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A new myrmicine ant genus from cocoa leaf litter in Ghana (Hymenoptera: Formicidae)

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Afroxyidris crigensis, a new genus and species of rare subterranean ant collected from leaf litter in the forest zone of Ghana, is described. Its relationships within the Myrmicinae and similarity to the fossil *Oxyidris* are briefly discussed. The genus is provisionally assigned to the Pheidologetonini.

KEYWORDS: *Afroxyidris*, new genus, Myrmicinae, Formicidae, cocoa, Ghana.

Introduction

Our knowledge of the insects in tropical forest soils and leaf litter has considerably improved following the use of specialized sampling and extraction techniques, e.g. soil coring and Berlese funnels. Many new myrmicine genera have recently been discovered, leading to an improved understanding of phylogenetic relationships within the subfamily (Bolton, 1988). The latest of these discoveries was made during a survey of the leaf litter ant fauna in the moist forest zone of Ghana, West Africa, during 1992 (Belshaw and Bolton, in press). During this survey, which involved sifting of the leaf litter followed by suspension in Winkler bags, we found a total of 179 species (excluding tourists). These species could all be placed in known genera with one exception.

Two specimens of this new species were found among leaf litter in cocoa farms at different localities in the Ashanti Region. From this we suggest that the species is rare and forages singly in the leaf litter. The other species found in the same samples as these two individuals were typical of the overall fauna and there are no obvious associations.

Bolton (in press) has included this new species in his key to the world's ant genera as an undescribed genus; in this paper we formally name and describe it.

Afroxyidris gen. nov.

Diagnosis of worker. Minute (total length *c.* 1·5 mm) subterranean myrmicine ants with the following combination of characters. Autapomorphies are marked †.

Mandible with two apical teeth followed by a long oblique edentate margin and a smaller basal tooth†.

Median portion of clypeus with a transverse step† and without distinct longitudinal carinae.

Anterior margin of clypeus lacking an isolated median seta.

Antenna of 10 segments including a 2 segmented club.

Eye absent (its position marked by a small pigmented spot).

Frontal carinae and antennal scrobes absent.

Alitrunk compact; metanotal groove shallow in profile.

Propodeum unarmed and rounded; propodeal (= metapleural) lobes rounded and small (not extended dorsally as lamellae).

Petiolar spiracle on the node, which is evenly rounded in profile and with a keel-like ventral process.

First gastral tergite extensively overlapping the first sternite.

Tibial spurs of middle and hind legs reduced to hairs.

Sting well developed and sabre-like.

Type-species. *Afroxyidris crigensis* sp. nov.

Afroxyidris crigensis sp. nov.

(Figs 1–3)

Etymology. Latin: African *Oxyidris* from CRIG (Cocoa Research Institute of Ghana).

Type material. Two workers extracted by one of us (R.B.) from leaf litter in cocoa farms in the moist forest zone of Ghana, West Africa. HOLOTYPE worker from farm at Poano (Ashanti Region), collected 9.ix.1992 (now in The Natural History Museum, London, UK). PARATYPE worker from farm near Ofinso (Ashanti Region), collected 2.xi.1992 (now in Museum of Comparative Zoology, Cambridge, MS, USA).

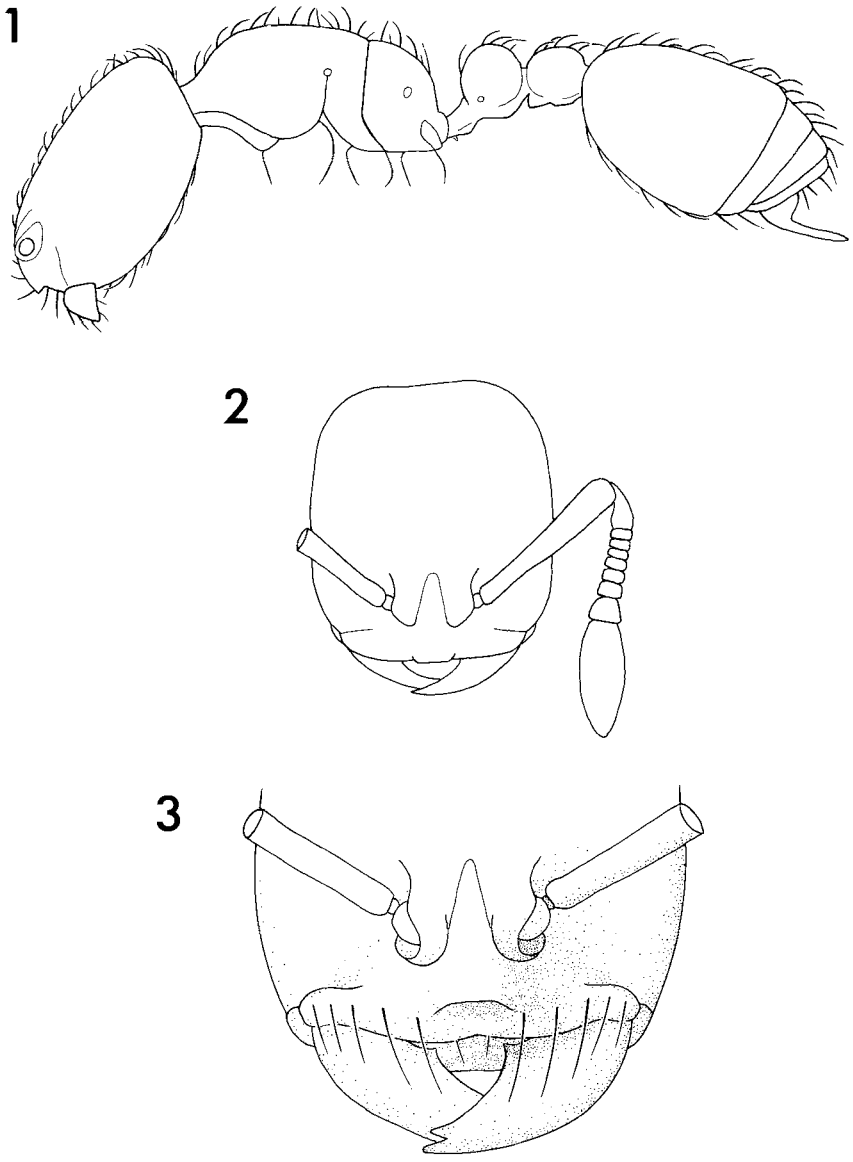
Description of worker. With characters of the generic diagnosis. Colour yellow throughout. Head and body without sculpturing and with fairly dense short hairs, most of which are at an angle of approximately 45° to the vertical (those on the dorsum of the head are more adpressed). In full face view a triangular gap present between the mandibles at full closure and the anterior clypeal margin. Median portion of clypeus rather broadly inserted between the frontal lobes: its width similar to that of one of the frontal lobes where it passes between them. Propodeal spiracle situated near the centre of the propodeum in lateral view. Petiole with a short peduncle and a very small subpetiolar process.

Dimensions. Following Bolton (1987). TL 1·41–1·50, HL 0·39–0·41, HW 0·31, CI 79–76, SL 0·20, SI 65, PW 0·24, AL 0·41–0·42. First figure refers to holotype, the second to paratype.

Relationships

The tribal classification of the Myrmicinae is very weak, with several tribes lacking synapomorphies. These tribes were originally defined using characters which have since been discarded, and a more satisfactory classification has not been proposed since. One such tribe is the Pheidologetonini, into which we provisionally place *Afroxyidris* on the basis of its overall similarity to genera within it, particularly *Carebara*, *Paedalgus* and *Oligomyrmex*. These are all small subterranean species with compact bodies, short legs and antennae (with reduced numbers of segments), eyes reduced or lost, and well developed stings. The genus with the greatest number of shared characters is *Carebara*. However, boundaries between these genera are poorly defined (Bolton and Belshaw, 1993) and a full study of the pheidologetonine genera, including a revision of *Oligomyrmex* is needed. The erection of a new genus for the species described here is therefore a provisional step until such a study is made.

The presence of a median clypeal seta appears to be a good synapomorphy for the Solenopsidini (Ettershank, 1966; Bolton, 1987), and its absence in *Afroxyidris*



FIGS 1–3. *Afroxyidris crigensis* gen. and sp. nov.: 1, head and body in profile; 2, head in full face (= dorsal) view; and 3, anterior portion of head in anterodorsal view.

excludes the genus from this otherwise similar tribe. The mandible of *Afroxyidris* is, however, closer to that typical of the Solenopsidini in its reduced number of teeth and oblique apical margin.

The number and arrangement of teeth on the mandible of *Afroxyidris* is found in only one other genus of myrmicine ant. This is *Oxyidris*, described from a single series in Dominican Republic amber (Wilson, 1985) and hence probably dating from the early Miocene. Wilson considered this genus closest to the extant South American solenopsidine *Oxyepoecus*, but as the diagnostic median clypeal setae were not

visible it could equally as well be a pheidologetonine. Characters which distinguish *Afroxyidris* and *Oxyidris* are listed below.

Afroxyidris	*Oxyidris*
Antenna of 10 segments with a 2-segmented club	Antenna of 12 segments with a 3-segmented club
Subpetiolar process very small	Subpetiolar process large
Clypeal carinae indistinct—median portion of the clypeus with a transverse step	Clypeal carinae well developed—terminating in a pair of projecting teeth

In each case the fossil genus exhibits the probable plesiomorphic condition. Additional differences are the sculpturing in *Oxyidris antillana*, its longer scape (SI = 83), shorter peduncle, and the smaller degree of overlap between the tergite and sclerite of the first gastral segment, although this latter character cannot be confidently determined from a drawing. Reduction in the number of mandibular teeth appears to be apomorphic among the Pheidologetonini and Solenopsidini, and we therefore consider that the similarity in mandible between *Oxyidris* and *Afroxyidris* is a parallelism.

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