image taken in early November 1979.

Above, Right– central, and right: Prey remains from the night roost of *Nycteris grandis* collected from water tower site, and presented by a night.

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GOODMAN, S. M., ANDRIAFIDISON, D., ANDRIANAIVOARIVELO, R., CARDIFF, S. G., IFTICENE, E., JENKINS, R. K. B., KOFOKY, A., MBOHOAHY, T., RAKOTONDRAVONY, D., RANIVO, J., RATRIMOMANARIVO, F., RAZAFIMANAHAKA, J. & RACEY, P. A., 2005. The distribution and conservation of bats in the dry regions of Madagascar. *Animal Conservation* 8(2): 153-165.

We carried out extensive field surveys in the dry forest portions of Madagascar to document the species of bats occurring in these regions. These data combined with information in the literature and museum specimen records indicate that 28 species of Chiroptera occur in this region of the island, of which we documented 27 during our inventories. The community composition at sites occurring in areas of water-eroded sedimentary rock is notably different from sites on alluvial substrates. In contrast to the majority of native land mammal species on Madagascar, much of the microchiropteran fauna is not dependent on large tracts of intact forest and anthropogenic perturbations of forests may have less direct impact on their long-term survival. Conservation strategies for Chiroptera in the dry regions of the island should focus on reducing various types of human disturbance of cave environments.

Above - *Taphozous mauritianus,* Grotte d'Anjohibe, near Mahajanga. —**S. M. Goodman**.

Above - *Miniopterus gleni* , Grotte d'Anjohibe, near Mahajanga. — **S. M. Goodman**.

Far left and left - *Otomops madagascariensis,* Grotte d'Anjohibe, near Mahajanga. —**S. M. Goodman**.

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Book release - The Mammals of the Southern African Subregion, 3rd Edition

Revised by John D. Skinner and Christian T. Chimimba. Published by Cambridge University Press. Available last quarter 2005.

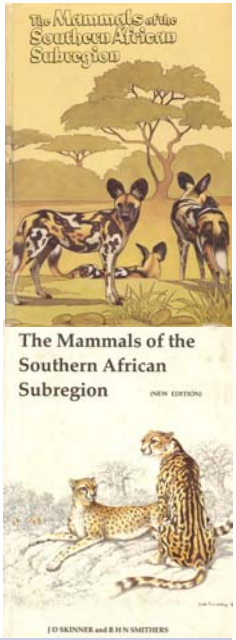
Africa is unique in terms of the number and diversity of its indigenous mammalian species. The major reasons for this are the size, shape and position of the continent, which straddles the equator and supports expansive biomes that range from equatorial rainforests through savannas and deserts to the alpine heathlands of Kilimanjaro and the shrublands of the Cape fynbos.

Added to this are topographic diversity and continuous climate change during the continent's long geological history. Over millions of years the various biomes have advanced and retreated, causing habitats to expand and contract, disappear and reappear, generating rich opportunities for new species to evolve.

This third, extensively revised edition of *The Mammals of the Southern African Subregion* contains detailed descriptions of all mammals that occur naturally on the African mainland south of the Cunene and Zambezi rivers, together with all mammals indigenous to the subregion's coastal waters. The rapid accumulation of new information from mammal research in southern Africa, together with radical taxonomic changes across all levels of mammalian classification, have necessitated this new edition, which presents the best and latest data accurately in one comprehensive volume for use not only by scientists but also by an increasingly wide audience of general readers with an intrest in the natural history of southern Africa.

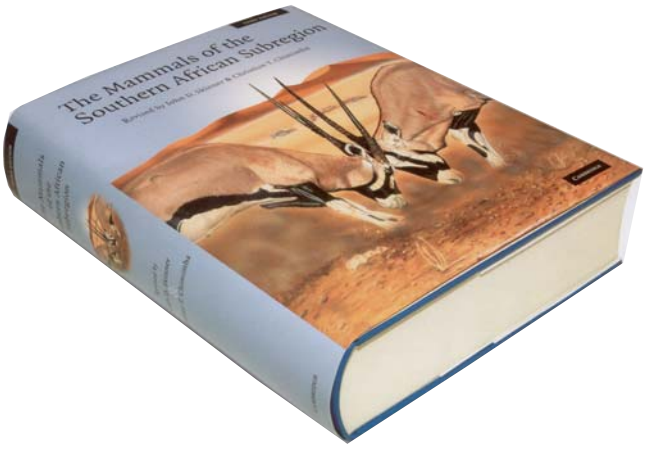
J.D. Skinner and C.T. Chimimba have revised, expanded and updated the text in a major project overseen by an editorial committee constituted by the Mammal Research Institute at the University of Pretoria. Specialists on each mammalian order have served as subeditors, and a range of independent and internationally recognised authorities have reviewed every species description.

In this edition all the distribution maps and many of the illustrations of mammal prints have been updated and redrawn, several new colour plates have been added, and the whole design of this definitive reference work has been enhanced to ensure easy access to information.



Above: Front covers for the first and second edition of the Mammals of the Southern African Subregion.

Below left:- Cover for the third edition.



The Standard Edition will be hard-covered with an attractive full-colour pictorial dust-jacket with French fold. 872pp

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10th European Bat Research Symposium

To be held at: National University of Ireland, Galway, Ireland, 21-26 August 2005.

Further information: - http://www.ebrs10.com/

International Bio-Acoustic Council Conference

To be held at: Slovenia, 15-19 September 2005.

Further information: http://www.unipv.it/ibac

35th Annual North American Symposium on Bat Research

To be held at: Sacramento, California, USA, 19-22 October 2005.

Further information: http://www.nasbr.org/Sacramento/NASBR_Sacramento.html

Rabies Conference

To be held at: Windhoek, Namibia, January 2006.

Future planning

- 36th Annual North American Symposium on Bat Research, to be held in Wrightsville Beach, North Carolina, USA, 18-21 October 2006. [http://www.nasbr.org]
- 37th Annual North American Symposium on Bat Research, tentatively scheduled for Mexico in 2007. [http://www.nasbr.org]
- The next International Bat Research Conference is planned to be in Mexico in 2007.