

Some new records of Fruit and Flower Chafers and Darkling beetles for Angola (Coleoptera: Cetoniidae and Tenebrionidae)†

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Introduction

Angola is the seventh largest country in Africa (1,246,700 km²) and is located in the southwestern part of the continent. The country has three principal natural regions: 1) The coastal lowland; 2) Hills and mountains which occur at distances ranging from 20 km to 100 km inland; and, 3) The high plateau ("planalto") which lies to the east of the hills and mountains and dominates Angola's territory.

Angola exhibits one of the highest biodiversity in Africa. Ferreira (1965) registered approximately 3550 species/subspecies of beetles to the country, a number surely under the real picture of the alpha diversity of this country. Within those there are about 90 and 260 species+subspecies of Cetoniidae and Tenebrionidae registered to Angola, respectively. The aim of this work is to present some new records (genera and species) within those two families for Angola based on some results got in the project "Inventory of inshore and freshwater invertebrates and small vertebrates (Task ID 208)" funded by Southern African Science Service Centre for Climate Change and Adaptive Land Management Integrated Science Plan (SASSCAL) to that country. Some species already recorded to Angola are confirmed to the country also. Distribution of the new beetle records in Angola and some ecological notes are also presented.

Material and methods

The study areas were selected along the Cuanza river basin, namely the surrounding areas of Mumbué, Calulo/Dondo and Natural Park of Quissama (Fig. 1). Some other localities were also prospected such as Alto Hama, Cuisse-Cuima and Menongue-Longa regions (Fig. 1). Three trips to Angola were performed during 2014 and 2015. The beetles were got through some sampling techniques and methodologies like direct observation (DO) (e.g., on the ground and under tree barks), light (LT), butterfly (BT), chromotropic (CT), and pitfall (PT) traps (e.g., Fig. 2). The BT were baited with banana+pineapple and the CT with banana. Each species is figured with indication of the sampling technic(s) and the locality (ies) (1, 2, 3, 4, 5 and/or 6).



Fig. 1 - Sample stations near Cuanza River
 > Mumbué region near Source of the river - 1;
 > Dondo and Calulo region - 2;
 > River Mouth region & Parque Natural da Quissama - 3;
Other locations
 > Alto Hama region - 4;
 > Cuisse-Cuima region - 5;
 > Menongue-Longa region - 6.

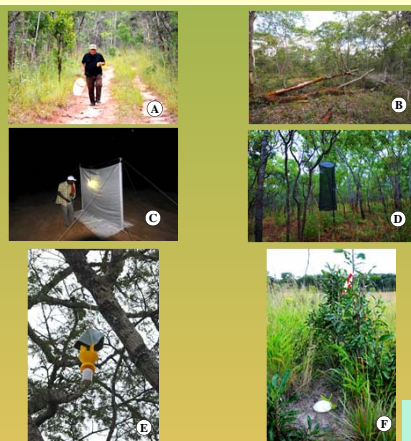


Fig. 2 - Some methods and technics applied to sample beetles in Angola:
 A) direct observation on the ground, B) direct observation under the tree barks, C) light trapping, D) butterfly trap, E) chromotropic trap and, F) pitfall trapping.



Fig. 4 - Tenebrionid species (habitus, dorsal view)
 (A, B, D to GI - ♂, C - ♀):
 A) *Ceropria romandi* (OD, 2),
 B) *Platyedema palliditarse* (OD, 2),
 C) *Alphitobius lamottei* (OD, 2),
 D) *Peltoidea politus* (OD, 1, 2),
 E) *Taraxides laevigatus* (OD, 2),
 F) *Taraxides punctatus* (OD, 1),
 G) *Cryphaeus taurus* (DO, 1, 2).



Discussion

The fruit and flower chafers due mainly to their beauty have attracted the curiosity and interest of professional scientists and amateur entomologists (e.g., Holm & Marais, 1992; Sakai & Nagai, 1998). The members of these beetles feed on sap and ripe fruits, flowers and larvae develop in rotten wood or other decayed organic matter or are associated with social insects (myrmecophilous). Darkling beetles due to their singular peculiarities concerning biology, behavior and ecology, mainly correlated with arid or semiarid environments were well studied in Southern Africa on several aspects, such as their natural histories, population dynamics, community composition, and taxonomy (e.g., Koch, 1958; Penrith, 1977). Due to the SASSCAL project (task ID 208) it was possible to implement some field work along the Cuanza river in Angola. The identification of part of the material got by means of some sampling techniques allowed us to improve our faunistic knowledge on Cetoniidae and Tenebrionidae families (see results) for this country. The cetoniids were sampled using BT and CT (Fig. 2 D, E) and the tenebrionids by OD on the ground or under the bark of the trees (Fig. 2B). Angola seems to be the most southern territory in the distribution of almost the new records of cetoniids and tenebrionids given in this work. However, some species widespread in central and eastern Africa, as *A. laevioplaga* and *P. subaenea*, were found now in this country enlarging his known distribution to southwestern regions.

Results

Among the material identified until now within the families Cetoniidae and Tenebrionidae, some of them represent genera and species previously unknown from Angola. The new genera records are: **Cetoniidae** - *Anthrachophorides* Moser, *Lophorrhina* Westwood and *Stethodesma* Bainbridge; **Tenebrionidae** - *Ceropria* Laporte & Brullé, *Peltoidea* Laporte and *Cryphaeus* Klug. The new species records are: **Cetoniidae** - *Anisorrhina laevioplaga* (Raffray) (Fig. 3A), *Anthr. capeneri* Schein (Fig. 3B), *L. quinquelineata* (Fabricius) (Fig. 3C), *Eudicella* (Cypriolais) *quadrinaculata* (Fabricius) (Fig. 3D), *Pedinorrhina subaenea* (Harold) (Fig. 3E), *Plaesiorrhina trivittata* (Schaum) (Fig. 3F), *Polystalactica* (s. str.) sp. (Fig. 3G), *Tmesorrhina iris schultzei* Preiss (Fig. 3H) and *St. strachani* Bainbridge (Fig. 3 I); **Tenebrionidae** - *Cer. romandi* Laporte & Brullé (Fig. 4A), *Platyedema palliditarse* (?) Laporte & Brullé (Fig. 4B), *Alphitobius lamottei* Ardoin (Fig. 4C), *P. politus* Chevrolat (Fig. 4D), *Taraxides laevigatus* (F.) (Fig. 4E), *Taraxides punctatus* (F.) (Fig. 4F) and *Cr. taurus* Fabricius (Fig. 4G). The cetoniids *Pseudoclonetia infusata* (Gory & Percheron) (Fig. 3J) and *Chlorocala inermis* (Burgeon) (Fig. 3K) are confirmed to Angola.

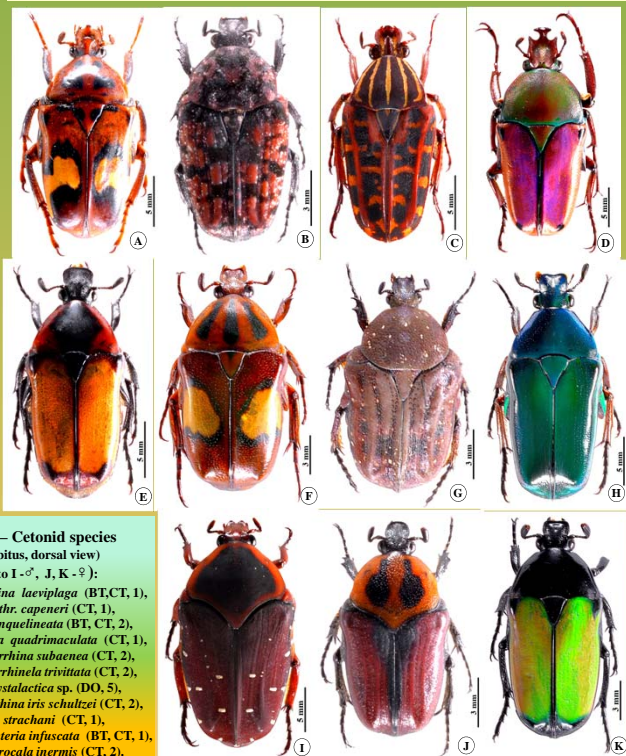


Fig. 3 - Cetoniid species (habitus, dorsal view)
 (A to I - ♂, J, K - ♀):

A) *Anisorrhina laevioplaga* (BT, CT, 1),
 B) *Anthr. capeneri* (CT, 1),
 C) *L. quinquelineata* (BT, CT, 2),
 D) *Eudicella quadrinaculata* (CT, 1),
 E) *Pedinorrhina subaenea* (CT, 2),
 F) *Plaesiorrhina trivittata* (CT, 2),
 G) *Polystalactica* sp. (DO, 5),
 H) *Tmesorrhina iris schultzei* (CT, 2),
 I) *St. strachani* (CT, 1),
 J) *Pseudoclonetia infusata* (BT, CT, 1),
 K) *Chlorocala inermis* (CT, 2).

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