Report on
Individual and Instiurional Capacity Building in Taxonomy and Collection Management

as provided by the

Belgian Focal Point to the Global Taxonomy Initiative
Royal Belgian Institute of Natural Sciences – Rue Vautier 29 – 1000 BRUSSELS - Belgium

1. Coordinates trainee

Name: Bernard Agwanda

*Country:*Kenya

Date of arrival and departure in / from Belgium: 5th March, Depart, 26th march 2005

*Number of training days:*20

Location of training (e.g. RAM, RBG,…): RBINS,

Taxon for which training was received: RODENTIA

2. Taxon specific reporting

Describe the different methodologies for collecting your taxon. By trapping using different traps; Kill traps such as Victor snap trap, mole traps, and traditional kill traps. Live traps such as Longsworth, Sherman and pitfall traps. Kill traps such as snap traps are efficient in trapping rodents but damages the specimens and only preferred by diet analysis studies or rodent control studies. Live traps on the other hand, are fairly efficient and are largely preferred since the specimens are normally intact and several information can be obtained except diet. All body measurements, blood samples and parasites can be collected. Besides, the animal can be released after examination if desired so.

Describe how to preserve the collected specimens for taxonomic purposes. Preservation techniques often are determined by the study objectives. Generally the specimen is processed where measurements, tissue sample for DNA and sometimes parasites are taken. The specimen is soon fixed in 10% formalin after tagging for at least 72 hours. There after the specimen can be washed in running water for 3-5 days before preserving permanently in 70% ethanol. The tissue samples for DNA extraction is preserved in 90-95% ethanol in a separate vial which is labelled with the same specimen number. The parasites especially external ones are preserved in 70% ethanol in a bottle labelled with the same number. Under field circumstances where separate vials are available the whole specimen need to be preserved in 90-100% ethanol until it gets to the lab where a tissue sample can be extracted. Sometimes the specimen is skinned immediately after trapping. In this case, the skull and skin is retained while the rest is discarded. The skin is treated with borax salt to facilitate drying and keep off insects. The skull is boiled before cleaning or fed to beetles to clean it. While the skin is stuffed with cotton wool, the skull is kept clean and dry. Both must have same number on the label.

Describe how to curate a collection. Specimens from the field must always be accessioned(admitted in the collection are. During this time accession number is given, nature of specimen, name(preliminary identification), nature of preservation, date of collection and record, locality, collector's name are recorded. All the recorded data from field must also be put in the database
After accession, the specimen are properly preserved, either put in ethanol if was in formalin before, or deep frozen if was flat or stuffed skin.
The specimen is then placed in the right category; if identified, then placed under the same ones, if undetermined then placed under that category but appropriately, while waiting identification. A reliable and retrievable database is then constructed for the specimen

Describe how your collection will be made accessible for other scientists by means of a relational database. The database must contain important fields such as locality, date of collection and standard measurements for the taxon in question. The database needs to be queriable to make search of information easy.

Describe in detail the taxonomic characters at the different hierarchical levels (e.g. on order level, family, genus, species) and use this information to describe in detail one species.

Different characters combined with way of life(eco-physiology) either makes different group different or make them similar. The degree of similarity or difference is often used to classify/identify each group with others. For instance a larger group say mammalia has a set of characters making them similar (mammary glands, presence of fur, etc). Further examination in the group reveals distinct differences which further divides them say into orders(winged ones-chiroptera; short-face, occasional bipedal, oppasable thumb-primates; elongate jaw with canassial teeth-carnivores, with prominent gnawing twin chisel-like teeth-rodents; etc). These among others, are set of characters that are commonly shared by members of specific group-order. In each order, a further examination still leads to recognition of characters that balkanise them into little groups-family, then to genus and even species. Grouping is not only determined by physical/morphological characters alone but also together with ecology and physiology. For instances, diet, reproductive strategy and condition of living are some factors that have been used to classify some groups, consider difference between rabbits and hares, rodents and insectivores etc. In all cases, both derived and acquired characters are used to trace each group's closest relative. Derived characters are commonly found in young animals even if they disappear in adulthood

The order Rodentia

One of the common characters:

-a pair of lower and upper chisel-like teeth (incisors) which continuously grow

- the incisors together form almost a full circle, each pair being a semi.
- They possess diastema between cheek teeth and incisors, due to absence of canines and reduction of premolars
- Occlusal features of molar teeth
- Four fingers on the hands, 5th finger vestigial; five toes on the feet (unguiculgrade & plantigrade respectively)
- General body conformation, physiology and ecology
- Diversity of characters include, fossorial/saltatorial life, reduced eyes, wing membranes, tail and taillessness, spiny body/hairy, bushy/naked tail

Family Muridae

The classification of families under this order is based on a combination of discrete and varying characters. Most are based on extent of foramina, pterygoid fossae, flying membrane among others, as flagship characters. Muridae is therefore unique relative to the rest due to its rat-like/mouse-like appearance, members possessing 3 upper cheek teeth. The shape and occlussal features of the molars separate Muridae from Cricetidae, which resembles it.

Genus Praomys

The Genus Praomys was defined by Thomas(1915). Diagnostic features unique to this genus include number of mammary (teats) which is either 1+2 or 2+2, the nature of its palatal ridges, length(long) of foramina and tail. Important characters such as chromosomal diploid number and fundamental number have all been used to describe the species in combination to morphological characters.

Praomys jacksoni

A part from the above characters through the hierarchy, this species has 2n=28 diploid number and Nfa=30 fundamental chromosomal number. Other characters which to a lesser extent it shares with other sister species include strong and straight supraorbital ridges, small ovale and possessing four small plantar pads. It is found in mature and secondary forests and not in grasslands. The other species which are closely resembling *P. jacksoni* have either fewer or more chromosome numbers, weaker ridges and ecology. The distinction of this species with respect to the sister species is underscored by the chromosomal number and DNA sequence. DNA information is an absolute data which tells of an organism's identity and phylogenetic affiliations.

THIS QUESTIONNAIRE MUST BE SUBMITTED ELECTRONICALLY (OR BY FAX) WITHIN ONE MONTH AFTER THE OFFICIAL CLOSURE OF THE TRAINING.

Dr Yves Samyn
Belgian Focal Point for the GTI

Royal Belgian Institute of Natural Sciences
Rue Vautier 29
B-1000 Brussels (Belgium)
Tel. : +32 2 627 43 41
Fax : +32 2 627 41 41
Email: cbd-gti@naturalsciences.be