

# ECE 2018

XI EUROPEAN CONGRESS OF ENTOMOLOGY

2-6 JULY 2018, NAPOLI



**BOOK OF ABSTRACTS**



## XI EUROPEAN CONGRESS OF ENTOMOLOGY 2-6 JULY 2018 | NAPOLI, ITALY

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PO442

**INTEGRATIVE TAXONOMY OF POLISTINE PAPER WASPS REVEAL A RICH BIODIVERSITY IN NIGERIA**

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Polistine paper wasps abound in Nigeria and observations suggest that the region is home to many undescribed species of social wasps. These social wasps perform ecological services such as pollination of agricultural crops, predators of pests of agricultural crops, bioindicators of environmental quality and biodiversity, and vector and natural reservoirs for brewers' yeast, *Saccharomyces cerevisiae*. In addition, social wasps are important models for the study and understanding of evolution of social behaviour in animals. The biodiversity of Polistine paper wasps in Nigeria is completely undescribed, despite their apparent high abundance and putative roles in the ecosystem. This knowledge gap constitutes an impediment for conservation, sustainable harnessing of the natural capital they offer and studies on any endemic West African species. To address this, Polistine paper wasps were collected from their nests across Nigeria and subjected to morphological and molecular identification. Molecular identification involving DNA barcoding was crucial in resolving species identity for morphologically cryptic species. Eleven species of social wasps were identified, from the three genera *Belonogaster*, *Polistes*, and *Ropalidia*, including four new undescribed species. The difficulties in amplifying and sequencing members of the three genera *Belonogaster*, *Polistes*, and *Ropalidia* with universal primers was overcome by designing a Polistine specific set of primers which amplified and sequenced approximately 620 bp COI gene in all the Polistines. Integrative taxonomy remains the best approach in species identification and is advocated for Polistine survey across all the biodiversity hotspots in Africa.

Keywords: Biodiversity, Nigeria, polistine, wasps

PO443

**ANCESTRAL AND DERIVED HORN PATTERNS IN ONTHOPHAGINI DUNG BEETLES**

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In Onthophagini dung beetles, sexual selection has generated a spectacular diversity in the head male weaponry. More in detail, in tunnelling species that display a guard behaviour of the female, the intensity of the male-male reproductive competition led to the development of weapons (secondary sexual traits) such as long horns or laminae, used to keep out the rival males from their territory by a face-to-face combat, but also in the male-female cooperation during the reproductive phase. In this framework, we studied the morphotypes of the extreme weaponry exhibited by males within a monophyletic clade of 15 Afrotropical Onthophagini species. In these taxa major males are characterized by a vertex carina (or horn) usually modified into a wide lamina. To identify potential evolutionary trends of the horn shape variation, we evaluated the phylogenetic relationships within the group obtained by using phenotypic external and internal characters. The dataset included the geometric morphometric partition with 12 different landmark configurations and the discrete partition comprehending 53 characters, combined into a single matrix processed by software TNT v.1.5. The unique fully resolved tree resulting from the combined phylogenetic analysis highlighted several clades, each characterized by a distinct horn pattern. The evolutionary trends of the horn shape thus allowed to identify ancestral and derived patterns in major males.

Keywords: Scarabaeinae, Phylogenetic relationships, Major males, Exaggerated Trait

PO444

**THE EVOLUTION OF THE EPIPHARINX CHEWING SYSTEM IN CARRIER BEETLES**

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Carrier beetles of the Eucraniini group, a small tribe with 4 genera endemic to Argentina, live in desert areas and are adapted to feed on dry, small mammal dung pellets. They grasp and lift pellets with the fore tibiae and move forward using only their middle and hind legs. This food-lifting relocation behaviour is considered a derived condition, probably evolved from a tunnelling behaviour. By using the SkyScan 1174 Micro CT, we studied the 3D morphology of the head of two closely related species, *Anomiopsoides cavifrons* (Burmeister, 1861) and *A. heteroclyta* (Blanchard, 1845). In both species, the clypeal armure consists of two central and two lateral (both symmetrical) processes, which are exaggerated to the point of modifying the entire structure of the head and the morphology of the mouthparts. Noteworthy is the case of the epipharynx (located on the lower surface of the head under the maxillae), with the epitorma producing a longitudinal enlargement on the fore edge, a sort of tooth that faces towards a small protrusion matching to a similar little tooth, present on the ventral surface of the clypeus near the anterior margin. The epipharynx plays a specific role in lifting and selecting food particles. These two coupled "teeth" can be functionally related to hash food before ingestion. The shape of the epipharynx chewing system seems therefore to be particularly adapted to manipulate small - and dried - dung pellets and/or constrained by the extreme development of the external symmetrical horns.

Keywords: Coprophagy, Mouthparts, 3D, Micro CT

PO445

**DIRPHYS (HYMENOPTERA: APHELINIDAE) - GREGARIOUS ENDOPARASITOIDS OF WHITEFLIES (HEMIPTERA: ALEYRODIDAE) IN THE NEOTROPICS**

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*Dirphys* Howard is a genus of aphelinid primary parasitoids of whiteflies (Aleyrodidae). It is the only known genus of obligate gregarious endoparasitoids of Aleyrodidae, and is known so far only from the Neotropical region. Until the current taxonomic revision, six described species were known. The current study describes an additional 16 species, bringing the total to 22. 10 of the newly described species are represented by holotype specimens that have had DNA extracted without damage to the sclerotized parts of the body, i.e. using a (so-called) "non-destructive" protocol. This extraction method, and the subsequent Sanger sequencing procedure, leave behind enough genomic DNA for future study, including