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## Contribution to the Afrotropical Ichneumoninae (Hymenoptera, Ichneumonidae) from Gabon and Sierra Leone, with descriptions of five new species and two new subspecies

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**A b s t r a c t :** In the present study, we describe and illustrate several new taxa of the subfamily Ichneumoninae (Hymenoptera, Ichneumonidae) from Gabon (Central Africa) and one species from Sierra Leone (West Africa).

Five new species are hereby described: *Adelotropis gabonense* nov.sp., *Adelotropis spinosus* nov.sp., *Compsophorus coxator* nov.sp., *Compsophorus fuscopetiolaris* nov.sp., and *Compsophorus paracorrugata* nov.sp. Two new subspecies are proposed: *Compsophorus corrugata gabonense* nov.spp. and *Ctenocalus maculipennis rufopetiolatus* nov.spp. The male of *Magwengiella congica* HEINRICH, 1937, is hereby described for the first time.

For the genus *Adelotropis* WATERSTON we provide a determination key for the known species.

**K e y w o r d s :** Ichneumonidae, Afrotropical, Ichneumoninae, new species.

### Introduction

The subfamily Ichneumoninae is a very large group within the family Ichneumonidae (Hymenoptera) mainly parasitizing lepidopteran hosts. Despite the huge number of species described worldwide, only 608 taxa of Ichneumoninae have been described from the Afrotropical region so far (YU et al. 2016).

A definite monograph of the Afrotropical Ichneumoninae (with the exception of the tribe Phaeogenini) has been published by HEINRICH (1967-1968) who already made clear that his revision covers only a small part of the biodiversity of Ichneumoninae in Africa south of the Sahara. The tribe Phaeogenini which was excluded in HEINRICH (1967-1968) has recently been revised by ROUSSE et al. (2013) with the description of a new genus and twelve new species.

We received a small collection of Ichneumoninae recently collected by Maurizio PAVESI (Natural History Museum of Milan, Italy) from Gabon for this study whence only three Ichneumoninae have been reported so far (TOWNES & TOWNES, 1973).

We hereby describe five new species, two of them belonging to *Adelotropis* and three to *Compsophorus*, and two new subspecies in two different genera (*Compsophorus* and *Ctenocalus*). Before the present paper, *Magwengiella congica* HEINRICH, 1967 was only known from the female type specimen and we describe its male for the first time. We provide either comparative tables or dichotomous keys for the identification of the different taxa.

## Material and methods

The nomenclature proposed by HEINRICH (1967-1968) was applied for the description of the body structures, with the exception of the area posteromedia (sensu HEINRICH) that is named area petiolaris here.

The types of the new taxa are deposited in the Museo Civico di Storia Naturale di Milano (MSNM) and the Zoologische Staatssammlung Munich (ZSM).

For the measurements we used an Olympus SZX 7 stereo microscope with dividing eyepiece. The figures were taken by an Olympus SC 30 CCD-camera using the AnalySIS getIT and Helicon Focus Pro softwares.

## Descriptions of species

### Tribus *Compsophorini*

#### *Compsophorus* SAUSSURE, 1890 [1892]

*Compsophorus* SAUSSURE, 1890 [1892]: pl XIII, figs. 9 and 9a (without description). Type species: *Compsophorus mirandus* SAUSSURE, 1890 [1892] (Paris).

*Compsophorus* HEINRICH, 1938: pag. 33; pl. iv, fig. 28 (scutellum); pl. v, fig. 31 (propodeum).

This is a large genus of Ichneumoninae with an Afrotropical and Oriental distribution. For the Afrotropical species of the tribe *Compsophorini*, HEINRICH (1967-1968) proposed five genera which were subsequently all synonymized by TOWNES & TOWNES (1973) under the sole genus *Compsophorus* with the exception of *Pyramidamblys* HEINRICH which was retained as a separate genus.

The material from Gabon represents a surprisingly species-rich assemblage of sympatric taxa which are described here as different species. However, due to the restricted material, the variability of the species could not have been adequately addressed. Although a future modern revision, together with more material from the different African countries, will be necessary for a better understanding of the variability of the genus in Africa, we believe that this addition to HEINRICH'S work will be a valuable input for future studies of the subfamily from Africa.

#### *Compsophorus corrugata gabonense* nov.ssp. (fig. 7, tab. 3)

**Material examined:** Holotypus: (♀) Gabon - prov. Ogooué-Ivindo, Parc National de l'Ivindo, station de Ipassa, 0°30'45"N 12°48'10"E, 20/29.II.2012, leg. M. Pavesi (MSNM, Milan).

**Description:** ♀: Body length 10.5 mm. Flagellum long, slightly lanceolate, with 39 flagellomeres, 1<sup>st</sup> and 2<sup>nd</sup> flagellomeres each c.3.0x longer than wide; widest flagellomeres 1.2x wider than long. Temple long, parallel behind eye and slightly narrowed apically, c.0.7x as wide as the eye. Distance of lateral ocellus to eye 1.4x its diameter. Temple and frons smooth and shining. Face and clypeus densely and finely punctate; gena with scattered punctures ventrally. Mandible large and wide, with a wide gap between both teeth, lower tooth slightly shorter than the upper one. Malar space c.1.1x wider than mandibular base. Genal carina reaching mandibular base.

Pronotum with oblique striae caudally and ventrally, epomia strongly developed, very

long. Mesoscutum without distinct notaulus, with coarse irregular rugae and three smooth stripes medially and in the centers of lateral fields. Mesopleuron strongly striate dorsally and punctate-striate ventrally, speculum smooth. Metapleuron rugose-punctate, juxtacoxal carina distinct. Scutellum flat, about as long as wide, coarsely rugose basally and striate in apical half, with complete lateral carina. Propodeum rugose-punctate; area superomedia heart-shaped, slightly wider than long, smooth, apical carina obsolete; area superoexterna finely striate. Area petiolaris not impressed. Hind coxa coarsely punctate, without apical tooth or lamella; hind femur with dense punctures, c.4.0x longer than wide. Claws not pectinate.

Areolet quadrangular; 2<sup>nd</sup> recurrent vein in its middle; nervulus postfurcal. Nervellus of hind wing reclinous, intercepted in its apical 0.75.

Metasoma semi-amblypygous, short-oval. Postpetiolus moderately widened apically, without dorsal carina, finely aciculate. Gastrocoelus triangular, with fine ridges. Thyridium wide, oblique, c.1.5x as wide as the interval. 2<sup>nd</sup> tergite 1.1x wider than long, 3<sup>rd</sup> tergite 1.5x wider than long, both tergites completely and coarsely aciculate; following tergites smooth and with fine scattered punctures, strongly shining. Ovipositor sheath not surpassing metasomal apex.

Color: Head black. Yellowish areas are located as follows: base of mandible, stripe on clypeal side confluent with narrow facial and frontal orbits up to anterior ocellus. Flagellum black, with ivory stripes on flagellomeres 8-14. Mesosoma black with metallic blue shine. Metasoma black with metallic blue shine; petiolus dark reddish-brown; 7<sup>th</sup> tergite with narrow ivory apical band. Fore and middle legs red except blackish coxae; fore and middle tarsi more or less brownish; hind leg black, hind femur red in basal 0.6. Wings hyaline, moderately infusate apically; pterostigma blackish.

Male and hosts unknown.

***Compsophorus coxator* nov.sp. (figs 1, 5, 8, tab. 1)**

**M a t e r i a l e x a m i n e d :** Holotypus: (♀) Gabon - prov. Ogooué-Ivindo, Parc National de l'Ivindo, station de Ipassa, 0°30'45''N 12°48'10'' E, 20/29.II.2012, leg. M. Pavesi (MSNM, Milan).

**D e s c r i p t i o n :** ♀: Body length 15 mm. Flagellum long, moderately lanceolate, with 42 flagellomeres, 1<sup>st</sup> and 2<sup>nd</sup> flagellomeres each c.2.5x longer than wide; widest flagellomeres c.1.6x wider than long. Temple long, parallel behind eye and slightly narrowed apically, c.0.65x as wide as the eye. Distance of lateral ocellus to eye 1.8x its diameter. Temple and frons smooth and shining. Face and clypeus densely punctate, median field of face partly rugose-punctate; gena with rather dense punctures ventrally. Mandible large and wide, with a wide gap between both teeth, lower tooth slightly shorter than the upper one. Malar space c.1.2x wider than mandibular base. Genal carina reaching mandibular base.

Pronotum with oblique striae caudally and ventrally, epomia strongly developed, long. Mesoscutum without distinct notaulus, with coarse irregular rugae and three smoothed stripes medially and in the centers of lateral fields. Mesopleuron strongly striate dorsally and rugose ventrally, speculum smooth. Metapleuron rugose-punctate, juxtacoxal carina distinct. Scutellum flat, about as long as wide, coarsely rugose, with complete lateral carina. Propodeum coarsely rugose-punctate; area superomedia hexagonal, slightly longer than wide, almost smooth; basal part of lateral area finely striate. Area petiolaris

moderately impressed, with weak lateral carina, rugose-punctate. Hind coxa punctate, with apical lamelliform carina forming a strong triangular elevation; hind femur with mainly dense punctures, ventral third with scattered punctures, slender, c.4.5x longer than wide. Claws not pectinate.

Areolet quadrangular and shortly stalked frontally; 2<sup>nd</sup> recurrent vein in its middle; nervulus postfurcal. Nervellus of hind wing reclivous, intercepted in its apical 0.75.

Metasoma semi-amblypygous, short-oval. Postpetiolus moderately widened apically, without dorsal carina, finely aciculate. Gastrocoelus triangular, with fine ridges. Thyridium wide, oblique, c.1.7x as wide as the interval. 2<sup>nd</sup> tergite 1.15x wider than long, 3<sup>rd</sup> tergite 1.6x wider than long, both tergites completely and coarsely aciculate, apical margins granulate and punctate; following tergites smooth and with fine scattered punctures, strongly shining. Ovipositor sheath not surpassing the metasomal apex.

Color: Head black. Yellowish areas are located as follow: base of mandible, spot on malar space and spot opposite to antennal grooves. Flagellum black, with ivory stripes on flagellomeres 8-12. Mesosoma and metasoma blackish with metallic blue shine; 6<sup>th</sup> and 7<sup>th</sup> tergites with wide ivory apical bands. Legs black; fore and middle femora and tibiae reddish, with more or less extended caudal infuscate stripes. Wings hyaline, infuscate apically distal to pterostigma; pterostigma blackish.

Male and hosts unknown.

***Compsophorus fuscopetiolaris* nov.sp. (figs 2, 9, 11, 13; tabs 2, 4)**

**Material examined:** Holotypus: (♀) Gabon - prov. Ogooué-Ivindo, Parc National de l'Ivindo, station de Ipassa, 0°30'45"N 12°48'10"E, 20/29.II.2012, leg. M. Pavesi (ZSM, Munich). Paratypes: 3♀ and 2♂ with same labels (ZSM, Munich and MSNM, Milan).

**Remark:** The correlation of both sexes is questionable. The reddish color on mesosoma, petioles, and legs are more extended in the females than in the males.

**Description:** ♀: Body length 12-13 mm. Flagellum long, moderately lanceolate, with 39-41 flagellomeres, 1<sup>st</sup> flagellomere c.2.6x longer than wide, 2<sup>nd</sup> flagellomere 2.4x longer than wide; widest flagellomeres c.1.7-1.8x wider than long. Temple long, almost parallel or slightly narrowed behind eye, c.0.65x as wide as the eye. Distance of lateral ocellus to eye 1.3x its diameter. Temple and frons smooth and shining. Face and clypeus densely punctate; gena with scattered punctures ventrally. Mandible large and wide, with a wide gap between both teeth, lower tooth slightly shorter than the upper one. Malar space about as long as the width of mandibular base. Genal carina reaching mandibular base.

Pronotum with oblique striae caudally and ventrally, epomia present. Mesoscutum without distinct notaulus, with coarse irregular rugae and three smooth stripes medially and in the centers of lateral fields. Mesopleuron striate dorsally and rugose ventrally, speculum smooth. Metapleuron rugose-punctate, juxtacoxal carina more or less distinct. Scutellum flat, about as long as wide, punctate and apically striate, with complete lateral carina. Propodeum coarsely rugose-punctate; area superomedia almost rectangular, longer than wide, apical carina often obsolete, finely aciculate as the area superoexterna. Area petiolaris moderately impressed, with weak lateral carina, rugose-punctate. Hind coxa punctate, without apical ridge or tooth; hind femur punctate, c.3.5x longer than wide. Claws not pectinate.

Areolet almost quadrangular, frontal distance of intercubiti 1x their width, 2<sup>nd</sup> recurrent

vein in its middle; nervulus interstitial or slightly postfurcal. Nervellus of hind wing reclivous, intercepted in its apical 0.75.

Metasoma semi-amblypygous, short-oval. Postpetiolus moderately widened apically, without dorsal carina, finely aciculate. Gastrocoelus triangular, with fine ridges. Thyridium wide, oblique, c.1.1-1.2x as wide as the interval. 2<sup>nd</sup> tergite 1.05x wider than long, 3<sup>rd</sup> tergite 1.55x wider than long, both tergites completely and coarsely aciculate; following tergites smooth and with fine scattered punctures, strongly shining. Ovipositor sheath not surpassing the metasomal apex.

Color: Head black. Yellowish areas are located as follows: mandible except teeth, side of clypeus, spot on gena, dorsal facial orbit and frontal orbit up to lateral ocellus (widened dorsally). Flagellum black, with ivory stripes on flagellomeres 7-13. Mesosoma mainly yellow-red. Black with metallic green shine are pronotum medially, propleurum basally, mesoscutum except narrow margins, 1<sup>st</sup> lateral field of propodeum and sometimes area superomedia. Metasoma blackish with metallic green shine, 4<sup>th</sup> to 7<sup>th</sup> tergites with reddish-brown copper-like shine; 6<sup>th</sup> and 7<sup>th</sup> tergites with ivory apical bands. Petiolus completely and sometimes narrow margins of basal tergites yellow-red. Legs yellow-red; fore and middle tibiae caudally and fore and middle tarsi completely brownish. Hind legs except red coxa and trochanters black. Wings slightly infusate, but without dark spots or bands; pterostigma blackish.

♂: Body length 11 mm. Flagellum long, bristle-shaped, with 37 flagellomeres, 1<sup>st</sup> flagellomere c.3.1x longer than wide. Flagellomeres without tyloids, central flagellomeres with transversal and central rings of small black hairs. Temple long, almost parallel or slightly narrowed behind eye, c.0.65x as wide as the eye. Distance of lateral ocellus to eye 1.5x its diameter. Temple and frons smooth and shining, with few fine punctures. Face and clypeus densely punctate, gena with scattered punctures ventrally. Mandible large and wide, with a wide gap between both teeth, lower tooth slightly shorter than the upper one. Malar space about as wide as the mandibular base. Genal carina reaching mandibular base.

Pronotum with oblique striae caudally and ventrally, epomia present. Mesoscutum without distinct notaulus, with coarse irregular rugae and three smoothed stripes medially and in the centers of lateral fields. Mesopleuron striate dorsally and rugose or rugose-striate ventrally, speculum smooth. Metapleuron rugose-punctate, juxtacoxal carina more or less distinct. Scutellum roundly and distinctly elevated, about as long as wide, punctate and apically striate, with complete lateral carina; area superomedia almost rectangular, longer than wide or as long as wide, apical carina often obsolete, finely aciculate or smooth. Area superoexterna finely striate. Hind coxa coarsely and densely punctate, without apical ridge or tooth; hind femur densely punctate, c.4.4x longer than wide. Claws not pectinate.

Areolet quadrangular; 2<sup>nd</sup> recurrent vein in its middle; nervulus slightly postfurcal. Nervellus of hind wing reclivous, intercepted in its apical 0.75.

Metasoma short-oval. Postpetiolus moderately widened apically, without dorsal carina, finely aciculate. Gastrocoelus triangular, with fine ridges. Thyridium oblique, c.1.2x wider than the interval. 2<sup>nd</sup> tergite 1.2x wider than long, 3<sup>rd</sup> tergite 1.5x wider than long, both tergites completely and coarsely aciculate; following tergites smooth and with fine scattered punctures, strongly shining. Ovipositor sheath not surpassing the metasomal apex.

Color: Head black. Yellowish areas are located as follow: mandible except teeth, side of clypeus, sometimes spot on gena, wide facial and frontal orbits up to anterior ocellus. Flagellum black. Mesosoma mainly black with metallic blue shine; mesopleuron and hind margin of pronotum red. Metasoma blackish with metallic blue shine, 4<sup>th</sup> to 7<sup>th</sup> tergites with reddish-brown copper-like shine; 7<sup>th</sup> tergite with wide ivory apical band; petiolus reddish basally. Fore and middle coxae mainly yellow; fore and middle legs otherwise red, tarsi more brownish; hind leg black, hind coxa with blueish shine, hind trochanter and trochantellus reddish. Wings slightly infusate, without apical darkening; pterostigma black.

***Compsophorus paracorrugata* nov.sp. (figs 3, 6, 10, 14; tab. 1)**

**M a t e r i a l e x a m i n e d :** Holotypus: (♀) Gabon - prov. Ogooué-Ivindo, Parc National de l'Ivindo, station de Ipassa, 0°30'45''N 12°48'10'' E, 20/29.II.2012, leg. M. Pavesi (MSNM, Milan).

**R e m a r k :** This new species resembles *C. corrugata* TOSQUINET, but differs by the reduced yellowish coloration of the head, wider malar space and the distinct apical lamella of hind coxa.

**D e s c r i p t i o n :** ♀: Body length 14 mm. Flagellum long, very slightly lanceolate, with 40 flagellomeres, 1<sup>st</sup> and 2<sup>nd</sup> flagellomeres each c.3.5x longer than wide; widest flagellomeres about as long as wide. Temple long, parallel behind eye and slightly narrowed apically, c.0.65x as wide as the eye. Distance of lateral ocellus to eye 1.4x its diameter. Temple and frons smooth and shining. Face and clypeus densely and finely punctate; gena with scattered punctures ventrally. Mandible large and wide, with a wide gap between both teeth, lower tooth slightly shorter than the upper one. Malar space c.1.3x longer than the width of mandibular base. Genal carina reaching mandibular base.

Pronotum with oblique striae caudally and ventrally, epomia strongly developed, very long. Mesoscutum without distinct notaulus, with coarse irregular rugae and three smooth stripes medially and in the centers of lateral fields. Mesopleuron strongly striate dorsally and punctate-striate ventrally, speculum smooth. Metapleuron rugose-punctate, juxtacoxal carina distinct. Scutellum flat, about as long as wide, coarsely rugose, with complete lateral carina. Propodeum rugose-punctate; area superomedia c.1.4x longer than wide, with rounded sides and obsolete apical carina, smooth; area superoexterna finely striate. Hind coxa coarsely punctate, with moderately raised apical lamella; hind femur with dense punctures, c.3.9x longer than wide. Claws not pectinate.

Areolet quadrangular and shortly stalked; 2<sup>nd</sup> recurrent vein proximal to its middle; nervulus slightly postfurcal (by 1x its width). Nervellus of hind wing reclivous, intercepted in its apical 0.75.

Metasoma semi-amblypygous, short-oval. Postpetiolus moderately widened apically, without dorsal carina, finely aciculate and punctate. Gastrocoelus triangular, with fine ridges. Thyridium wide, oblique, c.1.5x as wide as the interval. 2<sup>nd</sup> tergite 1.05x wider than long, 3<sup>rd</sup> tergite 1.4x wider than long, both tergites completey and coarsely aciculate; following tergites smooth and with fine scattered punctures, strongly shining. Ovipositor sheath not surpassing the metasomal apex.

Color: Head black. Reddish are base of mandible and spot on malar space. Small spots opposite to antennal grooves yellowish. Flagellum black, with ivory stripes on flagello-

meres 7-14. Mesosoma black with metallic blue shine. Metasoma blackish with metallic coppery shine; 7<sup>th</sup> tergite with wide ivory apical band. Fore and middle legs except blackish coxae reddish, fore and middle femora and tibiae with brownish stripes dorsally; fore and middle tarsi brown; hind leg black, hind femur red in basal half. Wings hyaline, apices diffusely infuscate distally to pterostigma; pterostigma blackish.

Male and hosts unknown.

### Tribus *L i s t r o d r o m i n i*

#### *Adelotropis* WATERSTON, 1922

*Adelotropis* WATERSTON, 1922: 455-456. Type species: *Adelotropis farquharsoni* WATERSTON, 1922 (Unknown Repository).

This genus was not included in the monograph of HEINRICH (1967-1968), because he was unable to study the type material. It is characterized by the following features: 1<sup>st</sup> flagellomere shorter than the 2<sup>nd</sup> one; claws not or only basally pectinate; juxtacoxal carina more or less present; gastrocoelus and thyridium large; scutellum completely carinate laterally, with a distinct central tooth or spine. Because we have not seen the type specimen, we based our comparison on the good drawings and description by WATERSTON (1922).

#### *Adelotropis gabonense* nov.sp. (figs 4, 15, 17, 19)

**M a t e r i a l e x a m i n e d :** Holotypus: (♀) Gabon - prov. Ogooué-Ivindo, Parc National de l'Ivindo, station de Ipassa, 0°30'45"N 12°48'10" E, 20/29.II.2012, leg. M. Pavesi (MSNM, Milan).

**R e m a r k :** This new taxon is closely related to *A. farquharsoni* WATERSTON, 1922. It can be differentiated from the latter species by its wider and sickle-shaped area supero-media, less extended red coloration of mesosoma, ivory spots on fore and middle coxae and dark spurs of hind tibia.

**D e s c r i p t i o n :** ♀: Body length 8.5 mm. Flagellum with 28 flagellomeres, short, filiform; 1<sup>st</sup> flagellomere 1.4x longer than wide, 2<sup>nd</sup> flagellomere 2.1x longer than wide and 1.5x longer than the 1<sup>st</sup> flagellomere, combined length 0.4x eye length. Head transverse, temple parallel behind eye and moderately narrowed apically, c.0.75x as wide as the eye. Distance of lateral ocellus to eye c.1.6x its diameter. Frons and temple with very scattered fine punctures and scattered short pale hairs. Face and clypeus confluent, with coarse dense punctures and long dense pilosity. Malar space 1.1x longer than the width of mandibular base. Gena with scattered fine punctures ventrally. Genal carina reaching the mandibular base. Mandible very large and wide, with wide gap between the teeth; lower tooth wider but shorter than the upper one.

Mesosoma with pale hairs. Epomia strong. Side of pronotum with coarse punctures dorsally, largely smooth with some rugae ventrally. Mesoscutum with scattered and coarse punctures, shining, partly distributed in longitudinal rows; notaulus weakly impressed frontally. Subtegular ridge sharp and strongly developed. Mesopleuron with coarse dense punctures, partly rugose, speculum large, smooth. Sternauli distinctly impressed in frontal 0.4 of mesopleuron, with fine transversal ribs; epicnemial carina narrow, reaching the frontal margin of mesopleuron. Scutellum wider than long, with strong lamelliform

lateral carina over the whole length, surface with some coarse transversal rugae and a strong central tooth-like extension. Propodeum and metapleuron with very coarse reticulo-rugose punctures. Juxtacoxal carina present. Propodeal spiracles oval, c.2x longer than wide. Area basalis trapezoid, wider than long. Area superomedia sickle-shaped, 2.7x wider than long, costula reaching the area petiolaris shortly behind the area superomedia. Area petiolaris strongly impressed medially, without lateral carina, coarsely rugose. Hind coxa with dense coarse punctures, without scopa. Hind femur with coarse dense punctures, almost smooth ventrally, c.3.6x longer than wide. Claws not pectinate.

Areolet pentagonal, frontal distance of intercubiti c.3x their widths, 2<sup>nd</sup> recurrent vein in its middle; nervulus antefurcal by 1x its width; nervellus of hind wing intercepted in its apical 0.8.

Metasoma amblypygous, short-oval, with dense pale pilosity. Petiolus slightly wider than high; postpetiolus strongly widened, without dorsal carina, but slightly elevated median field; lateral field with fine punctures laterally and with smooth surface medially, median field with coarse rugose punctures. Gastrocoelus rectangularly impressed, with longitudinal ridges. Thyridium transverse, c.0.8x as wide as the interval. 2<sup>nd</sup> tergite 1.4x wider than long, 3<sup>rd</sup> tergite 2.1x wider than long; both tergites with coarse and dense rugose punctures; following tergites with smooth surface and scattered fine hair-punctures. Ovipositor sheath not surpassing the metasomal apex.

Color: Black. Ivory are spot on mandibular base, facial and frontal orbits, stripe on upper outer orbit, frontal spots on fore and middle coxae, narrow apical margin of hind coxa and apical bands on 4<sup>th</sup> to 7<sup>th</sup> tergites. Red areas are located on pronotum (except frontal margin), mesopleuron, mesoscutum and scutellum. Fore leg except coxa reddish, middle leg except coxa brown. Wings slightly infusate, pterostigma blackish.

Male and hosts unknown.

### *Adelotropis spinosus* nov.sp. (figs 18, 20, 21)

**Material examined:** Holotypus: (♀) Kortright, Freetown, Sierra Leone, Dec. '68, D. Owen; ex *Myrina silenum* (ZSM, Munich).

**Remark:** This species was found in the HEINRICH collection hosted at the Zoologische Staatssammlung Munich as *Adelotropis* sp. It differs from *A. farquharsoni* WATERSTON and *A. gabonense* nov.sp. by its very long central spine of the scutellum and extended reddish color pattern, finer punctures of the face, and the extended ivory coloration of fore and middle legs.

**Description:** ♀: Body length 9 mm. Flagellum with 25 flagellomeres, short, filiform; 1<sup>st</sup> flagellomere 1.8x longer than wide, 2<sup>nd</sup> flagellomere 2.3x longer than wide and 1.3x longer than the 1<sup>st</sup> flagellomere, combined length 0.5x eye length. Head transverse, temples moderately narrowed behind eyes, c.0.6x as wide as the eye. Distance of lateral ocellus to eye c.1.6x its diameter. Frons with fine punctures, smooth medially; temple with very scattered and fine punctures. Face and clypeus with fine dense punctures, epistoma rugose-punctate. Apical margin of clypeus slightly concave. Malar space 1.15x longer than the width of mandibular base. Gena with scattered superficial punctures ventrally. Genal carina reaching the mandibular base. Mandible very large and wide, with wide gap between the teeth; lower tooth wider but shorter than the upper one.



Mesosoma with pale hairs. Epomia moderately strong. Side of pronotum with punctures dorsally and distinct striation centrally and ventrally. Mesoscutum with dense coarse punctures, shining; notaulus distinctly impressed in frontal 0.2. Subtegmental ridge sharp. Mesopleuron densely rugose-punctate, speculum finely granulate, matte. Sternauli distinctly impressed in frontal 0.4 of mesopleuron, with fine transversal ribs; epicnemial carina narrow, reaching the frontal margin of mesopleuron. Scutellum about as long as wide, with complete lateral carina, surface with some coarse rugae and a long central spine. Propodeum and metapleuron with very coarse reticulo-rugose punctures. Juxtacoxal carina partly present. Propodeal spiracle oval, c.2x longer than wide. Area basalis trapezoid, wider than long. Area superomedia sickle-shaped, 2.6x wider than long, costula reaching the area petiolaris shortly behind the area superomedia. Area petiolaris very strongly impressed medially, without lateral carina, coarsely rugose. Hind coxa with dense coarse punctures, without scopa. Hind femur coarsely rugose-punctate, smooth ventrally, c.3.5x longer than wide. Claws with some fine basal pecten.

Areolet pentagonal, frontal distance of intercubiti c.4x their width, 2<sup>nd</sup> recurrent vein slightly distal to its middle; nervulus antefurcal by 2x its width; nervellus of hind wing intercepted in its apical 0.75.

Metasoma amblypygous, short-oval. Petiolus slightly wider than high; postpetiolus strongly widened, without dorsal carina, but slightly elevated median field, completely rugose-punctate. Gastrocoelus rectangularly impressed, with longitudinal ridges. Thyridium transverse, c.0.75x as wide as the interval. 2<sup>nd</sup> tergite 1.7x wider than long, 3<sup>rd</sup> tergite 2.4x wider than long; both tergites with coarse and dense rugose-punctures, structure slightly smooth on 3<sup>rd</sup> tergite centrally; following tergites with smooth surface and scattered fine hair-punctures. Ovipositor sheath not surpassing the metasomal apex.

Color: Head and mesosoma reddish, propleuron and mesosternum blackish. Metasoma reddish-brown, darker brownish medially. Flagellum brown, more or less yellowish ventrally. Ivory areas are located on: mandibular base, frontal orbit, postscutellum, fore and middle coxae completely, hind coxa except black spots on lateral and medial sides, fore and middle femora apico-frontally, fore and middle tibiae frontally and large apical spots on 4<sup>th</sup> to 7<sup>th</sup> tergites. Legs dark chestnut-brown. Wings hyaline, pterostigma dark brown.

Male unknown.

H o s t : *Myrina silenum* (FABRICIUS, 1775) (Lep., Lycaenidae) (ZSM).

### Key to the known species of *Adelotropis* WATERSTON

- 1 Scutellum with a very long central spine (fig. 21); fore and middle legs with ivory coloration on coxae, femora and tibiae; general coloration reddish including the propodeum (fig. 4) ..... *A. spinosus* RIEDEL & DAL POS, nov.sp.
- Scutellum with a short tooth; fore and middle legs with reduced or absent ivory coloration; general coloration darker with thorax dark ferruginous and propodeum infuscate or black. ....2
- 2 Area superomedia sickle-shaped, 2.7x wider than long (fig. 15). Mesosoma with reduced red coloration; fore and middle coxae with ivory spots, hind coxa black; hind tibial spur dark.....*A. gabonense* RIEDEL & DAL POS, nov.sp.
- Area superomedia hexagonal, 1.5x wider than long; Mesosoma almost completely red, propodeum more or less infuscate; fore and middle coxae without ivory spots; hind coxa pale apically; hind tibial spur pale ..... *A. farquharson* WATERSTON, 1922

## Tribus C t e n o c a l i n i

### *Magwengiella* HEINRICH, 1938

*Magwengiella* HEINRICH, 1938: 42. Type species: *Magwengiella obtusa* HEINRICH, 1938 by original designation (Warszawa).

The genus comprises six species distributed in the Afrotropical (Congo, Madagascar), Eastern Palaearctic (Kazakhstan) and Western Palaearctic (Spain, Turkey) regions (YU et al. 2015). *Magwengiella* can be easily differentiated from the other two genera occurring in the Afrotropical area (*Ctenocalus* SZÉPLEGETI and *Seyrigiella* HEINRICH) by the following characteristics: complete and prominent carination of the propodeum; impectinate claws of female, and metasoma slightly more elongated and nearly parallel-sided (HEINRICH 1967-1968: 384-385).

### *Magwengiella congica* HEINRICH, 1967, new male (figs 12, 16)

**M a t e r i a l e x a m i n e d :** ♂ "Gabon - prov. Ogooué-Ivindo, Parc National de l'Ivindo, station de Ipassa, 0°30'45" N 12°48'10" E, 20/29.II.2012, leg. M. Pavesi (MSNM, Milan).

**D e s c r i p t i o n :** ♂. Body length 11.5 mm. Flagellum filiform, with 44 flagellomeres; 1<sup>st</sup> flagellomere c.2.2x longer than wide. Tyloids on flagellomeres 8-17, oval, c.0.6x as long as their flagellomeres. Temple rather wide, slightly widened behind eye and moderately narrowed apically, 0.65x as wide as they eye. Distance of lateral ocellus to eye about as long as its diameter. Frons and temple smooth, with very scattered fine punctures. Face and clypeus finely granulate, densely punctate. Clypeus flat and thin, apical margin moderately excised, labrum exposed. Malar space about as long as the width of mandibular base. Mandible with two teeth; lower tooth situated inwards, mandible seen from frontal apparently sickle-shaped. Genal carina reaching the mandibular base.

Side of pronotum mainly smooth and shining, with scattered fine punctures dorsally. Mesoscutum finely granulate but shining, with very scattered punctures; notaulus slightly impressed in frontal 0.2 of mesoscutum. Mesopleuron with dense and fine punctures, partly rugose ventrally; speculum very large and smooth. Metapleuron with rather coarse dense punctures, juxtacoxal carina present. Scutellum slightly wider than long, with complete lateral carina and a strong pyramidal elevation centrally. Propodeum punctate, spiracle slit-shaped. Area basalis not carinate. Area superomedia horseshoe-shaped, slightly longer than wide, almost smooth; costula in its caudal 0.6. Area petiolaris distinctly impressed, transversely rugose, with lateral carina. Hind coxa rugose-punctate; hind femur stout, punctate, c.3.4x longer than wide; hind tibia with several denticular spurs externally, claws not pectinate.

Areolet quadrangular, 2<sup>nd</sup> recurrent vein in its middle; nervulus interstitial; nervellus of hind wing strongly reclivous, intercepted in its apical 0.75.

Postpetiolus strongly widened apically, densely punctate, median field slightly elevated but dorsal carina absent. Gastrocoelus impressed; thyridium wide, transverse, c.1.5x wider than the interval. 2<sup>nd</sup> tergite c.1.1x wider than long. 2<sup>nd</sup> to 4<sup>th</sup> tergites coarsely and densely rugose-punctate, median parts with more or less longitudinal rugae; 5<sup>th</sup> tergite with superficial punctures.

Color: Black. Flagellum brownish. Ivory are wide side of clypeus, wide facial orbit and narrower frontal orbit, large stripe on outer orbit, frontal and upper margins of pronotum,

two short paramedial stripes on mesoscutum, longitudinal stripe on ventral mesopleuron, prescutellar carina, apex of scutellum, postscutellum, carinal triangle, spot on apical metapleuron, area posteroexterna, fore and middle coxae mainly, ventral and dorsal spots on hind coxa. Legs brownish, fore and middle femora cream-yellow ventrally, fore and middle tibiae and tarsi with blackish stripes externally; hind tarsus black. Metasoma reddish; complete 1<sup>st</sup> tergite and baso-medial spots in 2<sup>nd</sup> and 3<sup>rd</sup> tergites black. Wings hyaline, pterostigma blackish.

**D i s t r i b u t i o n :** Congo, Gabon.

### ***Ctenocalus* SZEPLIGETI, 1908**

*Ctenocalus* SZEPLIGETI, 1908: 51, 54. Type species: *Ctenocalus cephalotus* SZEPLIGETI, 1908 (Stockholm).

*Magwenga* MORLEY, 1919: 166. Type species: *Magwenga maculipennis* MORLEY, 1919 (London).

*Ctenocalus* HEINRICH, 1933: 162; *Magwenga* MORLEY, 1919 as synonym.

This is a strictly Afrotropical genus with only 3 species described so far, occurring in Eastern (Tanzania, Uganda) and Southern Africa (South Africa). *Ctenocalus* can be easily differentiated from the other two genera of the tribe Ctenocalini occurring in the Afrotropical area (*Magwengiella* HEINRICH and *Seyrigiella* HEINRICH) by the following characteristics: propodeum without or with incomplete carination; all claws of ♀ pectinate, and notauli obsolete, present only at the base (HEINRICH 1967-1968: 378).

### ***Ctenocalus maculipennis rufopetiولاتus* nov.ssp. (fig 22)**

**M a t e r i a l e x a m i n e d :** Holotypus: (♀) Gabon - prov. Ogooué-Ivindo, Parc National de l'Ivindo, station de Ipassa, 0°30'45''N 12°48'10'' E, 20/29.II.2012, leg. M. Pavesi (MSNM, Milan).

**R e m a r k :** The new subspecies resembles *C. maculipennis maculipennis* (MORLEY) by its structure and main color pattern. The subspecies from Gabon is slightly larger than the specimens described from Uganda and differs by its red petiolus and the brownish 7<sup>th</sup> tergite without an ivory apical band.

**D e s c r i p t i o n :** ♀: Body length 13 mm. Flagellum with 41 flagellomeres, slightly lanceolate; 1<sup>st</sup> flagellomere 5.2x longer than wide; 2<sup>nd</sup> flagellomere 3.5x longer than wide, widest flagellomeres beyond the middle about square. Temple wide, parallel behind eye, about as wide as eye. Temple finely granulate, with coarse but very scattered punctures. Occiput deeply emarginate. Distance of lateral ocellus from eye c.1.2x its diameter. Face and clypeus coarsely and densely punctate. Clypeus c.1.7x wider than long, flat and thin apically. Lower mandibular tooth small and turned inwards, mandible seen from frontal almost sickle-shaped. Malar space c.1.1x wider than the mandibular base. Genal carina reaching the mandibular base.

Collare with strong transversal rim, epomia present. Mesoscutum finely granulate, with scattered coarse punctures, mainly along the (indistinct) notauli. Mesopleuron and metapleuron densely and coarsely rugose-punctate, speculum coriaceous. Juxtacoxal carina not developed. Scutellum moderately elevated, wider than long, with coarse scattered punctures and complete lateral carina. Propodeum granulate, matte, with weak lateral carina of the area petiolaris only, other carinae not developed. Hind coxa granulate and punctate, with weak scopa in apical 0.2. Hind femur densely punctate, 4.4x longer than wide. All claws strongly pectinate.

Areolet quadrangular, 2<sup>nd</sup> recurrent vein slightly distal to its middle, nervulus postfurcal by 2x its width.

Metasoma oxypygous. Postpetiolus moderately widened, granulate and with very scattered punctures, median field not separated. Gastrocoelus transversely triangular, with some fine longitudinal ridges. Thyridium very large, oblique, 2.5x wider than the interval. 2<sup>nd</sup> tergite 1.3x wider than long, 3<sup>rd</sup> tergite 1.6x wider than long; both tergites granulate and coarsely and densely rugose-punctate; 4<sup>th</sup> tergite with less dense superficial punctures. Ovipositor sheath slightly reaching beyond metasomal apex.

Color: Black. Ivory are stripes on flagellomeres 7-14 and 3<sup>rd</sup>-4<sup>th</sup> hind tarsomeres. Pale reddish are all coxae and trochanters and the petiolus. Postpetiolus and following tergites black with slightly bluish shine, 6<sup>th</sup> and 7<sup>th</sup> tergites brownish. Wings hyaline, pterostigma brown; fore wing with a wide brown band behind pterostigma, fore and hind wings with brownish apical spots.

### Zusammenfassung

In der vorliegenden Arbeit werden verschiedene neue Taxa der Subfamilie Ichneumoninae (Hymenoptera, Ichneumonidae) aus Gabun (Central Africa) sowie aus Sierra Leone (West Africa) beschrieben und illustriert.

Fünf Arten werden neu beschrieben: *Adelotropis gabonense* nov.sp., *Adelotropis spinosus* nov.sp., *Compsophorus coxator* nov.sp., *Compsophorus fuscopetiolaris* nov.sp. und *Compsophorus paracorrugata* nov.sp. Außerdem werden zwei neue Subspecies, *Compsophorus corrugata gabonense* nov.spp. und *Ctenocalus maculipennis rufopetiolatus* nov.spp., sowie das bisher unbekannte Männchen von *Magwengiella congica* HEINRICH, 1937 beschrieben.

Für die bekannten Arten der Gattung *Adelotropis* WATERSTON wird ein Bestimmungsschlüssel gegeben.

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**Tab. 1:** Major differences between *Compsophorus coxator* nov.sp., *C. paracorrugata* nov.sp. and the closely related species *C. micans* (TOSQUINET) and *C. corrugata* TOSQUINET.

	<i>C. micans</i> (TOSQUINET)	<i>C. corrugata</i> TOSQUINET	<i>C. paracorrugata</i> nov.sp.	<i>C. coxator</i> nov.sp.
Color of mandibular base	yellow	yellowish-white	reddish	yellow
Color of malar space	yellow	yellowish-white	reddish	yellow spots
Color of inner orbits	yellow	yellowish-white	black	black
Color of clypeal side	yellow	yellowish-white	black	black
Color opposite to antennal groove	yellow	yellowish-white	yellow	yellow
Color of hind femur	orange on basal third, the rest black	orange, apically black	half orange, half black	black
Apical lamella of hind coxa	present	absent	present	present
Apical band on 6 <sup>th</sup> tergite	present	present	absent	present
Scutellum	coarsely rugose	sparsely punctate	sparsely punctate	punctate basal, puncto-striate apically
Length	16 mm	13 mm	14 mm	15 mm

**Tab. 2:** Major differences between ♀♀ of *Compsophorus fuscopetiolaris* nov.sp. and its closely related species *C. flavivertex* HEINRICH and *C. variabilis* MORLEY.

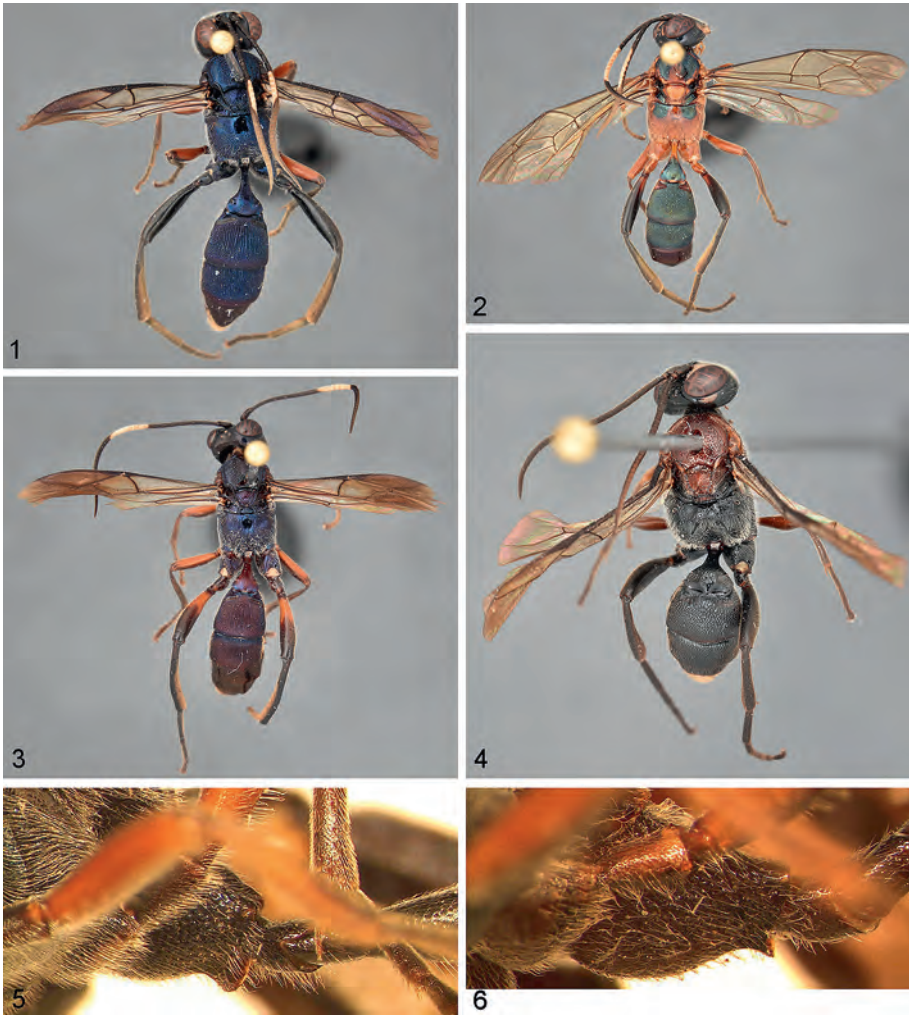
	<i>C. flavivertex</i> HEINRICH	<i>C. variabilis</i> MORLEY	<i>C. fuscopetiolaris</i> nov.sp.
Color of malar space	white	white	white
Color of frontal and vertical orbits	white	only frontal orbit white	white
Color of clypeal sides	black	white	black
Color of coxa I and II	only apically white	predominantly white	only apically white
Color of propodeum	red	blue-black	red with green area superoexterna
Color of head	black	red, sometimes black	red
Color of 1 <sup>st</sup> tergite		metallic blue or metallic green	orange, postpetiole metallic green dorsally
Color of 2 <sup>nd</sup> and 3 <sup>rd</sup> tergites	bluish-black	metallic blue	metallic green, with red border
Color of 4 <sup>th</sup> to 7 <sup>th</sup> tergites	black	black	reddish-brown copper-like shine

**Tab. 3:** Major differences between the subspecies of *Compsophorus corrugata* TOSQUINET.

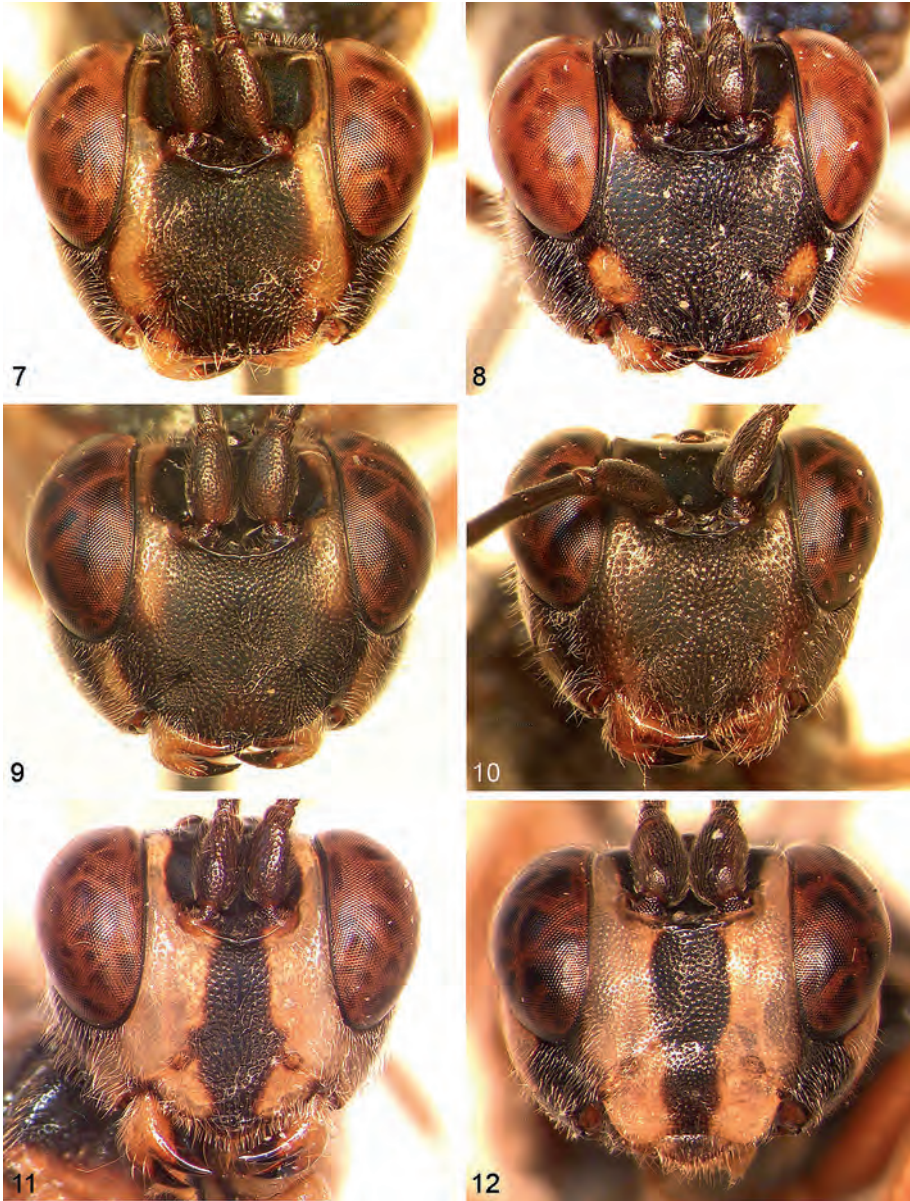
	<i>C. corrugata corrugata</i> TOSQUINET (only ♂ known)	<i>C. corrugata angolensis</i> HEINRICH (♀ and ♂)	<i>C. corrugata gabonense</i> nov.ssp. (only ♀ known)
Ivory annulus on flagellum	absent	present on flagellomeres 12-18	present on flagellomeres 8-14
Ivory margin on 6 <sup>th</sup> tergite	narrow	broad	absent
Wing infuscation	strong	slight	moderate
Scutellum	sparsely punctate	sparsely punctate	punctate basally, coarsely rugose towards apex
Distribution	Togo	Angola	Gabon

**Tab. 4:** Major differences between ♂♂ of *Compsophorus fuscopetiolaris* nov.sp. and the closely related species *C. flavivertex* HEINRICH. The ♂ of *C. variabilis* has not been described.

	<i>C. flavivertex</i> HEINRICH	<i>C. fuscopetiolaris</i> nov.sp.
Color of 1 <sup>st</sup> tergite	black	predominantly metallic green
Color of 2 <sup>nd</sup> and 3 <sup>rd</sup> tergites	bluish-black	metallic green with red border
Color of 4 <sup>th</sup> to 7 <sup>th</sup> tergites	Black	reddish-brown with copper-like shine
Color of propodeum	red	metallic green
Color of coxa III	black	metallic green



**Figs 1-4:** Habitus from dorsal: (1) *Compsophorus coxator* nov.sp. ♀; (2) *Compsophorus fuscopetiolaris* nov.sp. ♀; (3) *Compsophorus paracorrugata* nov.sp. ♀; (4) *Adelotropis gabonense* nov.sp. ♀. **Figs 5-6:** Hind coxa of: (5) *Compsophorus coxator* nov.sp. ♀; (6) *Compsophorus paracorrugata* nov.sp. ♀.

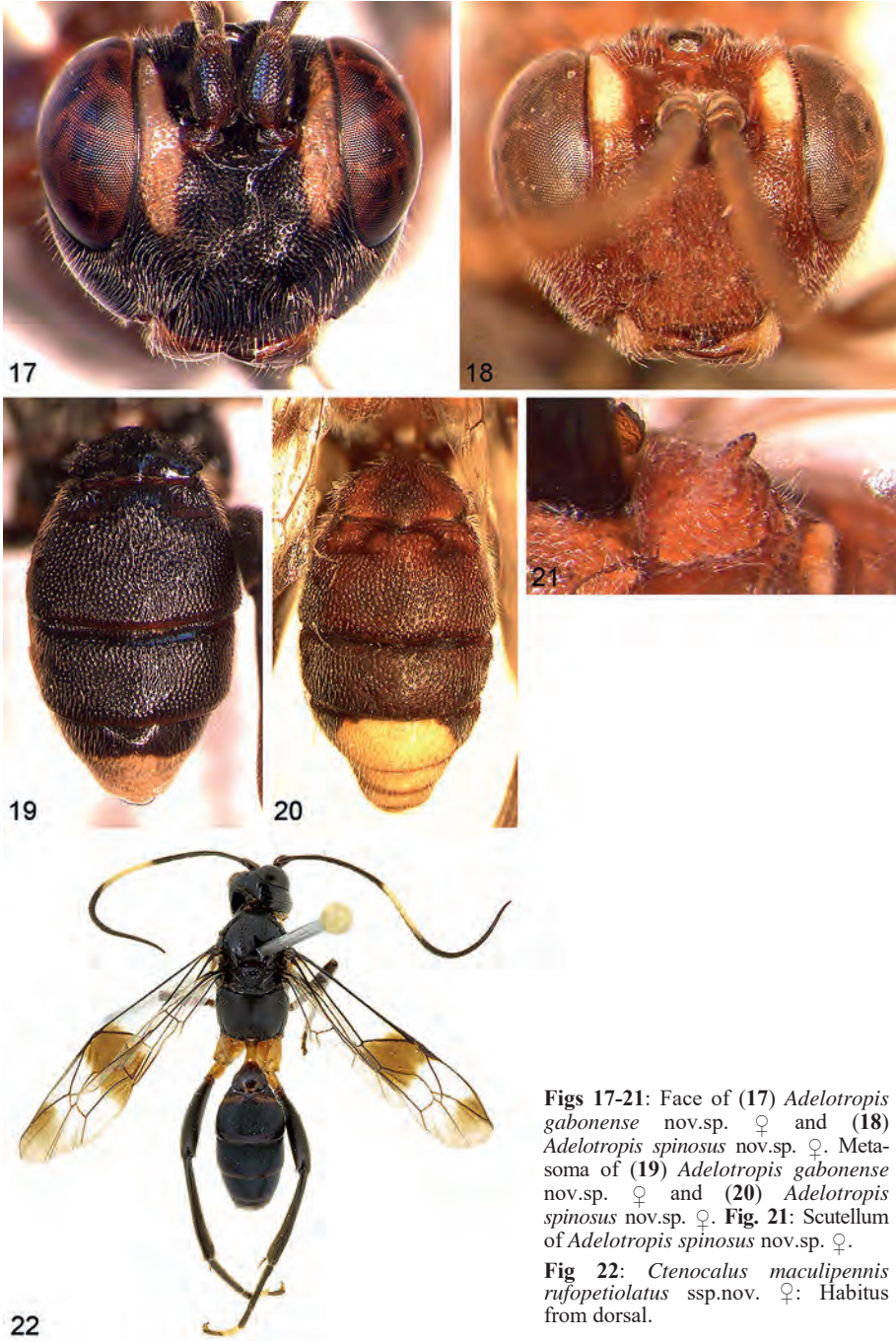


**Figs 7-12:** Face of: (7) *Compsophorus corrugata gabonense* nov.ssp. ♀; (8) *Compsophorus coxator* nov.sp. ♀; (9) *Compsophorus fuscopetiolaris* nov.sp. ♀; (10) *Compsophorus paracorrugata* nov.sp. ♀; (11) *Compsophorus fuscopetiolaris* nov.sp. ♂; (12) *Magwengiella congica* HEINRICH ♂.





**Figs 13-16:** Propodeum of: (13) *Compsophorus fuscopetiolaris* nov.sp. ♀; (14) *Compsophorus paracorrugata* nov.sp. ♀; (15) *Adelotropis gabonense* nov.sp. ♀; (16) *Magwengiella congica* HEINRICH ♂.



**Figs 17-21:** Face of (17) *Adelotropis gabonense* nov.sp. ♀ and (18) *Adelotropis spinosus* nov.sp. ♀. Metasoma of (19) *Adelotropis gabonense* nov.sp. ♀ and (20) *Adelotropis spinosus* nov.sp. ♀. **Fig. 21:** Scutellum of *Adelotropis spinosus* nov.sp. ♀.

**Fig 22:** *Ctenocalus maculipennis rufopetiolatus* ssp.nov. ♀: Habitus from dorsal.