

Mammals - Chiroptera and Bovids

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Woody talked on the biodiversity and evolutionary biology, systematic characters, literature and data management of 2 mammal groups, namely Chiroptera (bats) and bovids. This aims at collating detailed databases of the attributes from examined museum specimens. The research objectives aim to obtain accurate and exhaustive biogeographical syntheses, with similarly exhaustive reviews of the systematics of selected groups.

Bat Research

Of approximately 9 000 chiroptera specimens in the Natural History Museum in Bulawayo, 7 900 have already been electronically catalogued. In Toronto there is a huge collection of Afrotropical bats.

±5 000 specimens estimated in Transvaal Museum and Nairobi

Estimated ± 20 000 specimens have been examined in Europe and North America: These include:

Natural History Museum, (formerly British Museum), UK

Harrison Zoological Museum, Sevenoaks, UK

Royal Museum of Central Africa, Tervuren, Belgium

AMNH, ROM and LACM

He has still to visit:

Smithsonian - huge African collections - as judged by 1 500 specimens of *Mops condylurus* alone

Field Museum, Chicago

Kansas and Texas

The objective of examining all available specimens is collate an integrated database for all species of Chiroptera in south-central Africa, with research on some groups (horseshoe bats and molossids) Pan African. In addition to standard fields (taxonomy, locality, attributes of collecting event) for each specimen, the important characters used in bat taxonomy have been recorded. These include standard morphometrics (skull measurements), as well as digital images of the cleaned skull and other diagnostic characters (ear and noseleaf). More specialized research in some groups (horseshoe bats) has used, and will use:

 bacula (the most variable bone in the body)

 ultrasonics

 x-ray images (bat skulls for cryptic species - internal structure of the ear spiral is to compared)

Tissues are preserved for molecular characters in new and recently collected specimens.

Research on Bovids

Bovid research has focused on certain taxa of reduncines (lechwes and puku) and alcelaphines (tsessebes). In North America (Field Museum, Smithsonian, AMNH, RoM, LACM and Kansas), Europe (Berlin and Paris - Tervuren, Powell Cotton, BM) and Africa Transvaal Museum and Nairobi Museum) there are a large quantity of bovid species.

2 different characteristics are looked at when studying bovids, namely:-

Pelage patterns - Duiker, Tsessebe

Glands (e.g. pedal, inguinal and vomero nasal organ). Glands can be tricky, as some small antelope such as

Duiker lose certain glands at maturity. Another important character are the horns.

Specimens of reedbucks and tsessebes are photographed and skulls are measured (25 variables for each specimen). The latter are analysed using multivariate statistics (CVA, MANOVA etc).

Electronic management of data are critical to this research. All data are entered on site into a laptop PC. Digital images are and any other digital data are burnt to CD-R while visiting the museum. All scientific literature is electronically catalogued in Idealist with keywords. Each paper and book has a unique call number.

An important criteria on data quality and optimal synthesis of specimen data is the cleaning of collecting localities - with point data. The longer term aim is to integrate these specimen databases with a Geographical Information System.