

MARIO BONI BARTALUCCI

## TIPHIIDAE FROM SOUTH EAST ASIA (Hymenoptera)

**Abstract.** Together with new records of some taxa, the following combinations under the name *Mesa* Saussure 1892 are established: *Myzine madraspatana* Smith 1855, *Myzine fuscipennis* Smith 1855, *Plesia mandalensis* Magretti 1883, *Myzine laeta* Bingham 1897, *Myzine burmanica* Bingham 1897, *Myzine bengalensis* Cameron 1898, *Myzine rothney* Cameron 1902, *Elis (Mesa) opacifrons* Turner 1908, *Elis (Mesa) ustulata* Turner 1908, *Elis (Mesa) extensa* Turner 1908, *Elis (Mesa) nursei* Turner 1908. The following Lectotypes are designated: *Myzine madraspatana* Smith 1855, *Myzine fuscipennis* Smith 1855, *Plesia mandalensis* Magretti 1883, *Myzine burmanica* Bingham 1897, *Myzine rothney* Cameron 1902, *Elis (Mesa) opacifrons* Turner 1908, *Elis (Mesa) ustulata* Turner 1908, *Elis (Mesa) extensa* Turner 1908, *Elis (Mesa) nursei* Turner 1908. The synonymy of *Myzine burmanica* Bingham 1897 with *Myzine laeta* Bingham 1897, is proposed. The following species are described: *Tiphia brachycera*, *Tiphia cyclonota*, *Tiphia dichroptera*, *Tiphia dolichaula*, *Tiphia erythromera*, *Tiphia laticlypeata*, *Tiphia lucai*, *Tiphia macroplaka*, *Tiphia mastigophora*, *Tiphia oxycittara*, *Tiphia platycalymma*, *Tiphia platykerama*, *Tiphia platysma*, *Tiphia rhousiocalyptra*, *Tiphia toreuta*.

**Riassunto.** *Tiphiidae dell'Asia sud orientale (Hymenoptera).*

Insieme a nuovi dati sulla distribuzione di alcuni taxa, vengono stabilite le nuove combinazioni sotto il nome *Mesa* Saussure 1892 di: *Myzine madraspatana* Smith 1855, *Myzine fuscipennis* Smith 1855, *Plesia mandalensis* Magretti 1883, *Myzine laeta* BINGHAM 1897, *Myzine burmanica* Bingham 1897, *Myzine bengalensis* Cameron 1898, *Myzine rothney* Cameron 1902, *Elis (Mesa) opacifrons* Turner 1908, *Elis (Mesa) ustulata* Turner 1908, *Elis (Mesa) extensa* Turner 1908, *Elis (Mesa) nursei* Turner 1908. Vengono designati i seguenti Lectotipi: *Myzine madraspatana* Smith 1855, *Myzine fuscipennis* Smith 1855, *Plesia mandalensis* Magretti 1883, *Myzine burmanica* Bingham 1897, *Myzine rothney* Cameron 1902, *Elis (Mesa) opacifrons* Turner 1908, *Elis (Mesa) ustulata* Turner 1908, *Elis (Mesa) extensa* Turner 1908, *Elis (Mesa) nursei* Turner 1908. Viene proposta la sinonimia di *Myzine burmanica* con *Myzine laeta*. Sono descritte le seguenti nuove specie: *Tiphia brachycera*, *Tiphia cyclonota*, *Tiphia dichroptera*, *Tiphia dolichaula*, *Tiphia erythromera*, *Tiphia laticlypeata*, *Tiphia lucai*, *Tiphia macroplaka*, *Tiphia mastigophora*, *Tiphia oxycittara*, *Tiphia platycalymma*, *Tiphia platykerama*, *Tiphia platysma*, *Tiphia rhousiocalyptra*, *Tiphia toreuta*.

**Key words.** *Mesa*, *Tiphia*, Oriental Region.

### Introduction

It can be easily deduced from related literature that only a few areas of this region have been investigated to a fair degree. Indonesia, Borneo and the border between South China and Vietnam/Laos, together with Cambodia and the archipelago of the Phillipines are almost virgin lands and highly probable sources of further biodiversity. Regarding Tiphiidae the borders of the oriental region are well defined westwards by the arid zone of Rajasthan and northwards by the Himalayan range ending at Assam. Eastwards, the border becomes somewhat unsettled, running through Southern China where Oriental and Eastern

Palaeartic fauna can mingle with more ease. The Japanese islands are considered as belonging to the Palaeartic Region, while Taiwan and the islands southwards are considered as belonging to the Oriental region. Here the old way of considering Myzininae as belonging to the Tiphiidae has been pursued. The Pilgrim's results (2008) from molecular analysis regarding the inclusion of the Myzininae in the Thynnidae family, even though highly reliable, probably require a hitherto unperformed morphological confirmation.

## Material and methods

### Abbreviations

<b>A</b> = height ( <b>Alt</b> itudo)	<b>mR</b> = microreticulation ( <b>micro Reticulum</b> ) or microreticulated
<b>a</b> = fore ( <b>an</b> terior)	<b>M</b> = Male ( <b>Mas</b> )
<b>CC</b> = costal cell ( <b>C</b> ella <b>C</b> ostae)	<b>OI</b> = lateral ocellum ( <b>O</b> cellum <b>I</b> lateralis)
<b>CD</b> = discoidal cell ( <b>C</b> ella <b>D</b> iscoidalis)	<b>Om</b> = median ocellum ( <b>O</b> cellum <b>m</b> edianum)
<b>chY</b> = hypostomal keel ( <b>car</b> ina)	<b>N<sub>1</sub></b> = pro <b>N</b> otum
<b>Hypostomae</b>	<b>N<sub>3</sub></b> = meta <b>N</b> otum
<b>cOc</b> = <b>car</b> ina Occipitis (-alis).	<b>p</b> = <b>p</b> uncture (-s) ( <b>p</b> unctum), punctured
<b>CM</b> = marginal cell ( <b>C</b> ella <b>M</b> arginalis)	<b>P</b> = <b>P</b> ropodeum
<b>CSM</b> = submarginal cell ( <b>C</b> ella <b>S</b> ub Marginalis)	<b>Pal</b> = labial palpus ( <b>P</b> alpus <b>I</b> abialis)
<b>em</b> = epimeron	<b>Pam</b> = maxillary palpus ( <b>P</b> alpus <b>m</b> axillaris)
<b>es</b> = episternum	<b>PoG</b> = genal bridge ( <b>P</b> ons <b>G</b> enarum).
<b>F</b> = female ( <b>Fo</b> emina).	<b>Sc<sub>1</sub></b> = <b>S</b> cutum.
<b>Hy</b> = <b>H</b> ypostoma	<b>Sc<sub>2</sub></b> = <b>S</b> cutellum.
<b>iS</b> = interspace ( <b>i</b> nfra <b>S</b> patium)	<b>spP</b> = propodeal spiracle ( <b>s</b> piraculum)
<b>I</b> = <b>I</b> lateralis (lateral)	<b>Propodei</b>
<b>LA</b> = width ( <b>L</b> Atitudo)	<b>Ssa</b> = subantennal sclerite ( <b>S</b> cleritis <b>s</b> ub antenna)
<b>LaSt<sub>2</sub></b> = mesosternal lobes ( <b>L</b> amellae meso <b>S</b> terni)	<b>sup</b> = parapsidal line ( <b>s</b> ulcus <b>p</b> arpsidalis)
<b>m</b> = median ( <b>m</b> edianus)	<b>Tsa</b> = Tuberculum supra antennam
	<b>X</b> = co <b>X</b> a

*Characters are listed giving priority to those shared by both females and males and at any case following the scheme: anterior→posterior, dorsal→ventral, basal→apical.*

*The frontal aspect of the head is performed perpendicularly to the virtual plane joining lateral ocelli and ventral border of clypeal disk; the dorsal and lateral aspects, perpendicular to each other, are performed along the virtual plane along the occipital carina (BONI BARTALUCCI 2004 & 2010). Abbreviations of wing structures are in italics. ( ) = digits between round brackets in the chorological items mean number of specimens. / / = delimit the single label. ! = Types examined. Italics characters within the description of labels mean handwriting.*

*The drawings of the gonosquamae/volsella apparatus show their inner and/or outer aspect, unless otherwise indicated. Genitalia are settled in a solidified drop of 5,5-dimethyl hidantoin formaldehyd (5,5-DMHF) on a transparent support. Hair and punctuation have been overlooked in most of the drawings.*

## MYZININAE

The fauna from the Oriental Region belongs exclusively to the Mesini tribe. As already mentioned (BONI BARTALUCCI 2004) the recorded exception is the sole female specimen collected by Bingham and named *Meria binghami* (Turner 1908) from Maulmain, Tenasserim (Myanmar = Burma); there are reasonable grounds to doubt an eventual shuffled label, given that no other Meriin specimen has been caught eastward of the Rajahstan region, neither before nor thenceforward, in more than two centuries of subsequent research.

### **Mesa SAUSSURE 1892**

The following valid taxa are hitherto described within the genus *Mesa* from Oriental Region: *Mesa dimidiata* (Guérin 1837) ♂ ♀ : India. *Mesa fuscipennis* (Smith 1855) ♀ : India. *Mesa mandibularis* (Smith 1869) ♂ : Central and South China. *Mesa mandalensis* (Magretti 1892) ♀ ♂ : Burma. *Mesa petiolata* (Smith 1879) ♂ India, Sri Lanka, Thailand. *Mesa laeta* (Bingham 1897) ♂ : Burma. *Mesa claripennis* (Bingham 1897) ♀ ♂ : India, Sri Lanka, Burma, Thailand. *Mesa bengalensis* (Cameron 1898) ♀ : East India. *Mesa apimacula* (Cameron 1902) ♀ : India. *Mesa rothney* (Cameron 1902) ♀ : East India, Thailand. *Mesa ustulata* (Turner 1908) ♀ : Burma, Thailand. *Mesa opacifrons* (Turner 1908) ♀ : Burma, Thailand. *Mesa extensa* (Turner 1908) ♂ : Burma. *Mesa nursei* (Turner 1909) ♂ : INDIA. *Mesa karunaratnei* Krombein 1982 ♀ ♂ : Sri Lanka. *Mesa flavipennis* Krombein 1982 ♀ ♂ : Sri Lanka. *Mesa formosensis* Tsuneki 1986 ♀ : Taiwan. *Mesa alishana* Tsuneki 1986 ♂ : Taiwan. *Mesa chiaensis* Tsuneki 1986 ♀ : Taiwan.

### **Designation of lectotypes, new synonymy and combinations.**

#### ***Mesa madraspatana* (Smith 1855) comb. nova**

*Myzine madraspatana* Smith 1855: 72

*Elis (Mesa) dimidiata*: TURNER (1912: 715)

Lectotypus ♀ (here designed in order to ensure the name's proper and consistent use):

India = /madras/ /Type/ (rounded with red outer ring) /madraspatana Type Sm/, BMNH !

Actual name. *Mesa dimidiata* (GUÉRIN 1837)

Examined specimens. ♂ India = (1) /India Karnataka 20 km S of Kamakapura 19.VII.1980 K.D.Ghorpade leg/, ZMUC

#### ***Mesa fuscipennis* (Smith 1855) comb. nova**

*Myzine fuscipennis* Smith 1855: 72 ♀

*Elis (Mesa) fuscipennis*: TURNER (1912: 717)

Lectotypus ♀ (here designed in order to ensure the name's proper and consistent use):

India = /42 10/ (rounded) /Type/ (rounded with red outer ring) / fuscipennis Type Sm/, BMNH !

#### ***Mesa laeta* (Bingham 1897) comb. nova**

*Myzine laeta* Bingham 1897: 70 ♂

*Elis (Mesa) laeta*: TURNER (1912: 721-722)

Lectotype ♂ : Burma = /Tenasserim Maulmain 6-94 Bingham coll./ /Myzine laeta ♂ Bingham Cotype/ /Syntype/ (rounded with blue outer ring) /Col. Bingham 1902-120/ /possibly the holotype . No further specimens det. MC. Day 1979/ /Lectotypus Myzine laeta Bingham Design Gorbатовsky 1981/ /Mesa laeta (Bingham) Gorbатовsky det 1987/, BMNH !

*Myzine burmanica* Bingham 1897: 70. **syn. nova**

#### ***Mesa burmanica* (Bingham 1897) comb. nova**

*Elis (Mesa) burmanica*: TURNER (1912: 722)

Holotypus ♂ . Burma = /Tenasserim Amherst 1-94 Bingham coll./ /Myzine burmanica ♂ Bingham/ /Holotype/ (Rounded with outer red ring) /Mesa burmanica (Bingham) Gorbатовsky 1987/, BMNH !

Actual name: *Mesa laeta* (Bingham 1897)

***Mesa bengalensis* (Cameron 1898) comb. nova**

*Myzine bengalensis* Cameron 1898: 21 ♀

*Elis (Mesa) bengalensis*: TURNER (1912: 716)

Lectotypus ♀ (here designed in order to ensure the name's proper and consistent use):  
India = /*Myzine bengalensis* Cam Type Poona/ /Type Hym. 759 *Myzine bengalensis* Cameron Ispecm Hope dept. Oxford/, OUM !

***Mesa rothney* (Cameron 1902) comb. nova**

*Myzine rothney* Cameron 1902: 88 ♀

*Elis (Mesa) rothney*: TURNER (1912: 717)

Lectotypus ♀ (here designed in order to ensure the name's proper and consistent use):  
India = /*Myzine rothney* Cam. Type Khasia/ /Type Hym. 761 *Myzine rothney* Cameron Hope Dept. Oxford/, BMNH !

Examined specimens. ♀: Thailand = (2) /Thailand Chiang Mai province Doi Suthep 14 1500m 2.X.1981 ZMC leg/

***Mesa opacifrons* (Turner 1908) comb. nova**

*Plesia (Mesa) opacifrons* Turner 1908: 509 ♀

*Elis (Mesa) opacifrons*: TURNER (1912: 719)

Lectotypus ♀ (here designed in order to ensure the name's proper and consistent use):  
Burma = /Tenasserim Salween Valley 7-94 Bingham coll./ /*Plesia (Mesa) opacifrons* Type Turner/ /Type/ (rounded with red outer ring) /Col. Bingham 1902-120/, BMNH !

The name given by Turner means opaque frons and originates from a subtle layer of a sort of wax deposited on holotype, but not consistent with true integument which is really smooth and shining like in other specimens.

Examined specimens. ♀: Thailand =(1) /Thailand Doi Suthep Pui natn. Park Konthathan waterfall area 600 20-27.X.1979 ZMC exp/, MZUF; (3) /Thailand 7km NW of Fang Hort.exp.Station 20.X-2.XI.1979 ZMC exp/, ZMUC; (1) / Thailand Doi Inthanon N.P. Siripum 4.X.1981 750m ZMC leg/, ZMUC; (1) /Thailand Doi Inthanon N.P. Vajratarn 10.X.1981 750m ZMC leg/, ZMUC; (1) /Thailand Doi Inthanon N.P. road to summit 800-1800m 28.X.1981 ZMC leg/, ZMUC

***Mesa ustulata* (Turner 1908) comb. nova**

*Plesia (Mesa) ustulata* Turner 1908: 510 ♀

*Elis (Mesa) ustulata*: TURNER (1912: 718)

Lectotypus ♀ (here designed in order to ensure the name's proper and consistent use):  
Burma = /Tenasserim Yunzalin Valley Bingham coll./ /*Plesia (Mesa) ustulata* Type Turner/ /Type/ (rounded with red outer ring) /Col. Bingham 1902-130/, BMNH !

Examined specimens. ♀: Thailand =(2) /Thailand Chiang Mai Province Doi Saket 450m 3.X.1981 ZMC leg./, (1) ZMUC (1) MZUF

***Mesa extensa* (Turner 1908) comb. nova**

*Plesia (Mesa) extensa* Turner 1908: 511 ♂

*Elis (Mesa) extensa*: TURNER (1912: 721)

Lectotypus ♂ (here designed in order to ensure the name's proper and consistent use):  
Burma = /Upper Burma Maymyo Rd 2000 5.9.98 Bingham Coll./ /*Plesia (Mesa) extensa* Type Turner/ /Type/ (rounded with red outer ring) /Col. Bingham 1902-120/, BMNH !

Examined specimens. ♂: Thailand =(2) /Thailand Chiang Mai Province Vajratarn 750m 10.X.1981 ZMC leg./, ZMUC

***Mesa nursei* (Turner 1908) comb. nova**

*Plesia nursei* Turner 1909: 480-481 ♂

*Elis (Mesa) nursei*: TURNER (1912: 721)

Lectotypus ♂ (here designed in order to ensure the name's proper and consistent use):  
India = /Simla 9.98/ // *Plesia nursei* Type Turner/ /Type/ (rounded with red outer ring) /Col. CG.Nurse Collection 1920-32/, BMNH !

## New records

### ***Mesa dimidiata* (Guérin 1837)**

*Myzine dimidiata* Guérin 1837: 584

Examined specimens. ♂: India =/India. Karnataka 20 km S of Kamakapura 19.VII.1980 Ghorpade Ig/, ZMUC

### ***Mesa petiolata* (Smith 1855)**

*Myzine petiolata* Smith 1855: 72

Examined specimens. ♀: India = (1) /S.India. Karnataka Bangalore Allalsandra 900m 26-29.X.1977 Zool. Mus. Copenhagen exp./, ZMUC; (1) /S.India. Karnataka Bangalore Allalsandra 900m 30.XI.1977 Zool. Mus. Copenhagen exp./, ZMUC

Examined specimens. ♂: India = (1) /S.India. Karnataka Mudigere area c900m 2-10.XI.1977 Zool. Mus. Copenhagen exp./, ZMUC

### ***Mesa apimacula* (Cameron 1902)**

*Plesia apimacula* Cameron 1902: 272

*Mesa apimacula*: GORBATOVSKY (1981: 385)

Lectotypus ♀: India = /Deesa 1.00/ /*Plesia apinacula cam. Type deesa*/ /col. C.G. Nurse Collection 1920-72/ /Type/ (rounded with red outer ring) /Syntype/ (rounded with blue outer ring) /Lectotypus *Plesia apimacula* Cameron design. Gorbatovsky 1981/ /Mesa apimacula (Cam) Gorbatovsky det. 1987/, BMNH !

Examined specimens. ♀: India = (1) /S.India Karnataka Kemmangundi 1200-1500m 11-16.XI 1977 ZMC exp/, ZMUC

## TIPHIINAE

Until present roughly 140 taxa of the subfamily have been recorded from the Oriental Region. One is *Cyanotiphia ruficauda* Cameron 1907, a monotypic genus from Malaysia, while the vast majority belong to *Tiphia* Fabricius 1775 "sensu lato". Some among the latter 6 have been ascribed to the subgenus *Jaynesia* Allen & Jaynes 1930 and one to the subgenus *Punctotiphia* Tsuneki 1986. The relative data can be found in the ALLEN's (1975) chief work on *Tiphia* from the Indian subcontinent, in the Hymenopterorum Catalogus Subfamily Tiphiinae by G.J. Arbouw published in 1985 and in the successive publications by TSUNEKI (1985 & 1986) on the Japanese and Formosan fauna respectively.

A high degree of endemisms have been hitherto detected within fauna both from islands like Sri Lanka (21) and Taiwan (29) and from arcipelagos like the Philippines (3), the last hitherto poorly investigated. 53 taxa in the aggregate correspond to a particularly high percentage: 38%. Fauna from larger islands such as Indonesia and Borneo are practically unknown. The new taxa described here do not remarkably alter the state of the art.

## Morphological terms and tools

In earlier studies regarding subfamily the genitalia have only rarely (ALLEN 1966) been considered a valid systematic tool at specific level. In this study their examination revealed their utility for the purpose to achieve specific discrimination amongst otherwise very similar taxa in external morphology. In particular, the shape of the gonosquamae in lateral aspects and the aedeagus has proven very useful. Volsella has been overlooked, either because its shape shows less detectable diversification or because it is not easily detached from gonosquama without causing damage. Moreover both the shape of the head/ clypeus and process on 5<sup>th</sup> sternum have been considered of primary importance as useful tools to discriminate taxa; where they are different we can deem that we are dealing with different taxa at an high degree of probability. Other morphological characteristics such as palpi, the shape of the first sternum and apical cells of the forewing could act as a reliable diagnostic tool. The shape and relative proportions of areola on the horizontal propodeum reveal some fluctuation, therefore are not always a very reliable characteristic to be used; nevertheless their eventual discrepancies merit deeper investigation. The features of the surface of 6<sup>th</sup> tergum in the females is often not useful to discriminate single species since

it shows too few variations, difficultly defined. For the remainder, Allen's tools and methods (1930 & 1975) have been largely used with very slight modifications. As with Myzininae there is a differentiated (more often than not by a well developed carina in the males) vertical area between the horizontal disk and collar of **N**<sub>1</sub>, which has been called pronotal plate.

The term rib is used to indicate the prominent processes delimiting areola on **P**.

To avoid undue repetitions here a list of characters occurring in all the taxa (unless otherwise stated) in addition to those indicated by ALLEN & JAYNES (1930) and BONI BARTALUCCI (2010):

- **p** on clypeus and lower frons denser than in the remainder of head (both sexes); - anterior surface of **es**<sub>2</sub> normally with densely packed minute **p** (both sexes); - omaulus well expressed downward till signum on **es**<sub>2</sub> (both sexes); - tegula trespassing apical **Sc**<sub>1</sub> but not getting half the **Sc**<sub>2</sub> (both sexes); - posterior transversal carina on **P** (both sexes)-lateral **P** transversally wrinkled (both sexes); - narrow long sensorium on hind tibia (males); - **CM** more or less exceeding tip of **CSMII** (males) - preapical row of **p** on 1<sup>st</sup> tergal disk (both sexes); - well differentiated 1<sup>st</sup> laterotergum (both sexes); - 1<sup>st</sup> tergum without gradulus (both sexes); - subapical stripe of single or plural rows of **p** on terga. (both sexes); - 1<sup>st</sup> sternum with apical transversal groove (both sexes); - colpus of 2<sup>nd</sup> tergum bordered by adjacent large groove with numerous buttressing ridges normally longer and stronger in males; - rows of whitish hair along apical edge of terga and sterna longer than elsewhere (both sexes);- **p** on terga becoming denser from 2<sup>nd</sup> toward 6<sup>th</sup> (both sexes). 7<sup>th</sup> tergum with well impressed dense **p** without or with **iS** narrower than their diameter (males).

### **New Species**

#### ***Tiphia brachycera nova sp.***

Holotypus ♂: Philippines = /Philippines Tawi Tawi Lapid at Manalik Channel 19 Nov.1961 Noona dan. Exp. 61-62/, ZMUC.

Paratypi ♂: Philippines = (3) /Philippines Tawi Tawi Lapid lapid at Manalik Channel 19 Nov.1961 Noona dan. Exp. 61-62/, ZMUC.

Male. Holotype. Figs. 1- 11. Measurements: body length = 5.5 mm

Black. Brown: eye, mandible, most of clypeus, antennae, tegulae, viens and pterostigma, legs but coxae, apex of 7<sup>th</sup> tergum and 6<sup>th</sup> sternum. Wings hyaline.

Frons with not punctuated areas larger than mid ocellus. Genae bi-punctuated. Flagellum only 1.3 times longer than width of the head. Mandible without prominent sub apical tooth. Low laminated keel along fore border of **N**<sub>1</sub> disk followed by a large groove along it bearing regular and strong buttressing ridges; lateral **N**<sub>1</sub> with a well impressed arched groove; the disk with only weak sparse **p** (3<sup>rd</sup> degree density) as well as most of the head and mesosoma. **em**<sub>3</sub> mostly smooth, **es**<sub>3</sub> with evident (at x20) micro reticulation. Areola and posterior edge of **P** disk delimited by strong ribs; all the horizontal surface bears feeble micro sculpture. Lateral **P** with irregularly spaced few wrinkles. Posterior area of **P** with strong buttressing ridges along its upper edge forming sort of large **p**; the remainder of the surface with micro punctures progressively denser downward. Basal hind tibia feebly keeled. 1<sup>st</sup> tergum with almost smooth disk; the pre apical row of pits preceded by a sort of broad shallow gradulus wearing out laterally. 2<sup>nd</sup> tergum with the post gradular arched groove bearing regular strong buttressing ridges like in the vast majority of the species. 1<sup>st</sup> Sternum with an almost not punctuated surface, having laterally two short apical grooves parallel to its sides. Process on 5<sup>th</sup> sternum well present, arched and subtending inward a shallow hollow. Hair whitish throughout but on metasoma where is brownish. Microreticulation more or less detectable on most of the body.

Female. Unknown

Ecology. Unknown

Derivation nominis. From Greek words βραχύς (= short) and κέρα (= horn).

#### ***Tiphia cyclonota nova sp.***

Holotypus ♂: Philippines = /Philippines. Palawan Mantalingajan Pinigian 600M 8 Sept 1961 Noona Dan. Exp. 61-62/ /caught Malaise trap inside forest/, ZMUC

Male. Holotype. Figs. 12-19. Measurements: body length = 7 mm  
Black. Brown: mandible tip, apex of scape, flagellum, eyes, legs but coxae, pterostigma, semitransparent apical stripe of **N**<sub>1</sub> disk, veins and tegulae. Wings hyaline.  
Head with a median ridge on the lower frons; very sparse **p** throughout, bipunctate by very small **p**; a regular simple row of medium impressed **p** along inner border of the eyes; mandible without sub apical tooth; **mR** detectable at x30 throughout; well expressed median ridge on the frons. Lamellar carina with short and weak buttressing ridges along fore border of **N**<sub>1</sub> disk; prominent (semi-rounded in frontal aspect) ridge on the pronotal plate. Shallow primary **p** of 3<sup>rd</sup> degree on its disk and on **Sc**<sub>1</sub> **Sc**<sub>2</sub> and post-scutellar area; lateral **N**<sub>1</sub> without any groove, with only some wrinkles on its posteroventral corner. **es**<sub>1</sub> with shallow **p** and bipunctate throughout by smaller **p**. **es**<sub>2</sub> with **p** like pronotal disk. **em**<sub>3</sub> with weak wrinkles on its upper half. Inner surface of hind tibia clearly keeled, sensorium elongated. **CM** of forewing strongly exceeds **CMII** toward apical edge. Horizontal **P** with only **mR**. Lateral ribs of areola weak and buttressed by very small and short ridges, the median rib larger basally; all of them vanishing before reaching posterior edge which is bordered by a very weak carina along which feeble wrinkles spring forward. Posterior **P** smooth and shining on its upper half. Lateral **P** wrinkled. Lateral outline of **P** is regularly rounded without evident angle between horizontal and posterior areas. 1<sup>st</sup> and 2<sup>nd</sup> terga with sparse very small and shallow weak **p** which become stronger on the following terga. Colpus on 2<sup>nd</sup> tergum wears out medially and the contiguous groove is smooth and completely lacking in buttressing ridges. Sterna with sparse and small **p** too. 1<sup>st</sup> sternal disk shining with very small and sparse small **p** and a short gradulus at its apical corner. Tubercle on 5<sup>th</sup> sternum poorly prominent and weak, almost parallel to sternal edge.

Female. Unknown

Ecology. Unknown

Derivatio nominis. From Greek words κύκλος (= rounded) and νότον (= back).

Note. Well distinct taxon by the ridge on the pronotal plate, peculiar shape of propodeum and basal 2<sup>nd</sup> tergum; all of them are hitherto unique character states in the Old World Tiphiini, the last resembling female Silifkini. Following the ALLEN's key (1975) we run to couplet 29 (*T. pecki* Allen 1975), following TSUNEKI's key to couplet 9 (*T. puliensis* Tsuneki 1986). It is very known from them by the shape of head in frontal aspect, beside above said characters.

### ***Tiphia dichroptera nova* sp.**

Holotypus ♂: Philippines = /Philippines. Palawan Mantalingajan Tagenbung 1150 meter 16 Sept. 1961 Noona Dan. Exp. 61-62/, ZMUC

Paratypi ♂: Philippines = (2) /Philippines. Palawan Mantalingajan Tagenbung 1150 meter 16 Sept. 1961 Noona Dan. Exp. 61-62/, ZMUC; (2) Philippines. Palawan Mantalingajan Tagenbung 1150 meter 17 Sept. 1961 Noona Dan. Exp. 61-62/, (1) ZMUC, (1) MZUF; (1) Philippines. Palawan Mantalingajan Tagenbung 1150 meter 20 Sept. 1961 Noona Dan. Exp. 61-62/, ZMUC

Male. Holotype. Figs. 20-28. Measurements: body length = 7.4 mm

Black. Brown: eye, mandible, antenna, semitransparent tegula and veins, pterostigma, apical 7<sup>th</sup> tergum and 6<sup>th</sup> sternum. Apical half of forewing darkened; apical hind wing less darkened.

Frons with sparse **p**; large impunctate areas around ocelli and on rithe vertex; temples and genae bipunctate, with every sparse **p** surrounded by many minute **p**. Toruli larger than distance between them and eyes. No preapical tooth on mandible. Progena enlarged medially toward **PoG**. Fore border of **N**<sub>1</sub> disk with a regular carina without buttressing ridges, present only along its lateroventral extension; disk with very sparse weak **p**; lateral **N**<sub>1</sub> impunctate for its upper ¾ with a concave gradulus delimiting its ventral fourth.

Sparse irregularly spaced **p** also on **Sc**<sub>1</sub>, **Sc**<sub>2</sub> and **es**<sub>2</sub>; **es**<sub>1</sub> bipunctate. Horizontal **P** without **p**; upper fourth of posterior surface smooth and shining, ventral ¾ bipunctate by minute **p** among sparse larger **p**; areola with lateral and median ribs well produced and complete with feeble buttressing wrinkles. Tip of **CM** of forewing exceeding tip of **CMII**. Distinct keel on the apical inner surface of hind tibia. 1<sup>st</sup> tergum with very few and weak **p**, becoming a bit denser in the remainder of terga and 2<sup>nd</sup> to 6<sup>th</sup> sterna; 1<sup>st</sup> sternum almost **p**-less too. Long (about twice diameter of **mO**), strong buttressing ridges along colpus of 2<sup>nd</sup> tergum.

**mR** (well detectable at x40) covers most of the body, clypeal disk and legs included, becoming weaker on the frons, anterior surface of femurs and tibiae, upper **em<sub>3</sub>**, apical 2<sup>nd</sup> sternum.

Note. Following the ALLEN's key (1975) we run to couplet 29 (*T. pecki* Allen 1975); in TSUNEKI's key (1986) we get couplets 29 or 30 (*T. bunun* Tsuneki 1986, *T. wushita* Tsuneki 1986, *T. yonagunensis* Tsuneki 1986). It differs from all of them by the coloured wings, enlarged progena near **PoG**, different shape of head, **N<sub>1</sub>** disk, genitalia and other minor characters in the **p**.

Female. Unknown

Ecology. Unknown

Derivatio nominis. From the Greek words δίχρους (= bicolour) and πτερόν (wing).

### ***Tiphia erythromera nova sp.***

Holotypus ♂: Philippines = /Philippines. Palawan Mantalingajan Pinigisan 600 meter 22 Sept. 1961 Noona Dan. Exp. 61-62/, ZMUC

Paratypus ♂: Philippines = /Philippines. Palawan Mantalingajan Pinigisan 600 meter 3 Sept. 1961 Noona Dan. Exp. 61-62/, ZMUC

Paratypus ♀: Philippines = /Philippines. Palawan Mantalingajan Pinigisan 600 meter 22 Sept. 1961 Noona Dan. Exp. 61-62/, ZMUC

Male. Holotype. Figs 29-37. Measurements: body length = 10.5 mm

Black. Brown: eye, mandible, scape, upper side of flagellum, **LaSt<sub>2</sub>**, back surface of hind Examined specimens. femur, most of tarsi, pterostigma and semitransparent veins, apical metameri. Ferruginous brown are ventral flagellomeri, remainder of legs but coxae (black). Fore wing slightly darkened, hind wings hyaline. Whitish hair on most of the body, brownish on last four metameri.

Mandible with a preapical denticle. Frons and vertex with irregularly and sparsely **p**; distinct long median furrow on the frons; temples and genae bipunctate. Lower genae near **PoG** almost **p**-less and shining. **PoG** narrow and prominent. Toruli larger than their distance from eye. Well expressed carina with buttressing ridges along fore border of **N<sub>1</sub>** disk; its surface with small shallow **p** and apical smooth stripe; lateral **N<sub>1</sub>** with few **p** uppermost, a sub-vertical shallow but distinct gradulus at its middle and fine wrinkles on postero-ventral corner. **Sc<sub>1</sub>** with irregular more impressed **p** than on **N<sub>1</sub>**. **Sc<sub>2</sub>** almost **p**-less. Post-scutellar area prominent with small **p**. Tegula with a narrow deep groove along its postero-lateral edge. **es<sub>1</sub>** and fore coxa sparsely, mid and hind coxa more densely **p**. **es<sub>2</sub>** with **p** progressively becoming less dense from omalulus backward and sparsely bipunctate by smaller **p**. **em<sub>3</sub>** smooth. **es<sub>3</sub>** with a strong microreticulation. Hind tibia with a shining longitudinal keel on its inner surface, sensorium flushed with surrounding surface. Most of the horizontal surface of **P** with fine, dense irregular sculpture, with strong **mR** laterally; lateral rib of areola and posterior carina form a regular arch buttressed by strong wrinkles; mid rib of areola incomplete and irregular; posterior area covered throughout by piliferous minute **p** settled in sub-horizontal rows. 1<sup>st</sup> tergum with well impressed sparse **p** and large **p**-less lateral areas; 2<sup>nd</sup> to 6<sup>th</sup> sparsely **p**; 7<sup>th</sup> densely **p**, almost sculptured. 1<sup>st</sup> sternal disk basally with irregular **p**, almost **p**-less apically with an arched short groove at its apical corner; 2<sup>nd</sup> sternum with a median protuberance well evident in lateral aspect (like in *T. aurata* Allen 1975); 2<sup>nd</sup> to 6<sup>th</sup> sterna with surface like terga; very shallow and short, almost undetectable tubercle on 5<sup>th</sup> sternum. **mR** well detectable on most of the body but lower genae, back surface of hind femur, 1<sup>st</sup> sternum and sub-vertical 1<sup>st</sup> tergum.

Female. Paratype. Figs. 38-40. Measurements. Body length = 14 mm

Black, Brown: dorsal flagellum, mandible, legs but ferruginous portions, most of coxae, semitransparent tegulae, spurs, pterostigma and veins. Ferruginous: ventral flagellum, mid and hind trochanters, femurs.

Sparse **p** on lateral frons, vertex (which shows smaller ones along **cOc**), temples and genae. Horizontal fore border of **N<sub>1</sub>** disk without carina; anterior surface with sparse **p**, delimited by irregular row of larger and stronger **p** from apical smooth surface (which is twice high than punctured surface in the middle); lateral **N<sub>1</sub>** with **mR** above the rounded gradulus delimiting postero ventral corner which shows many regular fine wrinkles. Colpus on **Sc<sub>1</sub>** not connected to **sup**, **Sc<sub>2</sub>** and postscutellar area irregularly **p**. **es<sub>1</sub>**, **es<sub>2</sub>** and fore coxa with sparse shallow **p**. **em<sub>3</sub>** with finely wrinkled upper half and smooth ventral



surface. Inner surface of hind tibia clearly keeled, sensorium gutta-like and flushed with smooth and shining surrounding surface. Well developed groove on hind basal tarsomerus. Horizontal area of P with inextricable mixture of **mR**, shallow sculpture and sparse **p**; area of **spP** clearly delimited by a regular rib; posterior surface densely finely sculptured with sparse **p** becoming denser along surrounding carinae. Sparse **p** on terga and sterna. 1<sup>st</sup> sternum with a median stripe of dense minute **p** becoming sparser laterally and clear furrow at its apical corner. Very small tubercle on 5<sup>th</sup> sternum. Detectable **mR** at x40 on apical clypeus, frons, progena and lower genae, **es<sub>3</sub>**, inner hind tibia 1<sup>st</sup> sternum.  
Ecology. Unknown

Derivatio nominis. From Greek words ερυθρός (= red) and μηρός (= thigh)

Note. Following ALLEN (1930) this male meets *T. cilicincta* Allen & Jaynes 1930 if we overlook the small tubercle of 5<sup>th</sup> sternum, otherwise *T. malayana* Cameron 1910; from both of them is heavily distinct by different head in frontal aspect and median furrow on the frons, pronotal shape and its lateral surface, presence of tegular groove, shape of 2<sup>nd</sup> sternum. Also *T. pecki* Allen 1975 which it meets in ALLEN (1975) at couplet 29 is different taxon because of all that and genitalia. None taxon can be found close to it in TSUNEKI (1986). The female looks like a big *T. davarae* Allen 1975 from which is known by different head shape, colour of flagellum, different disk and sides of **N<sub>1</sub>**, **Sc<sub>1</sub>**, **es<sub>3</sub>**, horizontal **P**, size. The large smooth apical stripe on **N<sub>1</sub>** disk and shape of its lateral area, well defined ribs around **spP** and areola, surface of 1<sup>st</sup> and 2<sup>nd</sup> sterna severe it from *T. khasiana* Cameron 1902 and *T. rufomandibulata* Smith 1855.

### ***Tiphia laticlypeata nova sp.***

Holotypus ♂: Thailand = /Cheng Mai Province Fang Horticult. Exp. Station 550-600 m 22.X.1981 Zool. Museum Copenhagen leg./, ZMUC

Paratypus ♀: Thailand = /Cheng Mai Province 7 km NW of Fang Horticult. Exp. Station 30.X-2.XI.1979 Zool. Museum Copenhagen leg./, ZMUC

Male. Holotypus. Figs. 41-49. Measurements = 6.5 mm. It lacks final four left flagellomeres. Black. Brown: eye, , most of flagellum, upperside of the scape, tip of mandible, **LaSt<sub>2</sub>**, , hind femur and tibia, most of tarsi, apical metameri, semitransparent tegula and apex of sterna. Ventral scape and flagellum, most of mandible, remainder of legs but coxae are light brown. Yellowish hair throughout.

Frontal head, clypeus and lower frond included, with sparse **p** and large **p**-less areas around ocelli and on vertex; temples and genae bipunctate but smooth areas near **PoG**, which is not featured by a prominent ridge but by a suture like a stitch; progena enlarged Mandible without preapical tooth. Progena (lateral extension of hypostoma) very large along posterior **FoO**. Fore border of **N<sub>1</sub>** disk with a carina buttressed by strong long (as long as half its height in the middle) ridges and irregular variously sized **p**. Lateral area of **N<sub>1</sub>** with irregularly spaced **p** on the middle and a strong concave gradulus, wrinkled uppermost, on its lower fourth. Pon Fore and hind coxae with sparse medium **p**, mid coxa with denser smaller **p**. **p** on **Sc<sub>1</sub>** like **N<sub>1</sub>** disk; **Sc<sub>2</sub>** and postscutellar area with smaller **p**. **es<sub>1</sub>** bipunctate. **es<sub>2</sub>** with sparse **p** throughout but along omaulus where a rough sculpture exists. **es<sub>3</sub>** covered by **mR**. Horizontal area of **P**, inside and outside areola mostly smooth and shining; lateral ribs of areola regular and without lateral buttressing ridges; the mid one larger, broader and incomplete; long but weak buttressing ridges originate from posterior carina; regular polished rib limits area around **spP**; posterior area with few large **p** along posterior carina and smaller sparse **p** on the remainder surface. lateral P with about 20 strong wrinkles. Hind coxa with a strong longitudinal lamellar carina on its inner border. Hind tibia not keeled. Terga and sterna with weak and sparse **p**, becoming denser from 1<sup>st</sup> toward 7<sup>th</sup>. 1<sup>st</sup> sternum with impressed groove at apical corners. Well produced tubercle on 5<sup>th</sup> sternum with a sub rectilinear uplifted edge.

Female. Unknown

Ecology. Unknown

Derivatio nominis. From Latin words latus (= wide) and clypeus (= shield).

Note. Its main distinctive features are the large clypeal disk, the strong buttressing ridges on pronotal disk, the large median progena, the lamellar carina on hind tibia; the latter character state is shared with *T. birganjiae* Allen 1975 which has also similar genitalia but

from which it is well known by different colour of legs, shape of tubercle on 5<sup>th</sup> sternum (rounded uplifted edge in Allen's taxon) besides the above said characters.

***Tiphia lucai nova sp.***

Holotypus ♂: Vietnam = /N-Vietnam Pho Tho Prov., Xuan Son National Park, 500m13-17.VI.2010 L. Bartolozzi & S. Bambi legit (N° Mag. 2894)/, MZUF.

Paratypus ♂: Vietnam = /N-Vietnam Pho Tho Prov., Xuan Son National Park, 500m13-17.VI.2010 L. Bartolozzi & S. Bambi legit (N° Mag. 2894)/, MZUF.

Paratypus ♀: Vietnam = /N-Vietnam Pho Tho Prov., Xuan Son National Park, 500m13-17.VI.2010 L. Bartolozzi & S. Bambi legit (N° Mag. 2894)/, MZUF.

Male. Holotypus. Figs. 50-59. Measurements: body length = 9 mm

Black. Brown: eye, mandible tip, calcaria, veins and pterostigma, shadows on tarsi. Apical **N<sub>1</sub>** disk, tegula, **LaSt<sub>2</sub>** and apical border of metameri are black and opaque. Wings darkened. Yellowish hair throughout, but brown hairs on 7<sup>th</sup> tergum.

Frons and vertex with well impressed, irregularly spaced **p** (**iS** shorter than their diameter along eye and between **OI**, elsewhere longer). Lower frons with a short median ridge. Vertex with a large abruptly descending posterior half which is shagreened along **cOc**. Temples and mid genae densely haired by dense deep piliferous **p**. Lower genae smooth with very sparse shallow **p**. **cOc** with a small diameter, half the width of the head. Temples and mid genae very thin, 1/3 width of the eye in lateral aspect. Clypeal lamella with a shallow notch and no **p**-less areas. Scape with a longitudinal **p**-less stripe on its inner (anterior) side. Fore border of **N<sub>1</sub>** disk with a strong carina buttressed by quite long irregular ridges; pronotal plate slightly convex so that it is detectable in dorsal aspect; lateral area mostly smooth and shining, with a gradulus separating the postero ventral corner which has weak irregular wrinkles. **Sc<sub>1</sub>** and **Sc<sub>2</sub>** irregularly **p**. **es<sub>1</sub>** bipunctate by sparse small **p** among larger ones. Large deep **p**, with **iS** smaller than their diameter, on upper **es<sub>2</sub>** disk, becoming sparse and weaker toward ventral area with secondary small **p**; omaulus well expressed with regular contour. **es<sub>3</sub>** finely wrinkled uppermost, smooth elsewhere. **em<sub>3</sub>** shagreened. Lobes of **St<sub>3</sub>** deeply and completely hollowed. Fore and mid coxa bipunctate. Tegula with an arched shallow groove near apical edge. Hind coxa more densely **p** with acutely keeled inner (posterior) edge. Horizontal **P**: - lustrous surface; - very high lateral ribs of areola and posterior carina, from which obscure wrinkles cross area toward **spP**; - median rib of areola thicker, low and very short; - strong transversal rib bisect it obliquely; - area surrounding **spP** completely delimited by a strong inner rib; - area behind **spP** deeply hollowed. Complete lateral carina between lateral and horizontal surface. Posterior area of **P** smooth and shining on its upper fourth, with small piliferous **p** becoming denser toward apex. Lateral area with about 15 regularly spaced strong wrinkles. 1<sup>st</sup> tergum almost **p**-less throughout, with very sparse small and shallow **p** and without any stripe of minute **p** on its vertical surface; subapical stripe made by stronger single **p**, a bit depressed; following terga progressively more densely **p**; last tergum strongly compressed apically. 1<sup>st</sup> sternal disk flattened and smooth. 2<sup>nd</sup> sternum with scattered shallow **p**. 3<sup>rd</sup> to 5<sup>th</sup> sterna basally **p**-less, with an irregular narrow groove between subapical row of **p** and edge. No lateral tubercle on 5<sup>th</sup> sternum. 6<sup>th</sup> sternum apically compressed and keeled, without notch at its apex. **mR** on scape, pedicel, clypeus, mid **es<sub>2</sub>**, **LaSt<sub>2</sub>**, hind coxa and most of legs but tarsi, 3<sup>rd</sup> to 7<sup>th</sup> terga, 3<sup>rd</sup> to 6<sup>th</sup> sterna.

Female. Paratype. Figs. 60-62. Measurements: body length = 10 mm

Black. Brown: most of mandible, shadows on the scape and legs, semitransparent apical **N<sub>1</sub>** disk, the whole tegula, veins and pterostigma, **LaSt<sub>2</sub>**, metameral borders.

Sparse **p** on frons and vertex, with many smooth areas larger than ocelli; more dense **p** on temples and mid genae, still sparsely on lower genae. **PoG** as long as 2<sup>nd</sup> flagellomeres; clypeus with a smooth and shining rounded lateral extension under which a very thin transparent lamella exists. Apical extension on 3<sup>rd</sup> element of **Pam**, Low complete carina along fore border of **N<sub>1</sub>** disk, where scattered **p** exist; lateral area mostly covered by **mR**, with a transversal large groove separating the lower postero-ventral corner. Colpus on **Sc<sub>1</sub>** connected to parapsidal lines by a continuous gradulus and irregularly **p** like **Sc<sub>2</sub>**. **es<sub>1</sub>** sparsely **p**. **es<sub>2</sub>** bipunctate; subtegular area well detectable and as large as tegula itself. **em<sub>3</sub>** with **mR** on ventral 2/3, finely sculptured uppermost. **St<sub>3</sub>** flattened and bipunctate. Fore and hind coxae sparsely **p**, mid coxa with dense piliferous

small **p** basally. Hind tibia broadly keeled with a gutta like sensorium. No groove on hind basal tarsomerus. Areola slightly tightened apically; lateral and mid ribs of areola straight and moderately prominent; the mid one worn out just a bit before posterior carina; surface of horizontal area completely covered by regular **mR** without any sculpture and/or ribs or wrinkles (apart areola) and also without differentiated area surrounding **spP**. Lateral area with densely packed oblique wrinkles weakening downward to confuse with striolation of the underneath **es<sub>3</sub>**. Posterior area concave and laterally smooth, with a median bipunctate stripe and a median ridge on its basal 2/3. Sparse minute **p** on the vertical surface; the horizontal disk with only a median row of few (about 10) scattered small and shallow **p** and subapical row made by far deeper and more densely packed single **p**. 2<sup>nd</sup> tergum with very sparse shallow **p**. 1<sup>st</sup> sternal disk with central stripe of minute **p** and sparse ones elsewhere. Following metameri with denser **p**. **mR** only on 6<sup>th</sup> sternum.

Ecology. Unknown

Derivation nominis. In honour of collector Luca Bartolozzi.

Note. Male well distinct by the small **cOc**, abruptly descending large posterior vertex, **p**-less stripe on the scape, strong ribs on horizontal **P**, the entire apical border of 6<sup>th</sup> sternum. Female by the large lateral extension of clypeal disk and the following complex of character states: apical extension on 3<sup>rd</sup> element of **Pam**, complete carina on pronotal disk, the entire gradulus on **Sc<sub>1</sub>**, no groove on hind basal tarsomerus, **mR** surface of horizontal **P**, 1<sup>st</sup> tergal surface.

Male runs at couplet 2 in ALLEN & JAYNES (1930), facing with *T. cilicincta* Allen & Jaynes 1930, which differs also in general **p**, wings, propodeal areola and surface of horizontal area, 1<sup>st</sup> tergum and sternum, long haired distal border of metameri. It runs at couplet 5 in ALLEN (1975), but greatly differs by both *T. clavinerva* CAMERON and *T. dutti* Allen 1975, and at couplet 9 in TSUNEKI (1986) where his new species *T. kotoshensis* and *T. puliensis* are very different taxa too.

Female meets *T. sternocarinata* Allen & Jaynes 1930 and *T. rufomandibulata* Smith 1873 in ALLEN & JAYNES's key (1930), *T. cinchonae* Allen 1975 in ALLEN's key (1975), all of which have different complex of characters.

### ***Tiphia mastigophora nova sp.***

Holotypus ♂: Thailand = /Thailand: Chieng Mai Province Doi Suthep: summit 1600m 27.IX.1981 Zool. Mus. Copenhagen Exp/, ZMUC

Paratypi ♂: Thailand = (1) /Thailand: Chieng Mai Province Doi Suthep 14-1500m 2.X.1981 Zool. Mus. Copenhagen Exp/, ZMUC; (1) /Thailand: Chieng Mai Province Doi Suthep N.P.: Doi Pui summit 1650m 27.IX.1981 Zool. Mus. Copenhagen Exp/, ZMUC; (1) /Thailand: Chieng Mai Province Doi Suthep N.P.: Doi Pui Chang Kian 27.IX.1981 Zool. Mus. Copenhagen Exp/, ZMUC; (1) /Thailand: Chieng Mai Province Doi Suthep summit 1600m 27.IX.1981 Zool. Mus. Copenhagen Exp/, MZUF

Paratypus ♀: Thailand = /Thailand: Chieng Mai Province Doi Suthep N.P.: Doi Pui Chiang Kian 1400m, 27.IX.1981 Zool. Mus. Copenhagen Exp/, ZMUC

Male. Holotype. Figs. 63-70. Measurements = 10.2 mm

Black. Brown: eyes, ocelli, shadows on mandible, apex of fore tibia and tarsi, tegula, pterostigma, 7<sup>th</sup> tergum, semitransparent veins.

Upper frons, lateral vertex and with sparse **p**; lower genae near **PoG** has also sparse **p** while middle vertex and temples along **cOc** have a stripe of dense **p**, all of these areas are bipunctate by densely packed small **p**. Mandible without subapical tooth. Toruli a bit wider than their distance from eye. **N<sub>1</sub>** disk, **Sc<sub>1</sub>** and **Sc<sub>2</sub>** with sparse irregularly spaced **p**. Distinct low carina, not buttressed by any ridge, along fore border of **N<sub>1</sub>** disk. Lateral **N<sub>1</sub>** without any **p** only shagreened and with a waving large groove on its postero ventral corner. **es<sub>1</sub>**, **es<sub>2</sub>** and forecoxa bipunctate by small densely packed secondary **p** among sparser primary larger **p**. **em<sub>3</sub>** more finely, **es<sub>3</sub>** more heavily shagreened; dorsal **P** finely shagreened outside areola but wrinkles springing from posterior carina, more roughly sculptured inside; ribs of areola well produced. Posterior **P** with densely packed, bearing short hair, small **p** throughout with very sparse larger ones. Back surface of hind coxa strongly angled longitudinally. Back surface of hind tibia longitudinally broadly angled and completely covered by **p** bearing short hair Terga and sterna but 1<sup>st</sup> with sparse shallow **p**

becoming progressively denser and more impressed from basal to apical ones. 1<sup>st</sup> sternum. With smooth central area and rows of **p** laterally. Very shallow and small tubercle on 5<sup>th</sup> sternum. **mR** covering **iS**, detectable at least at x50, over all the body but temples, lower genae, flagellum, mandible, anterior, medium and posterior **es**<sub>2</sub>, back surfaces of tibiae and femurs, horizontal and posterior **P**, the shagreened areas.

Female. Paratype. Figs. 71-74. Measurements: body length = 15 mm

Black. Brown: mandible, palpi, **LaSt**<sub>2</sub>, pterostigma, shadows on legs, calcaria, apical half of 6<sup>th</sup> tergum. Ventral flagellomeres, veins and spines of legs are light brown. Wings darkened, hindwing lighter.

Sparse shallow **p** on frons and vertex, but along **cOc** where they are denser like on temples and genae. **N**<sub>1</sub> disk without carina along horizontal fore border; anterior surface with regularly spaced medium **p** delimited posteriorly by a row of single strong **p** from large apical smooth surface. Lateral **N**<sub>1</sub> with an angled groove delimiting ventral area covered by weak bristles. Colpus of **Sc**<sub>1</sub> not connected to parapsidal lines, large smooth areas between middle and lateral surfaces; irregular **p** on **Sc**<sub>2</sub>, denser on postscutellar area. **es**<sub>1</sub> and fore coxa bipunctate. Outer and ventral surface of **es**<sub>2</sub> irregularly bipunctate, posterior surface with dense minute **p**. ventrally smooth, uppermost with very minute **p** bearing microscopic hair. **es**<sub>3</sub> with strong **mR**. **2r-m** vein of forewing clearly sinuous. Posterior **P** covered by small **p**, with scattered larger ones and irregular wrinkles along the surroundings carinae. Areola 4 times higher than its median width; lateral and median ribs complete appearing like a fish-bone. Posterior transversal carina with short buttressing ridges both on horizontal and vertical areas. Inner surface of hind tibia bluntly angled longitudinally, with a short sub triangular sensorium. Hind basal tarsomerus with a deep long groove. 1<sup>st</sup> to 5<sup>th</sup> terga with large median smooth areas and scattered shallow medium **p** together with very minute ones. Sterna with scattered shallow **p**. 6<sup>th</sup> tergum with smooth apical half. **mR** detectable at x50 on most of the head, lateral **N**<sub>1</sub>, **es**<sub>2</sub>, legs, 1<sup>st</sup> tergum, 3<sup>rd</sup> to 6<sup>th</sup> sterna. Well detectable at x20 **mR** covering the horizontal area of **P**.

Ecology. Unknown

Derivatio nominis. From Greek words μαστιξ-ιγος(= lash) and φέρω (= to carry)

Note. Male specimens differ strongly from *T. inconspicua* Allen & Jaynes 1930 (met at couplet 23 in ALLEN 1930) and *T. cinchonae* Allen 1975 and *T. godavariae* Allen 1975 that they meet at couplet 34 of the ALLEN's key (1975). The female runs to couplet 32 in ALLEN & JAYNES (1930) and to couplet 34 in ALLEN (1975), but *T. phyllophagae* Allen & Jaynes 1930, *T. ovinigris* Allen & Jaynes 1930 and *T. s-secunda* Allen 1975 (= *T. ssecunda*), *T. consueta* Smith 1879 respectively are decisively different taxa.

Both sexes differ from *T. pempuchiensis* Tsuneki 1986 (couplet 26) in shape of the head and **N**<sub>1</sub>, the female in lacking carina along fore border of **N**<sub>1</sub> disk, the male in the smooth shining posterior area of **P** and shape of genitalia.

### ***Tiphia oxycittara nova sp.***

Holotypus ♂: Philippines = /Philippines, Palawan Mantalingajan Pinigisan 600 meter 9 Sept. 1961 Noona Dan Exp. 61-62/, ZMUC

Paratypi ♂: Philippines = (1) /Philippines, Palawan Mantalingajan Pinigisan 600 meter 1 Sept. 1961 Noona Dan Exp. 61-62/, ZMUC; (1) /Philippines, Palawan Mantalingajan Pinigisan 600 meter 8 Sept. 1961 Noona Dan Exp. 61-62/, ZMUC; (1) /Philippines, Palawan Mantalingajan Pinigisan 600 meter 21 Sept. 1961 Noona Dan Exp. 61-62/, ZMUC; Male. Holotype. Figs. 75-84. Measurements: body length = 7.2 mm

Black. Brown: eye, palpi, flagellum, tegula, pterostigma, legs but fore and mid coxae, semitransparent veins. Wings hyaline.

Frons, vertex, lower genae with sparse **p** and large smooth areas around ocelli; temples bipunctate. Mandible without sub apical denticle. Well expressed carina along fore border of **N**<sub>1</sub> disk, without any buttressing ridge; lateral area: irregular buttressing ridges along ventral portions of the carina and before the subvertical groove placed near posterior border. **N**<sub>1</sub> disk, **Sc**<sub>1</sub> and **Sc**<sub>2</sub> with **p** like on the vertex. **es**<sub>2</sub> bipunctate along omalulus. Upper **em**<sub>3</sub> with horizontal wrinkles. Tegula with a groove along its postero inner corner. **es**<sub>1</sub> and fore coxa with sparse weak **p**, mid and hind coxae with stronger ones. **CM** far exceeding tip of **CSM II**. Hind tibia without longitudinal keel.

Horizontal **P** with a subtrapezoidal areola and well expressed lateral and median ribs; surface inside areola irregularly and finely sculptured, the outside areas completely crossed by fine oblique wrinkles. No ribs around **spP** and from it onward. Posterior area mostly smooth with a narrow vertical stripe of small **p** near the short median ridge and irregular weak buttressing ridges along the posterior and lateral carinae.

1<sup>st</sup> terga disk almost devoid of **p**, with a subapical row of single **p** and a waving gradulus before it wearing out laterally. 2<sup>nd</sup> tergum and 2<sup>nd</sup> sternum almost **p**-less. 3<sup>rd</sup> to 6<sup>th</sup> terga and 2<sup>nd</sup> to 6<sup>th</sup> sterna with denser and more impressed **p** and irregular small groove just along distal borders. 7<sup>th</sup> tergum with elongated **p**. Short apical grooves and only very few **p** on the smooth and shining 1<sup>st</sup> sternal disk. Tubercle on 5<sup>th</sup> sternum with long curved uplift edge. Well detectable at x40 **mR** on **Last**<sub>2</sub>, mid and hind coxae, 3<sup>rd</sup> to 7<sup>th</sup> terga and 3<sup>rd</sup> to 6<sup>th</sup> sterna, weaker on lateral **N**<sub>1</sub> and **es**<sub>2</sub>.

Female. Unknown

Ecology. Unknown

Derivatio nominis: from the Greek words οξύς = sharp and κύτταρος = cell, because of the sharpening tip of marginal cell of forewing.

Note. Following ALLEN (1975) key it meets *T. cinchonae* from which strongly differs in shape of the head, **CM**, tubercle on 5<sup>th</sup> sternum and genitalia, besides other minor differences. The same differences exist from *T. ashmeadi* CRAWFORD 1910, *T. lucida* CRAWFORD 1910 and *T. segregata* CRAWFORD 1910. In according to TSUNEKY's key (1986) this taxon should be *T. ilanensis* Tsuneky 1986 nevertheless it differs because of width of toruli far larger than their distance from eye, no **mR** on head and **N**<sub>1</sub> disk, different sub apical stripe on 1<sup>st</sup> tergum and genitalia, lesser size.

### ***Tiphia, rhousiokalyptra nova sp.***

Holotypus ♀: Philippines = /Philippines, Palawan Mantalingajan Pinigisan 600 meter 11

Sept. 1961 Noona Dan Exp. 61-62/ *Tiphia* A ♀ B. Petersen det 19/, ZMUC

Female. Holotype. Figs. 85-89 . Measurements: body length = 14.5 mm

Black. Veins and Pterostigma are semitransparent brown. Ferruginous are ventral flagellum, apical scape, mandible, ventral edges of **N**<sub>1</sub> and the collar too, apical coxae trochanters, tibiae and femurs, tarsomeri, apical 6<sup>th</sup> tergum, the semitransparent tegula and apical smooth stripe of **N**<sub>1</sub> disk. Hair whitish throughout. Base and apex of forewing are pale yellow, with darker coloration on **CM**, **CSM II**, apical **CSMI** and **CDII**; hindwing uniformly pale yellow.

Frons, vertex and temples with **p** not densely packed, with **is** mostly larger than their diameter; genae bipunctate; last two elements of **Pal** elongated, their aggregate length about 1.6 times aggregate length of basal two elements. Horizontal disk of **N**<sub>1</sub> with a distinct carina on lateral third of its fore border, medially only angled, and with densely packed large **p** on its anterior surface; lateral area upperly smooth with wrinkled postero ventral corner. **Sc**<sub>1</sub> mostly **p**- less, with dense small **p** along posterior border; colpus almost connected to **sup**. **Sc**<sub>2</sub> sparsely **p**. **es**<sub>1</sub> and coxae sparsely bipunctate. Outer and ventral disk of **es**<sub>2</sub> sparsely bipunctate. **es**<sub>3</sub> covered by **mR**. Inner hind tibia with a longitudinal keel; sensorium small, gutta-like and flushed with surrounding surface. No groove on basal hind tarsomerus. Areola with almost straight low ribs from which obscure transversal ridges start to cross inside surface of areola, covered elsewhere by **mR** as the remainder of horizontal surface outside areola. Well settled rib delimits a small semicircular area behind **spP**. Lateral **P** with dense regular wrinkles. 1<sup>st</sup> tergal disk with sparse **p** and subapical row of single **p**. 2<sup>nd</sup> to 5<sup>th</sup> terga and 2<sup>nd</sup> to 6<sup>th</sup> sterna sparsely **p** without definite belt. Apical third of 6<sup>th</sup> tergum **mR**. 1<sup>st</sup> sternal disk with sparse **p** and minute **p** throughout and very weak lateral furrows as long as about its lateral length. Well detectable **mR** on lower genae, progenae, ventral **es**<sub>2</sub>, ventral coxae and most of legs but tarsi, 2<sup>nd</sup> to 6<sup>th</sup> sterna.

Male. Unknown

Ecology. Unknown

Derivatio nominis. From greek words ρούσιος (= reddish) and κάλυπτρα (= lid)

Note. Very distinct species from taxa at couplets 14 and 15 (*T. katmanduae* Allen 1975 , *T. tuberculata* Cameron 1904, *T. lawrencei* Allen 1975) in ALLEN (1975), from *T.*

*rufomandibulata* Smith 1873 in ALLEN & JAYNES 1930 (couplet 6) and from *T. ilanensis* Tsuneki 1986 (couplet 8).

Its main distinctive character states are the elongated **Pal**, inside surface of areola, colour of wings and tegula.

### ***Tiphia toreuta nova* sp.**

Holotypus ♀: Thailand = /Thailand Chiang Mai Province Doi Inthanon N.P.: Huai Sai Luang 10-1100m 13.X.1981 Zool. Mus. Copenhagen leg./, ZMUC

Paratypus ♂: Thailand = /Thailand Chiang Mai Province Doi Pha Hom Pok, NW of Fang 1550-1750m 22.X.1981 Zool. Mus. Copenhagen leg./, ZMUC

Female. Holotype. Figs. 90-92. Measurements: body length = 11 mm

Black. Brown: eye, mandible, ventral flagellum, tegula, veins and pterostigma, legs but coxae, apical 6<sup>th</sup> tergum. Ferruginous are mid and hind femurs, sensorium on hind tibia. Forewing well darkened, hindwing with slightly darkened apical half.

Upper frons and vertex with sparser **p** than mid frons; stripe of minute **p** along **cOc** from vertex to temples. Genae and most of temples bipunctate by smaller among sparse larger **p**. **PoG** slightly prominent. Roughly defined carina along fore border of **N<sub>1</sub>** disk which has very sparse **p** anteriorly (but a lateral slightly smooth prominent area) back delimited by a row of larger **p** from the large smooth apical area; lateral area with irregularly spaced **p** uppermost, with a smooth central area, a subrectilinear narrow groove along its posteroventral edge and feeble wrinkles on its postero ventral corner. **Sc<sub>1</sub>** with anterior colpus almost connected to parapsidal lines, central longitudinal stripe of dense **p** and sparse laterally. **Sc<sub>2</sub>** and postscutellar area with scattered weak **p**. **es<sub>1</sub>** and coxae sparsely **p**. Bipunctate outer surface of **es<sub>2</sub>** with irregular sparse **p** and scattered smaller **p** among them. **es<sub>3</sub>** with **mR** anteriorly, posteriorly with dense minute **p**. Horizontal **P** with regular strong sculpture outside areola; lateral ribs only inwardly and mediana rib on both sides buttressed by regular short ridges; posterior area covered by small **p** bearing small hair. Hind tibia with subparallel edges (in lateral aspect) and broad longitudinal keel on its inner surface; sensorium small, gutta like and flushed with surrounding smooth area. Hind basitarsomerus with well produced groove shorter than half its length. Tergal and 2<sup>nd</sup> to 6<sup>th</sup> sternal disks with scattered shallow **p**; 6<sup>th</sup> tergum with apical half with evident **mR** and without **p**. 1<sup>st</sup> sternal disk covered by minute **p**, with lateral long (about ¾ its length) groove apically. Smooth areas and **iS** among **p** with well detectable at x40 **mR** on most of the body, (except clypeus, lower frons, apical **N<sub>1</sub>** disk, **Sc<sub>1</sub>**, **Sc<sub>2</sub>**, postscutellar area and propodeal surface).

Male. Paratype. Figs. 93-99. Measurements: body length = 8.5 mm

Black. Brown: eye, antenna, most of mandible, tegula, veins and pterostigma, back surface of fore tibia, tarsi, apex of last metamerus. Ferruginous is the remainder of legs (but black coxae), apical stripe of mandible. Wings hyaline, with **CM** slightly exceeding tip of **CSMII** apically.

Head with shallow sparse **p** everywhere, without smooth areas, temple and genae bipunctate by smaller ones. Well distinct not prominent carina on fore border of **N<sub>1</sub>** disk with **p** like head and a smooth apical belt. Disk of lateral area completely covered by **mR** uppermost without **p**, delimited downwardly by a concave groove connected to the side end of carina to shape a sort of semicircle and with feeble wrinkles on the postero ventral corner. **Sc<sub>1</sub>** and **Sc<sub>2</sub>**, fore and hind coxae with irregularly sparse **p**, larger than on **N<sub>1</sub>** disk. **es<sub>1</sub>**, outer disk of **es<sub>2</sub>** and hind coxa bipunctate. Horizontal **P** with surfaces inside areola and near lateral edge irregularly and finely sculptured, the remainder with **mR**. posterior surface with an upper smooth stripe, mostly covered by widely spaced minute **p**. Ribs of areola moderately prominent with very feeble radiating ridges. terga and 2<sup>nd</sup> to 6<sup>th</sup> sterna with sparse **p**. 1<sup>st</sup> sternum smooth with very few small **p** and long lateral groove at its apex. Tubercle on 5<sup>th</sup> sternum prominent without orifice nor smooth place flanking it. **mR** well detectable on frons, vertex, lateral **N<sub>1</sub>**, **Sc<sub>1</sub>**, **Sc<sub>2</sub>**, **es<sub>2</sub>**, fore and hind coxae, 1<sup>st</sup> to 7<sup>th</sup> terga and 2<sup>nd</sup> to 6<sup>th</sup> sterna.

Ecology. Unknown

Derivatio nominis. From Greek word τορευτός (= chiselled) because of the regular sculpture of the propodeum of the female.

Note. The female is well distinct from other Asiatic female taxa with bright ferruginous mid and hind femurs and grooved basitarsus (*T. rufomandibulata* Smith 1855, *T. magrettii* Cameron 1897, *T. biseculata* Allen & Jaynes 1930, *T. pigmentata* Allen & Jaynes 1930, *T. davarae* Allen 1975, *T. khasiana* Allen 1975) by the presence of a rough carina on **N**<sub>1</sub> disk, very darkened fore wing and especially by the very peculiar sculpture of **P**. The coupling here proposed is purely arbitrary, based mainly on the ferruginous colour of the legs. The male is well known from other males from South East Asia by the shape of lateral **N**<sub>1</sub> and genitalia.

### Taxa with elongated tegula.

The following taxa show elongate tegula in both sexes, more than 1.5 times higher than wide, mostly with enlarged apical inner corner and often almost reaching the back border of **Sc**<sub>2</sub> (suture between **Sc**<sub>2</sub> and **N**<sub>3</sub>). Here the key to their identification:

- |   |   |
|---|---|
| Males   | <b>1</b>  |
| Females   | <b>10</b>   |
| <b>1</b>  |   |
| a) Mandible with prominent preapical denticle               | <p><b><i>Tiphia oswini</i> Turner 1911</b></p> <p><b><i>Tiphia leclerqi</i> Krombein 1982</b></p> <p><b><i>Tiphia kaszabi</i> Krombein 1982</b></p> <p><b><i>Tiphia bouceki</i> Krombein 1982</b></p> |
| b) Mandible without prominent preapical denticle            | <b>2</b>  |
| <b>2</b>  |   |
| a) Tubercle on 5 <sup>th</sup> e sternum absent             | <p><b><i>Tiphia platykalymma nova</i> sp.</b></p>   |
| aa) Tubercle on 5 <sup>th</sup> e sternum present           | <b>3</b>  |
| <b>3</b>  |   |
| a) Inner surface of hind tibia longitudinally keeled        | <b>4</b>  |
| aa) Inner surface of hind tibia flattened, without any keel | <b>7</b>  |

**4**

- a) 6<sup>th</sup> sternum clothed with dense, short sub erect bristles, forming a distinct tuft in lateral aspect

***Tiphia knutsoni* Krombein 1982**

- aa) 6<sup>th</sup> sternum without such a tuft, with sparse bristles

**5**

**5**

- a) Lower frons with a median vertical ridge

***Tiphia hillyardi* Krombein 1982**

- aa) Lower frons without evident median vertical ridge

**6**

**6**

- a) Tegula glossy with semitransparent apical half at least
- b) Tibiae, tarsi and femurs more or less bright red

***Tiphia longitegulata* Allen & Jaynes 1930**

***Tiphia sakagamii* Krombein 1982**

- aa) Tegula mainly opaque black, without semitransparent apical half
- bb) Legs mostly castaneous, with black hind leg

***Tiphia tegelonga* Allen 1975**

**7**

- a) Propodeum rounded in lateral aspect without carina between horizontal and posterior areas outside areola.
- b) Orifice lying under uplifted edge of tubercle of 5<sup>th</sup> sternum

***macroplaka nova* sp.**

- aa) Propodeum distinctly angled in lateral aspect with complete carina between horizontal and posterior areas.
- bb) No orifice under tubercle of 5<sup>th</sup> sternum

**8**

**8**

- a) Head stout in dorsal aspect, ratio **LA/A** more than 1.6.
- b) Head in frontal aspect almost as wide as high



- c) Ocelli very close to each other, distance **OI – Om** less than half their diameter
- d) Clypeus very prominent downward, ratio its **LA/A<sub>m</sub>** about 2
- e) Large, prominent on the surrounding surface, sensorium of hind tibia, its length about half maximal width of tibia

***Tiphia tegulita* Allen 1975**

- aa) Ratio **LA/A** of head in dorsal aspect more than 2
- bb) Head larger than high in frontal aspect
- cc) Ocelli less close to each other, distance **OI – Om** about as large as their diameter
- dd) Clypeus less prominent, ratio **LA/A<sub>m</sub>** no more than 1.7
- ee) Small, flushed with surrounding surface, sensorium, its length about ¼ width of tibia at the best

**9**

**9**

- a) Prominent median ridge on the frons
- b) Apical width of clypeus larger than toruli
- c) Fore border of pronotal disk with a strong carina with well expressed buttressing ridges
- d) Propodeum stouter; areola with ratio median height/apical width (**A<sub>m</sub>/LA<sub>a</sub>**) about 1.5
- e) Basal two metameri stouter; 1<sup>st</sup> sternal disk just a bit longer than wide in ventral aspect

***Tiphia platykerama* nova sp.**

- aa) Very shallow median ridge on frons
- bb) Apical width of clypeus narrower than toruli
- cc) Fore border of pronotal disk with low carina lacking of buttressing ridges
- dd) Propodeum slender; areola with ratio **A<sub>m</sub>/LA<sub>a</sub>** more than 1.8
- ee) Basal two metameri more slender; 1<sup>st</sup> sternal disk 1.7 times longer than wide in ventral aspect

***Tiphia platysma* nova sp.**

**10**

- a) Basal hind tarsomerus with a longitudinal groove on its upper surface

**11**

- aa)** Basal hind tarsomerus without longitudinal groove on its upper surface

**12**

**11**

- a)** Lower frons strongly prominent like a sort of rounded shed above toruli, acutely expressed medially in dorsal aspect
- b)** 3<sup>rd</sup> element of **Pam** strongly dilated, its thickness more than twice thickness of following elements.
- c)** Tegula dilated outwardly at its middle
- d)** Large size, about 20 mm

***Tiphia dolichaula nova sp.***

- aa)** Lower frons either only gently swollen either longitudinally ridged, but never like a sort of rounded shed above toruli
- bb)** 3<sup>rd</sup> element of **Pam** not so strongly dilated, its thickness less than 1.5 times twice thickness of following elements.
- cc)** Tegula with enlarged apical inner corner
- dd)** Size never more than 13mm

***Tiphia longitegulata* Allen & Jaynes 1930**

***Tiphia tegelonga* Allen 1975**

***Tiphia oswini* Turner 1911**

***Tiphia leclerqi* Krombein 1982**

***Tiphia sakagamii* Krombein 1982**

***Tiphia knutsoni* Krombein 1982**

***Tiphia hillyardi* Krombein 1982**

***Tiphia bouceki* Krombein 1982**

***Tiphia moczari* Krombein 1982**

**12**

- a)** Head more transversal; Ratio **LA/A** about 1.3 in frontal aspect
- b)** Ratio lengths **Pal**/labium about 1.6
- c)** Areola of propodeum with five, more or less complete, ribs
- d)** Most of legs bright ferruginous
- e)** Sensorium of hind tibia sub rounded
- f)** Ratio **LA/A** of 1<sup>st</sup> sternal disk about 1.2 or less

**13**

- aa) Head less transversal with ratio **LA/A** in frontal aspect just a bit more than 1
- bb) Ratio lengths **Pal**/labium about 1.3
- cc) Areola of propodeum 1<sup>st</sup> sternal disk, ratio LA/A a bit less than 1.5
- dd) Legs brown
- ee) Sensorium sub triangular
- ff) Ratio **LA/A** of 1<sup>st</sup> sternal disk almost 1.5

***Tiphia platykalymma nova sp.***

**13**

- a) Frons with evident **mR**
- b) Complete carina along fore border of pronotal disk
- c) Mid and supplementary ribs incomplete, not getting posterior carina
- d) Lateral and supplementary ribs of areola with inner wrinkled edge

***Tiphia macropilaka nova sp.***

- aa) Frons without evident **mR**
- bb) Carina along fore border of pronotal disk weaker and broken in the middle
- cc) Only the supplementary ribs incomplete, not getting posterior carina
- dd) Lateral and supplementary ribs of areola with simple edges

***Tiphia tegulita* Allen 1975**

Note. Male *Tiphia alishana* Ishikawa 1967 lacks lateral tubercle on 5<sup>th</sup> sternum like *T. platykalymma nova sp.* but it has darker legs, different head in dorsal and frontal aspect, different distance toruli-eye, different clypeus, different areola and more slender 1<sup>st</sup> metamerus (ratio **L/LA** about 2). Male *Tiphia yushana* Tsuneki 1986 runs at item 4 meeting *T. tegulita* Allen 1975 to which it looks very like; nevertheless it differs greatly in the shape of the head in dorsal aspect, larger apical clypeus, backward tapering areola, smaller and different lateral tubercle on 5<sup>th</sup> sternum. Female *Tiphia yushana* Tsuneki 1986 differs from all these taxa in having the colpus (escarpment) on fore border of **Sc<sub>1</sub>** connected to **sup** and bent lateral ribs of areola. Moreover it differs from *T. tegulita* and *T. macropilaka*, with which share the bright ferruginous legs, in the more transversal 1<sup>st</sup> metamerus (**LA/A** more than 1.3, like in *T. platykalymma nova sp.*). *Tiphia alishana* Tsuneki 1986 runs at item 11, but differs from *T. oswini* Turner 1911 in having brown parts of the body, from *T. tegelonga* Allen 1975 and *T. longitegulata* Allen & Jaynes 1930 because of bigger size; from all of them by the shape of the head and frons. Female *T. tsukengensis* Tsuneki 1986 runs too at item 11 where it links with *T. tegelonga* and *T. longitegulata* because of size, but differs greatly in the strong connection of colpus on **Sc<sub>1</sub>** with **sup**, less elongate areola (ratio **L/LA<sub>a</sub>** about 2.1 instead of 3 in those taxa) and more dense **p** everywhere.

***Tiphia tegulita* Allen 1975**

*Tiphia tegulita* Allen 1975: 16-17

Holotypus ♂: Nepal = /Nepal Ktmd. Godavari 6000 17 August 1967 Can Nepal Exped./  
/Holotypus ♂ *Tiphia tegulita* HW. Allen/ /Holotype *Tiphia tegulita* CNC N° 15574/, CNC !

*Tiphia tegulita*: KROMBEIN (1982: 21-22. Established synonymy with *Tiphia devalae* ALLEN 1975: 61-62 - Paratypus ♀: India = /Shillong, Assam, India 4800PT 20.VI.20/ /LB. parker collector/ /Paratype ♀ *Tiphia devalae* HW. Allen/, USMNMH !)  
Holotype. Figs. 100-110

***Tiphia platykalymma nova sp.***

Holotypus ♂: Philippines = /Philippines. Palawan Mantalingajan Tagenbung 1150 meter 16 Sept. 1961 Noona Dan. Exp. 61-62/, ZMUC

Paratypus ♂: Philippines = (1) /Philippines Balabal Dalawan bay 8 Oct. 1961 Noona Dan. Exp. 61-62/, ZMUC

Paratypus ♀: Philippines = /Philippines. Palawan Mantalingajan Pinigian 600 meter 10 Sept. 1961 Noona Dan. Exp. 61-62/ /caught malaise trap outside forest/ /*Tiphia* E ♀ B. Peterson det /, ZMUC

Male. Holotype. Figs. 111-122. Measurements: body length = 5.2 mm

Balck. Brown: eye, 2-11 flagellomeri, veins, pterostigma, coxae. Pedicel, 1<sup>st</sup> flagellomeres, palpi, the remainder of legs and apex of metasoma are light ferruginous-brown. Tegulae completely transparent pale yellow. Frons, vertex, very sparsely **p**, with large smooth areas; temples and genae bipunctate with scattered both primary and secondary **p**. Progena with **mR**. Pal with apical two segments very long, everyone twice longer than single basal segment. **N<sub>1</sub>** disk with a strong carina with very weak buttressing ridges along its fore border; lateral area without any furrow. **N<sub>1</sub>** disk, **Sc<sub>1</sub>**, **Sc<sub>2</sub>** with **p** like head, postscutellar area smooth, without any **p**. **es<sub>1</sub>** bipunctate by dense secondary small **p**. **es<sub>2</sub>** with **p** like genae. Lower half of tegula with subhorizontal obscure wrinkles springing from its outer edge. Fore coxa smooth and shining, mid coxa with dense minute **p**, hind coxa with scattered **p**. Sub rounded sensorium on hind tibia which has not median longitudinal keel. Surface of areola roughly sculptured with a trace of additional longitudinal ribs; the remainder surface of horizontal P with a rough **mR** and no ridge around **spP** and anteriorly to it; posterior area without median ridge and completely covered by piliferous minute **p**. Terga and sterna with very sparse weak **p**. 1<sup>st</sup> tergal disk with a pre-apical stripe mono-punctured in the middle and with a weak gradulus just after it. Pre-apical band on terga made by distanced **p** followed by a small irregular furrow. 1<sup>st</sup> sternal disk smooth with short apical longitudinal ridges at its sides instead of grooves as usual. No tubercle on 5<sup>th</sup> sternum. **mR** present on clypeus, **es<sub>3</sub>**, horizontal **P**, 4<sup>th</sup> to 7<sup>th</sup> terga and 3<sup>rd</sup> to 6<sup>th</sup> sterna.

Female. Paratype. Figs. 123-125. Measurements: body length = 4,8 mm

Black. Brown: eye, mandible, antenna, legs but coxae, apical 6<sup>th</sup> tergum. Semitransparent yellowish are the apical half of tegula, veins and pterostigma.

Very weakened **cOc** along the vertex. Frons, vertex, temples and genae with well impressed scattered **p**. Head but clypeus covered by very weak **mR**. Well expressed carina with weak irregular buttressing ridges along fore border of **N<sub>1</sub>** disk; lateral areas mostly smooth with a down transversal groove delimiting the feebly wrinkled corner. Anterior gradulus on **Sc<sub>1</sub>** connected to parapsidal lines. Scattered **p** on **Sc<sub>2</sub>**, almost smooth postscutellar area. **es<sub>1</sub>** and coxae sparsely **p**. Surface of **es<sub>2</sub>** like head with bipunctate by small **p** narrow area along posterior border with **es<sub>3</sub>**. which has strong **mR**. **em<sub>3</sub>** shagreened. Hind tibia longitudinally keeled, with a subtriangular sensorium flushed with the surrounding surface. No groove on basal hind tarsomeres. Areola with delimiting ridges having gently irregular contours by vertical to it small ridges; inside area vertically sculptured with trace of additional ribs, outside areas covered by **mR**. 1<sup>st</sup> tergal disk with very scattered **p** and an irregular prepical stripe of **p** without gradulus. Terga and sterna with scattered **p** almost absent medially. 6<sup>th</sup> tergum with scattered **p** and **mR** covering **iS** on its basal half medially broken by a forward large protrusion of the smooth apical area surface.

Note. Well known species because of the character states given in the key, by the ridges on 1<sup>st</sup> sternum and the genitalia of the males. The association of sexes is intuitive basing mainly on the similarity of areola and their temporal and spatial proximities.

Ecology. Unknown

Derivatio nominis. From the Greek words πλατύς = large and κάλυμμα = tile

***Tiphia macroplaka nova sp.***

Holotypus ♂: Thailand = /Thailand Chiang Mai Province Doi Inthanon NP. Main road 1900m 7.X.1981 Zool. Mus. Copenhagen leg/, ZMUC

Paratypus ♂: Thailand = /Thailand Chiang Mai Province Doi Suthep N.P.: Konthathan 6-700m 26.IX.1981 Zool. Mus. Copenhagen leg/, ZMUC

Male. Holotype. Figs 126-138. Measurements: body length = 6.8 mm

Black. Brown: eye, antenna, most of the legs but lighter fore and mid tibiae and femurs, basal half tegula with semitransparent apical half, apical metameri.

Frons and vertex with spars **p**, denser along inner border of the eye; temples and genae like vertex but bipunctate by dense minute piliferous **p** which gave them a velvety appearance under incident light. Palpi elongated. Fore border of **N<sub>1</sub>** disk with a moderate carina buttressed by weak and short ridges; lateral area mostly smooth with only a sub vertical shallow groove delimiting a finely wrinkled postero ventral corner. **Sc<sub>1</sub>** and **Sc<sub>2</sub>** like head, postscutellar area with denser and smaller **p**. **es<sub>1</sub>**, **es<sub>2</sub>** disk and coxae bipunctate by small **p** among scattered larger ones. Inner (back) hind coxa with a well produced longitudinal keel (no laminated carina). Inner (back) hind tibia not keeled and with a very small subellissoidal sensorium surrounded by a slightly prominent shining surface above the main surface of the element. Horizontal **P** with a somehow irregular microsculpture and **mR**. Areola delimited by well expressed ribs, the median one does not get the fore border. No posterior carina laterally to areola and poorly expressed between posterior and lateral areas. Posterior area strongly convex. Lateral surface wrinkled only on its antero dorsal half, underneath with a rough **mR** like **em<sub>3</sub>** without any distinction between them. 1<sup>st</sup>, 2<sup>nd</sup> terga and sterna almost **p**-less; 1<sup>st</sup> tergal disk with a subapical narrow row of **p** bordered posteriorly by a sort of gradulus on the sides. The remainder terga with denser **p**. 1<sup>st</sup> sternal disk swollen and smooth with a short lateral furrow at its apex. **mR** well detectable on **iS** on most of the body and legs.

Female. Paratype. Figs 139-144. Measurements: body length = 5.5 mm

Black. Brown: eye, mandible, scape, upperside of flagellum, **LaSt<sub>2</sub>**, mid and hind coxae. Ventral flagellum, legs but coxae. Tegula, veins and stigma are semitransparent yellowish. Head with scattered **p** throughout with large **p**-less areas on the frons, which show a quite short median furrow. **p** on **N<sub>1</sub>** disk, **Sc<sub>1</sub>** and **Sc<sub>2</sub>** like on the head. Moderate well distinct carina along fore border of **N<sub>1</sub>** disk. Lateral **N<sub>1</sub>** without **p** with a shallow groove with fine wrinkles underneath from it. **N<sub>1</sub>** disk. Postscutellar area completely smooth. **es<sub>1</sub>** and **es<sub>2</sub>** disk with shallow sparse **p**. Pterostigma very small. Hind tibia obscurely wrinkled with a sub rounded sensorium flushed with the surrounding surface. Basal hind tarsomerus without groove. Propodeum: posterior carina well expressed; areola with supplementary ribs between lateral and mid one; all three not getting posterior carina and their inner edges with irregular contour by short buttressing ridges; side surfaces covered by **mR**; posterior area with regularly packed small piliferous and sparse larger **p**; lateral areas like in the male, with wrinkled anterodorsal half and microreticulated posteroventral half confused with **em<sub>3</sub>** surface. 1<sup>st</sup> tergum completely **p**-less apart the subapical area subtended by a distinct gradulus; 2<sup>nd</sup> tergum with sparse **p** like the following ones and 2<sup>nd</sup> to 5<sup>th</sup> sterna. 1<sup>st</sup> sternal disk completely **p**-less. **mR** well expressed on most of the head, lateral **N<sub>1</sub>**, **es<sub>2</sub>**, **es<sub>3</sub>**, **LaSt<sub>2</sub>**.

Note. Their conspecificity too has to be proved definitively. The female strongly resembles *T. devalae* ALLEN 1975 (= *T. tegulita* Allen 1975 according to KROMBEIN 1982), from which is well distinct by different shape of head in dorsal aspect, different ventral contour of the clypeus, different palpi, hind tibial sensorium and characters of the key. The male is strongly segregated from all other forms by the peculiar propodeum, besides other smaller differences.

Ecology. Unknown

Derivation nominis. From the Greek words μακρός = long and πλαξ, πλακός = slab

***Tiphia platykerama nova sp.***

Holotypus ♂: Thailand = /Thailand Loei province Phu Luang wildlife Sanctuary 8-14.X.1984 700-900m Karsholt, Lomholdt 6 Maisen leg Zool. Mus. Copenhagen /, ZMUC

Male. Holotype. Figs. 145-154. Measurements: body length = 6 mm

Black. Brown: eye, mandible tip, scape, dorsal flagellum, , pterostigma, hind leg, basal 7<sup>th</sup> tergum. Ventral flagellum, palpi, most of mandible and fore and mid legs are light brown. Semitransparent tegula.

Frons and vertex almost devoid of **p**, only few along inner edge of eye; temples and genae bipunctate by denser small **p** among sparse and larger ones. Long prominent ridge on the frons. Apical width of clypeus larger than toruli. **N**<sub>1</sub> disk with a strong carina along its fore border, buttressed by well produced ridges. Lateral **N**<sub>1</sub> smooth with a distinct groove and shagreened surface on the postero ventral area underneath from it. **N**<sub>1</sub> disk, **Sc**<sub>1</sub> and **Sc**<sub>2</sub>, **es**<sub>1</sub> and forecoxa with scattered **p**. **es**<sub>2</sub> bipunctate almost throughout. Hind tibia without keel, completely haired, with a small sub rounded sensorium. Areola with well distinct lateral and weaker median ribs; surface inside areola somewhat irregularly sculptured; outside areola with rough irregular **mR**; posterior area with small piliferous **p** packed in sub concentric rows. 1<sup>st</sup> tergum with only sparse minute **p**. 2<sup>nd</sup> tergum bipunctate by sparse small **p** among scattered larger ones. 1<sup>st</sup> sternal disk smooth with apical lateral short grooves. Arched tubercle on 5<sup>th</sup> sternum, with large shining smooth area on its inside. **mR** on frons, lateral **N**<sub>1</sub>, **es**<sub>3</sub>, mid and hind coxae, propodeal disk, 3<sup>rd</sup> to 7<sup>th</sup> terga and 3<sup>rd</sup> to 6<sup>th</sup> sterna.

Note. Distinct species by the prominent ridge on frons, strong carina on **N**<sub>1</sub> disk, slender basal metameri and genitalia.

Ecology. Unknown

Female. Unknown

Derivatio nominis. From the Greek words πλατύς = large and κέραμος = tile

### ***Tiphia platysma nova sp.***

Holotypus ♂: Malaysia = /Malaysia Pahang Cameron highlands 2000m 27.XI.1979 Peter Nielsen leg/, ZMUC

Male. Holotype. Figs. 155-164. Measurements: body length = 6.5 mm

Black. Brown: eye, mandible, antenna, coxae, portion of legs, apical metamerus, the semitransparent tegulae, veins and pterostigma. Palpi and most of legs are light brown. Most of the body with very scattered shallow **p** giving it a shining aspect; temple and genae show also very scattered minute **p** among them. Very shallow groove on the middle frons. **es**<sub>3</sub> weakly sculptured. **em**<sub>3</sub> with weak wrinkles and hair upperly and smooth and shining ventrally. Inner surface of hind coxa only bluntly angled. Hind tibia not keeled with a very small sub rounded sensorium. Propodeum with horizontal an dupper posterior areas also shining with very large **mR**; lower posterior area with dense small **p**, without any ridge; lateral area with weak almost indistinct wrinkles. 5<sup>th</sup> to 7<sup>th</sup> terga and 3<sup>rd</sup> to 6<sup>th</sup> sterna covered by well detectable at x40 **mR**. Arched tubercle on 5<sup>th</sup> sternum with a large polished area (not depressed) on its inner side.

Note. Similar to *T. platykerama*, from which is well segregated by lacking strong ridge on the middle of the frons, narrower apical clypeus, longer propodeum in dorsal aspect, quite slender basal metameri, genitalia.

Ecology. Unknown

Female. Unknown

Derivatio nominis. From the Greek word πλατύσμα= slab

### ***Tiphia dolichaula nova sp.***

Holotypus ♀: Thailand = /Chieng Mai province Doi Pha Hom Pok NW of Fang 1550-1750 m 22.X.1981 Zool. Museum Copenhagen leg/, ZMUC

Female. Figs 165-172. Measurements: body length = 20 mm.

Most of propleurae (**es**<sub>1</sub>) and forecoxae are missing because of dermastid attack.

Black. Dark reddish brown: eye; most of mandible; ventral side of flagellum; palpi; semitransparent apical border of **N**<sub>1</sub> disk; most of semitransparent tegula, **LaSt**<sub>2</sub>, pterostigma and veins; apex of coxae, femurs and tibiae; tarsi; sensorium of hind tibia; basal plate of hind femur; apex of 6<sup>th</sup> tergum. Fore wing strongly yellowed, hind wing less coloured. Lower frons strongly and acutely prominent better seen in dorsal aspect. Basal third **Pam** enlarged. Fore border of **N**<sub>1</sub> disk roughly keeled only at its sides; lateral **N**<sub>1</sub> without evident neither median groove neither gradulus, only with weak wrinkles on its postero-ventral corner; its apical border evenly arched. Colpus on **Sc**<sub>1</sub> connected to **sup**

through unbroken gradulus (the Allen's "escarpment") . Omaulus present on **es<sub>2</sub>**. **em<sub>3</sub>** with microreticulated upper half and finely wrinkled basal half like **es<sub>3</sub>**. Large irregular depression along basal border of **P**; areola elongated, about five times longer than wide, slightly tightening apically; its inner surface sculptured by delicate sub horizontal ridges, the remaining horizontal areas microreticulated; lateral areas densely and regularly wrinkled; posterior area without any median vertical ridge. **LaSt<sub>2</sub>** completely smooth and shining. Ventral lobes of **St<sub>3</sub>** flat with only 4-5 **p**. Inner surface of hind tibia with a clear longitudinal keel and a large sensorium. Basal hind tarsomerus with a large deep groove. Hair yellowish with cupreous reflections under incident light. Spines light brown. Spurs red brown.

Note. Size, general habitus and punctuation are very like in *annandalei* Turner 1908. The examination of its lectotype preserved at BMNH [/Annandale Robinson Siamese & Malay States 1903-127/ /Semangko Selangor 3500' 10.V.02 on bank/ /*Tiphia annandalei* Type Turne/(autographic) /Lectotype/(rounded with outer blue ring) /Lectotype *Tiphia annandalei* Turner H.W: Allen/(red), BMNH; figs 173-178], permits to exclude their conspecificity. Here the differences with TURNER's taxon (in brackets): shape of the head; presence of a protuberance on the lower frons between toruli; shape of the clypeal ventral edge; stouter scape (ratio **L/A** about 2.2 instead of 2.5); different 3<sup>rd</sup> element of **Pam**; evenly arched apical edge of **N<sub>1</sub>** disk (with a median backward prominence); shape of **N<sub>1</sub>** in lateral aspect; no groove on lateral **N<sub>1</sub>** disk (clear rectilinear sub vertical groove near posterior border); unbroken gradulus between **sup** along fore border of **Sc<sub>1</sub>** (absent laterally); different shape of tegula; different areola (subparallel outer ridges); bigger propodeal spiracle; stouter hind tibia; by far larger sensorium on hind tibia; longer and deeper groove on basal hind tarsus (0,60 times times length of the element in front of 0,44); different surface of 1<sup>st</sup> sternum; yellow wings (brownish); rectilinear apical border of 2<sup>nd</sup> **CSM** (strongly bent).

Male. Unknown

Ecology. Unknown

Distribution: type locality

Derivatio nominis: from the greek δόλιχος (= elongated) and αὐλός (= stem), because of the elongated body.

## New records

### ***Tiphia levipunctata* Allen 1975**

♀: Thailand = (2) / Thailand Chieng Mai province Doi Inthanon N.P. Siripum 12-1300m 5.X.1981 Zool. Mus. Copenhagen exp./, ZMUC; (2) / Thailand Chieng Mai province Doi Phai Hom Pok NW of Fang 1550-1750m 22.X.1981 Zool. Mus. Copenhagen exp./, ZMUC; (1) /Thailand Doi Suthep Pui N.P. Doi Pui road 1000 23-26.X.1979 Zool. Mus. Copenhagen exp./, ZMUC

### ***Tiphia clavinerva* Cameron 1904**

### ***Tiphia stertia* Allen 1975**

♀: Thailand = (1) /Thailand Near Singora Syd-Siam Oc.1940 AM. Hammingsen/, ZMUC

### ***Tiphia murrea* Allen 1975**

♂: India = (1) /India Uttar Pradesh Mussoorie c 1500-2000m 3-14.VIII.1978m Zool. Mus. Copenhagen exp./, ZMUC

### ***Tiphia shillonga* Allen 1975**

♀: Thailand = (1) /Thailand Chieng Mai province Doi Inthanon N.P. Huai Sai Luang 10-1100m 13.X.1981 Zool. Mus. Copenhagen lg./, ZMUC

### ***Tiphia pulchaurkiae* Allen 1975**

♂: India = (1)/India (Kashmir) c 2200m Kashmir Valley (Tangmarg) 17.VIII-7.IX.1978 Zool. Mus. Copenhagen exp./, ZMUC

***Tiphia davarae* Allen 1975**

♀: India = (1) /India Uttar Pradesh Mussoorie c 1500-2000m 3-14.VIII.1978m Zool. Mus. Copenhagen exp./, ZMUC

***Tiphia nilgirensis* Allen 1975**

♀: India = (1) /S.India. Karnataka Bangalore 916m 22-31.V.1980 Belavadi coll/, ZMUC. Thailand = (1) /Thailand Chieng Mai Province Doi Inthanon N.P. Huai Sai Luang 10-1100m 14.X.1981 Zool. Mus. Copenhagen exp./, ZMUC; (3) /Thailand Chieng Mai Province Doi Inthanon N.P. Hhuai Sai Luang 10-1100m 14.X.1981 Zool. Mus. Copenhagen exp./, ZMUC;

***Tiphia decrescens* Walker 1859**

♂: India = (1) /S. India Karnataka Wandri hills 1467m 27.VII.1975 Ghorsade nà01207/, ZMUC; (4) /S. India Karnataka Bangalore herbal 26-31.X.1977 c.900m Zool. Mus. Copen. exp./, ZMUC; (12) /S. India Karnataka Mudigere area c.900m 2-10.XI.1977 Zool. Mus. Copen. exp./, ZMUC; (18) /S. India Karnataka Kermangundi 1200-1500m 11-16.XI.1977 Zool. Mus. Copen. Exp./, ZMUC; (1) /S. India Karnataka 12 km N. Yelburga 23-27.XI.1980 KD. Ghorsade leg./, ZMUC; (1) /S. India Karnataka near Anekal 10.VIII.1979 n° 1228 Ghorpade leg./, ZMUC; (1) /S. India Karnataka Bangalore 916m 7-14.IV.1980 Col/, ZMUC. Thailand = (1) /Thailand 7 km NW Fang Hort. Exp. Station 30.X-2.XI.1979 Zool. Mus. Copenhagen exp./, ZMUC; (1) /Thailand San Ngao St Bhumpipol Dan 6-8.XI.1979 Zool. Mus. Copenhagen exp./, ZMUC

***Tiphia cinchonae* Allen 1975**

♂: India = (1) /S. India Karnataka Bangalore 916 m 16.VIII.1975 Coll/, ZMUC; (2) / S. India Karnataka Mudigeree area c900m 2-10-X.1977 c.900m 26-29.X.1977 Zool. Mus. Copenhagen Exp./, ZMUC; (3) / S. India Karnataka Bangalore Allalsandra c.900m 26-29.X.1977 Zool. Mus. Copenhagen Exp./, ZMUC; (1) /S. India Karnataka Tarikere area c 900m 12-17.XI.1977 Zool. Mus. Copenhagen Exp./, ZMUC; (3) /S. India Karnataka Gersoppa (jog falls) c 600m 19-24.XI.1977 Zool. Mus. Copenhagen Exp./, ZMUC. Thailand = (1) /Thailand Chieng Mai Province Doi Inthanon N.P. Siripum 12-1200m 4.X.1981 Zool. Mus. Copenhagen exp./, ZMUC; (1) /Thailand Chieng Mai Province Doi Inthanon N.P. Huai Sai cuang 10-1100m 13.X.1981 Zool. Mus. Copenhagen exp./, ZMUC; (1) /Thailand Doi Suthep Pui N.P. Doi Pui road 1000 23-26.X.1979 Zool. Mus. Copenhagen exp./, ZMUC.

***Tiphia vanlithi* Krombein 1982**

♀: Sri Lanka = (1) /Ceylonia Mus. Drews/, ZMUC

***Tiphia pulawsky* Krombein 1982**

♀: Sri Lanka = (1) /Ceylonia Mus. Drews/, ZMUC

***Tiphia dayi* Krombein 1982**

♀: Sri Lanka = (1) /Ceylonia Mus. Drews/, ZMUC

***Tiphia hilliardii* Krombein 1982**

♀: Sri Lanka = (2) /Ceylonia Mus. Drews/, ZMUC

***Tiphia oswini* Krombein 1982**

♀: Sri Lanka = (3) /Ceylonia Mus. Drews/, ZMUC

***Tiphia consueta* Smith 1879**

♀: Sri Lanka = (2) /Ceylonia Mus. Drews/, ZMUC

***Tiphia hirashimai* Krombein 1982**

♀: Sri Lanka = (4) /Ceylonia Mus. Drews/, ZMUC

♂: Sri Lanka = (4) /Ceylonia Mus. Drews/, ZMUC



***Tiphia malayana* Cameron 1910**

♂: Malaysia = (1) /Malaysia, Selangor Templer Park 1-5.XII.1979 peter Nielsen leg./, ZMUC

***Tiphia palmi* Krombein 1938**

♀: India = (1) /India Tamil nadu Valpari 1070m 4-6.XII.1982 KD. Ghorpade lg/, ZMUC.  
Thailand = (1) / Thailand Chieng Mai Province Fang Horticult. Exp. Station c 50-800m 22.x.1981 Zool. Mus. Copenhagen Exp./, ZMUC  
♂: India = (1) / India. Karnataka Bangalore 915m 7.12.1980 Belavadi coll/, ZMUC.

***Tiphia nathani* Allen 1975**

♀: Thailand = (1) /7km NW of Fang Horticult. Exp. Station c.900m 2-10.X.1977 Zool. Mus. Copenhagen Exp./, ZMUC  
♂: India (1) / India. Karnataka Bangalore 916 m 1-17.IV.1980 Belavadi coll/, ZMUC; (1) /S. India Karnataka Mudigere area c.900m 2-10.XI.1977 Zool. Mus. Copen. exp./, ZMUC

***Tiphia lawrencei* Allen 1975**

♀: Thailand = (1) /Thailand Chieng Mai Province Doi Suthep N.P.: Konthathan Waterfall area 600m 20-27.X.1979 Zool. Mus. Copenhagen leg/, ZMUC; (1) /Thailand Chieng Mai Province Doi Inthanon N.P. Siripum 1400m 8.X.1981 Zool. Mus. Copenhagen exp./, ZMUC;

***Tiphia capillata* Allen & Jaynes 1930**

♂: India = (1) /S. India Karnataka Mudigere area c.900m 2-10.XI.1977 Zool. Mus. Copen. exp./, ZMUC

***Tiphia nilgiria* Allen 1975**

♂: India = (1) /S. India Karnataka Kermangundi 1200-1500m 11-16.XI.1977 Zool. Mus. Copen. exp./, ZMUC

***Tiphia flavipalpis* Allen 1975**

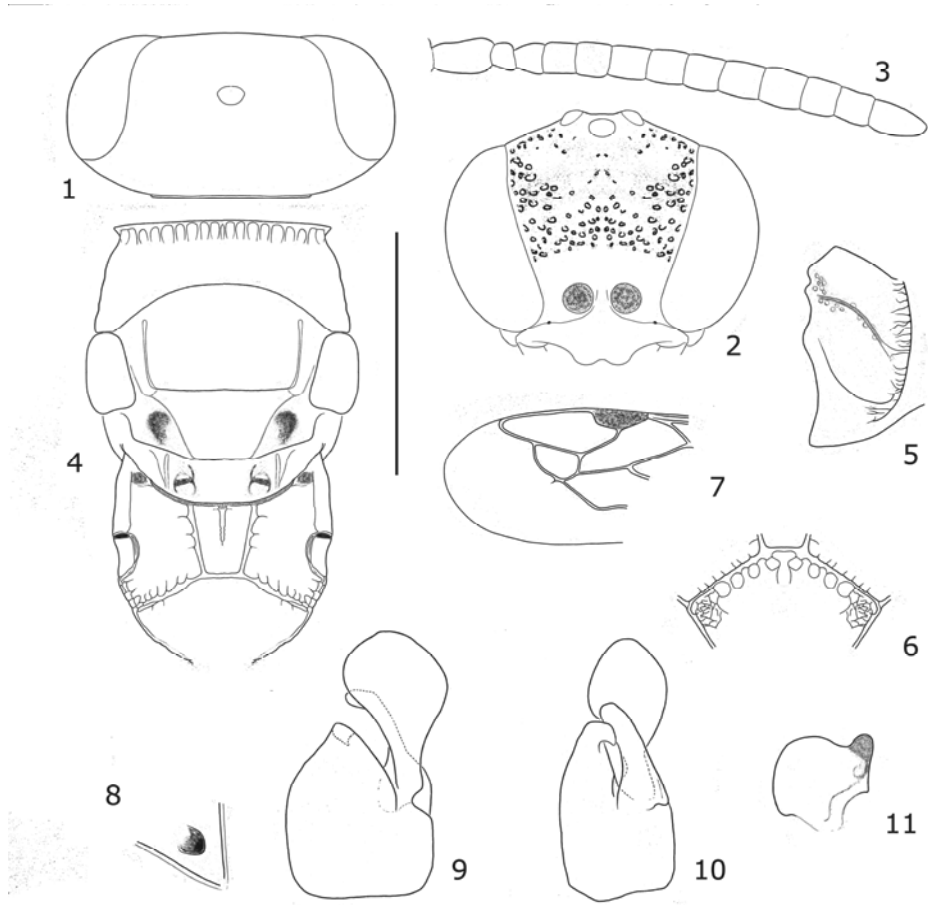
♂: Thailand= (2) /Thailand Chieng Mai Province Doi Suthep N.P.: Konthathan Waterfall area 600m 20-27.X.1979 Zool. Mus. Copenhagen leg/, ZMUC

***Tiphia dampara* Allen 1975**

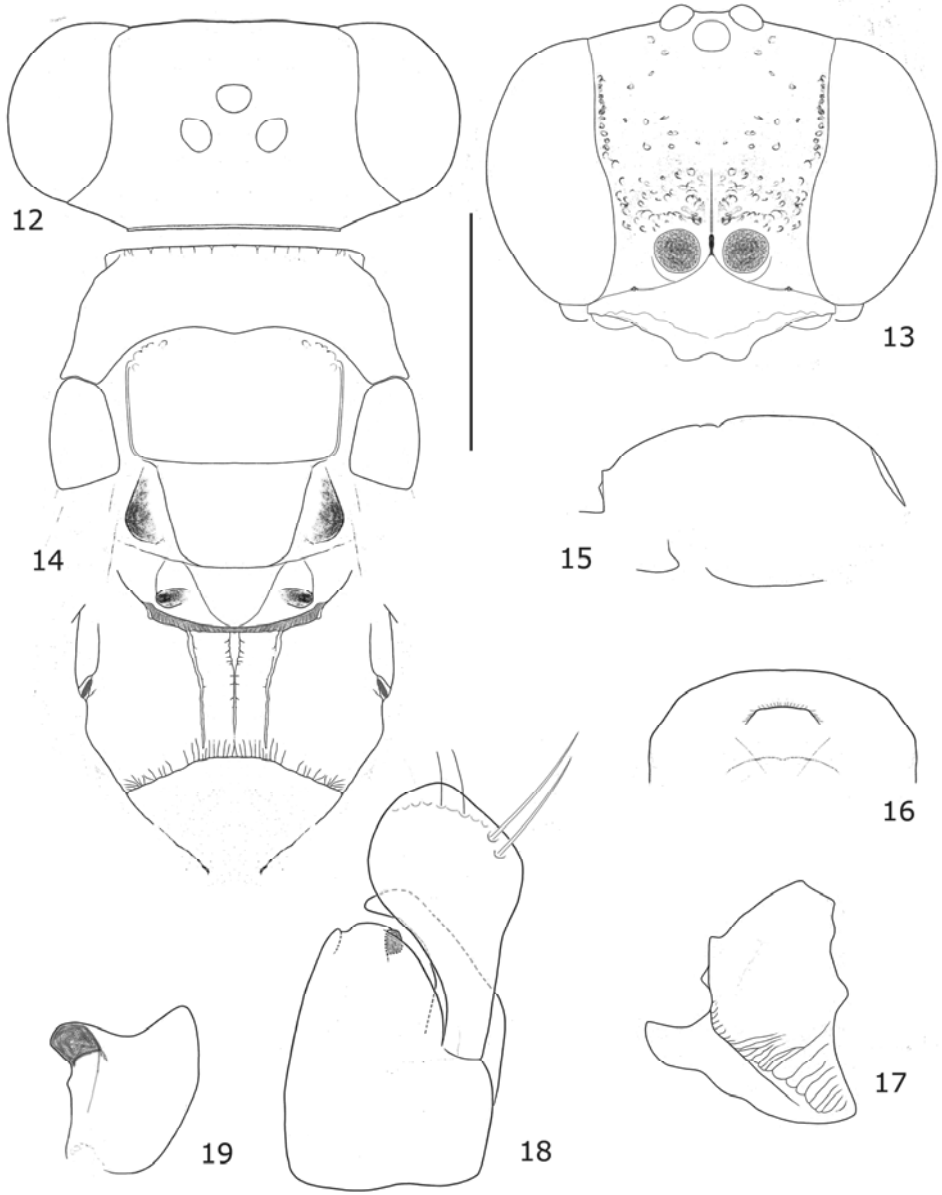
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***Tiphia tegelonga* Allen 1975**

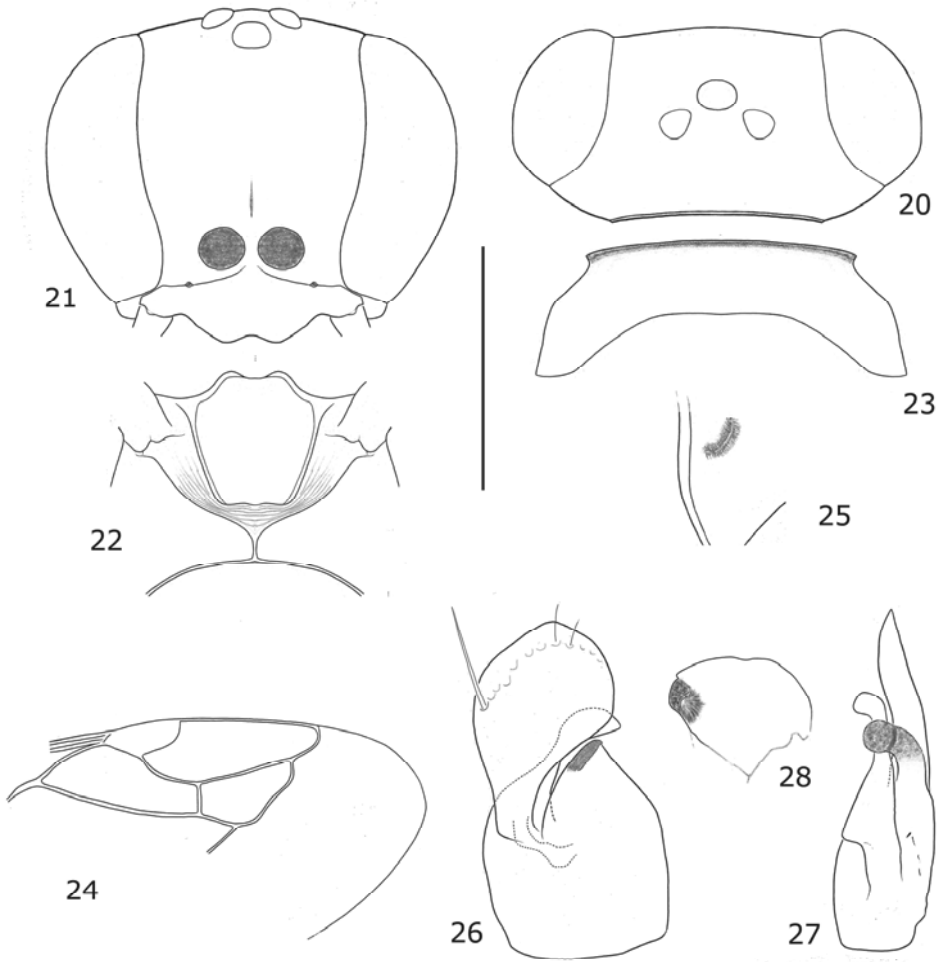
♀: Thailand = (1) /Thailand Chieng Mai Province Doi Inthanon N.P. Maeya 6-700 m 12.X.1981 Zool. Mus. Copenhagen exp./, ZMUC  
♂: Thailand= (1) /Thailand Chieng Mai Province Doi saket 950m 3.X.1981 Zool. Mus. Copenhagen exp./, ZMUC



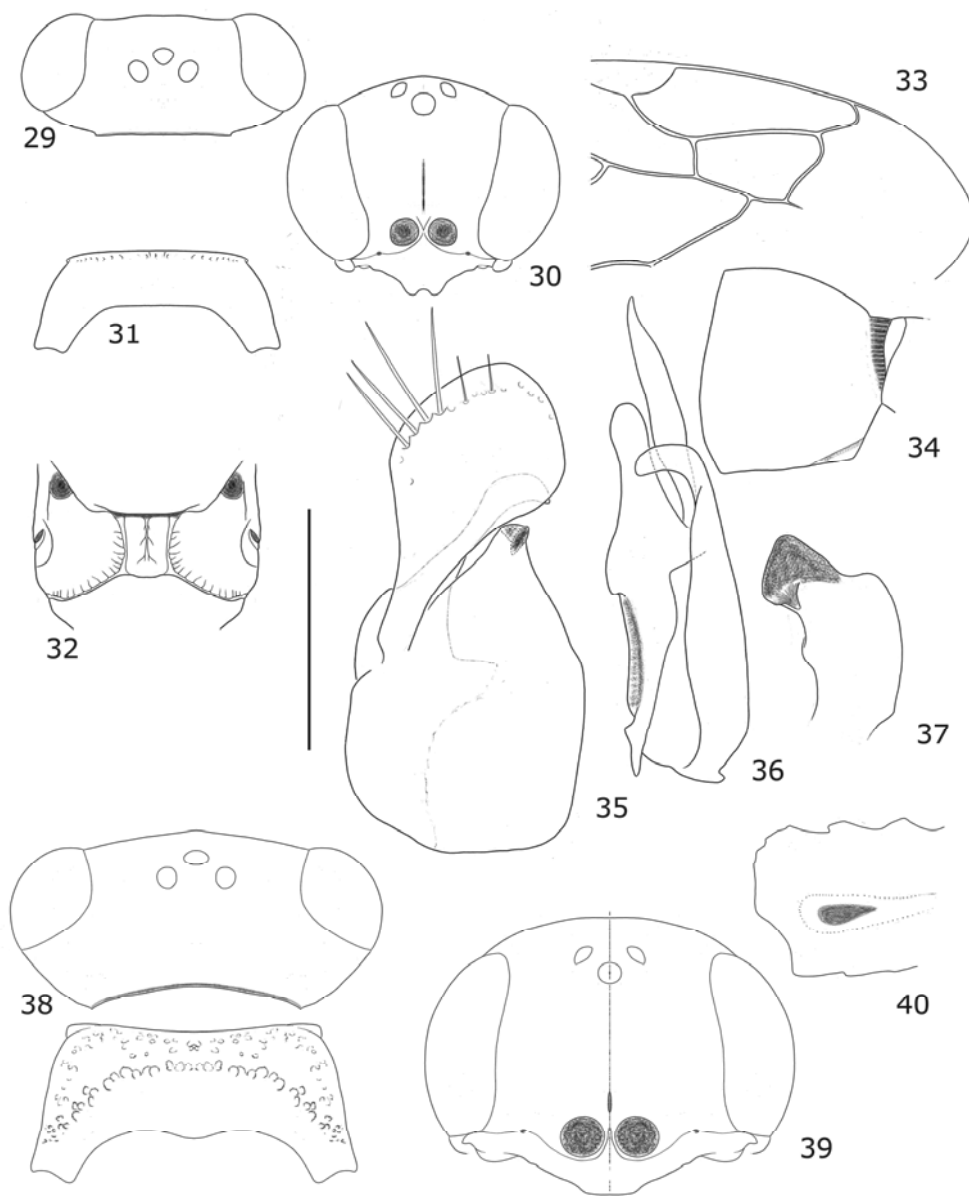
Figs. 1-11. *Tiphia brachycera* nova sp. - (1): head, dorsal aspect; (2): head, frontal aspect; (3): antenna; (4): mesosoma, dorsal aspect; (5): pronotum, lateral aspect; (6): back aspect of posterior surface of propodeum; (7): apical fore wing; (8): side of 5<sup>th</sup> sternum, sub ventral aspect; (9): gonosquama, lateral aspect; (10): gonosquama, sub latero-ventral aspect; (11): aedeagus, lateral aspect. (7: scale bar = 2 mm) (1, 2, 3, 4, 5, 6: scale bar = 1 mm) (8, 9, 10, 11: scale bar = 0.5 mm)



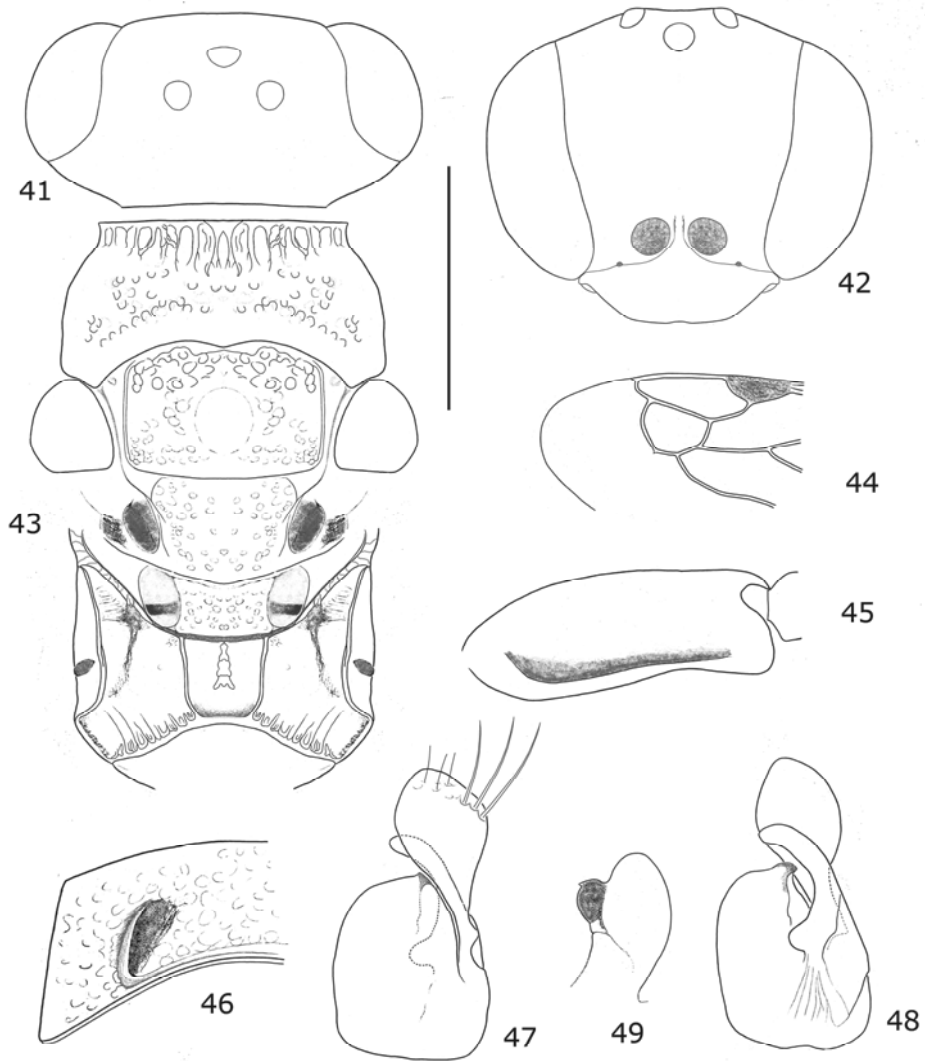
Figs. 12-19. *Tiphia cyclonota* nova sp. - (12): head, dorsal aspect; (13): head frontal aspect; (14): mesosoma, dorsal aspect; (15): lateral outline of mesosoma; (16): pronotal plate, frontal aspect; (17): pronotum, lateral aspect; (18): gonosquama, lateral aspect; (19): aedeagus lateral aspect. (15: scale bar = 2 mm) (12, 13, 14, 16, 17: scale bar = 1 mm) (18, 19: scale bar = 0.5 mm)



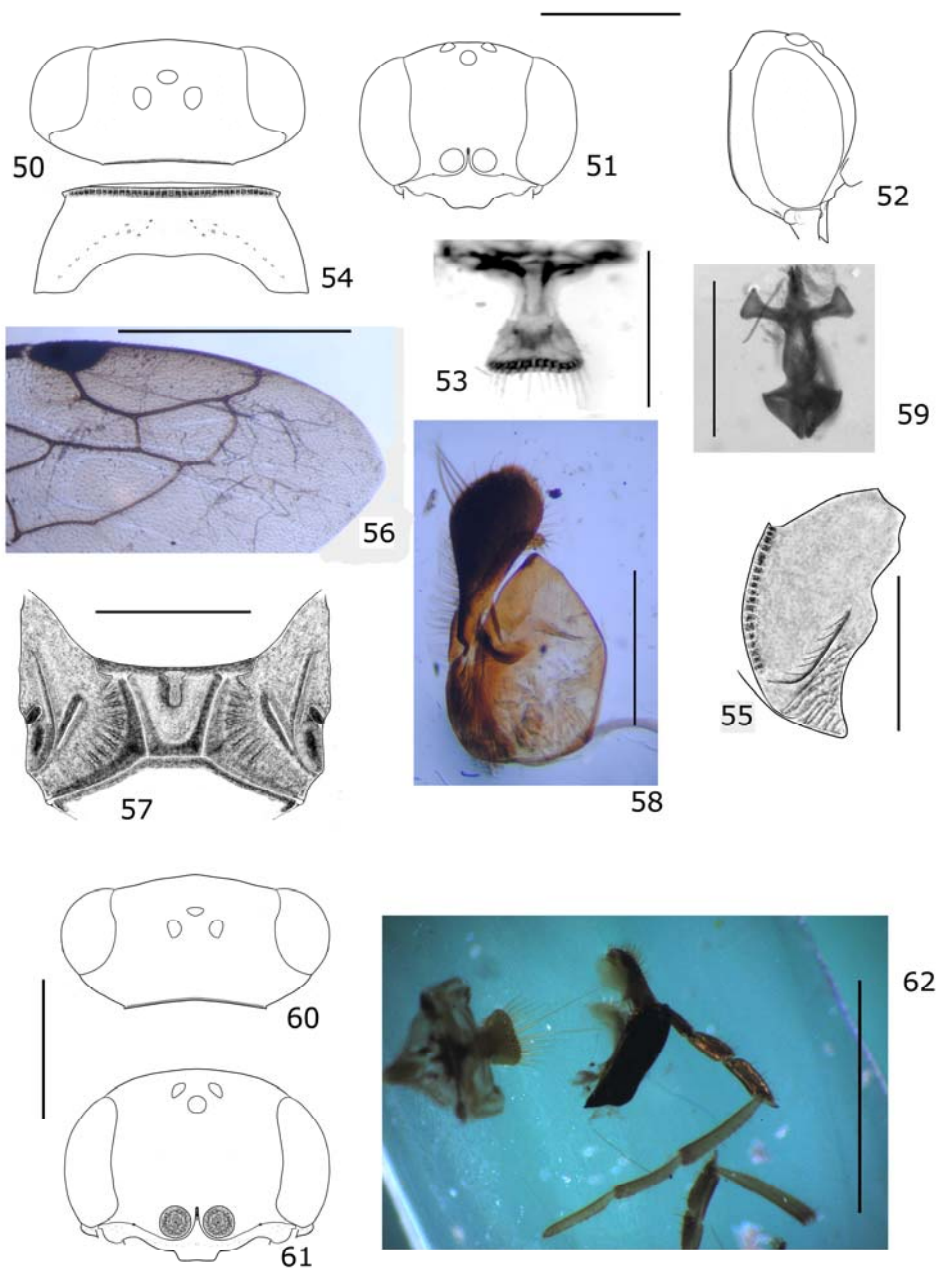
Figs. 20-28. *Tiphia dichroptera nova* sp. - (20): head, dorsal aspect; (21): head frontal aspect; (22): head, ventral aspect; (23): pronotum, dorsal aspect; (24): apical fore wing; (25): side of 5<sup>th</sup> sternum, sub ventral aspect; (26): gonosquama, lateral aspect; (27): gonosquama, sub ventral aspect; (28): aedeagus lateral aspect. (24: scale bar = 2 mm) (20, 21, 22, 23: scale bar = 1 mm) (25, 26, 27, 28: scale bar = 0.5 mm)



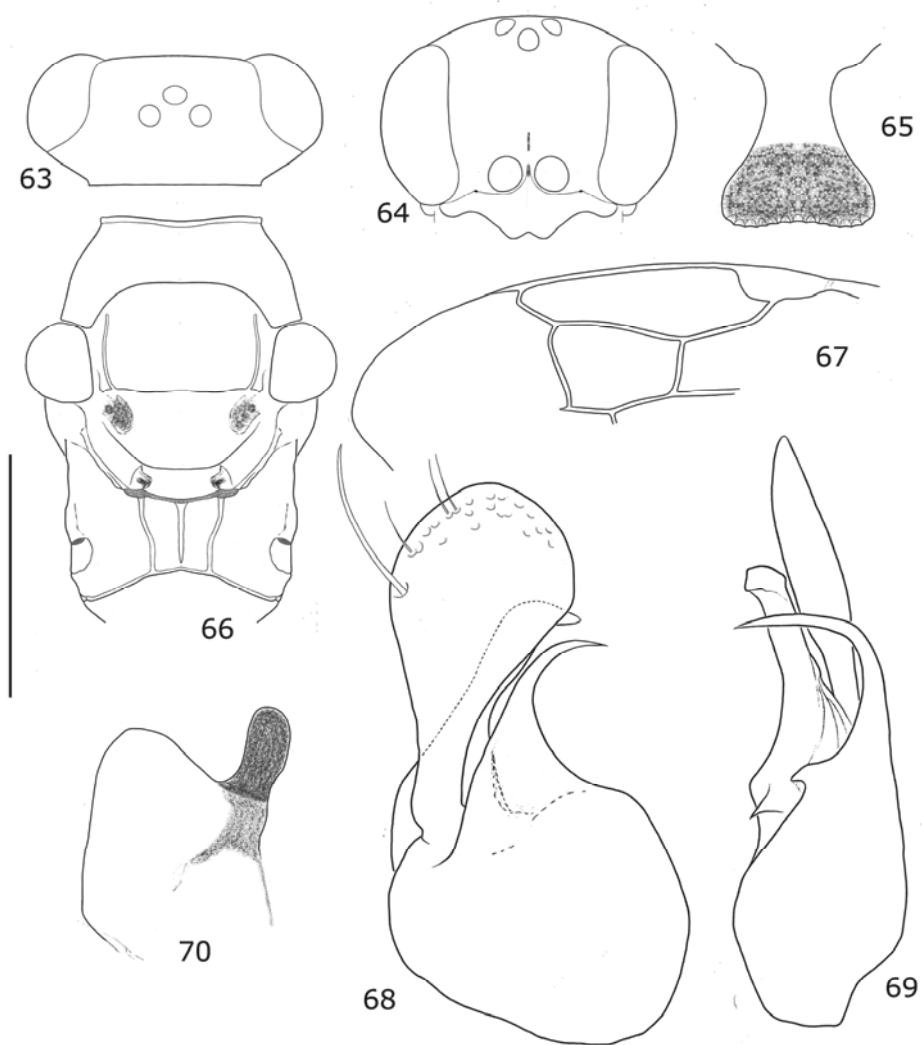
Figs. 29-40. *Tiphia erythromera nova* sp. n. ♂ - (29): head, dorsal aspect; (30): head frontal aspect; (31): pronotum, dorsal aspect; (32): propodeum, dorsal aspect; (33): apical fore wing; (34): 2<sup>nd</sup> metamerus, lateral aspect; (35): Gonosquama, lateral aspect; (36): Gonosquama, ventral aspect; (37): aedeagus lateral aspect. ♀; (38): head and pronotum, dorsal aspect; (39): head frontal aspect; (40): apical hind tibia, inner aspect. (29, 30, 31, 32, 33, 34, 38, 39: scale bar = 2 mm) (40: scale bar = 1 mm) (35, 36, 37: scale bar = 0.5 mm)



Figs. 41-49. *Tiphia laticlypeata* nova sp. ♂ - (41): head, dorsal aspect; (42): head frontal aspect; (43): mesosoma, dorsal aspect; (44): apical fore wing; (45): hind femur, inner aspect; (46): side of 5<sup>th</sup> sternum, ventral aspect; (47): Gonosquama, outer lateral aspect; (48): gonosquama, inner lateral aspect; (49): aedeagus lateral aspect. (44: scale bar = 2 mm) (41, 42, 43: scale bar = 1 mm) (45, 46, 47, 48, 49: scale bar = 0.5 mm)

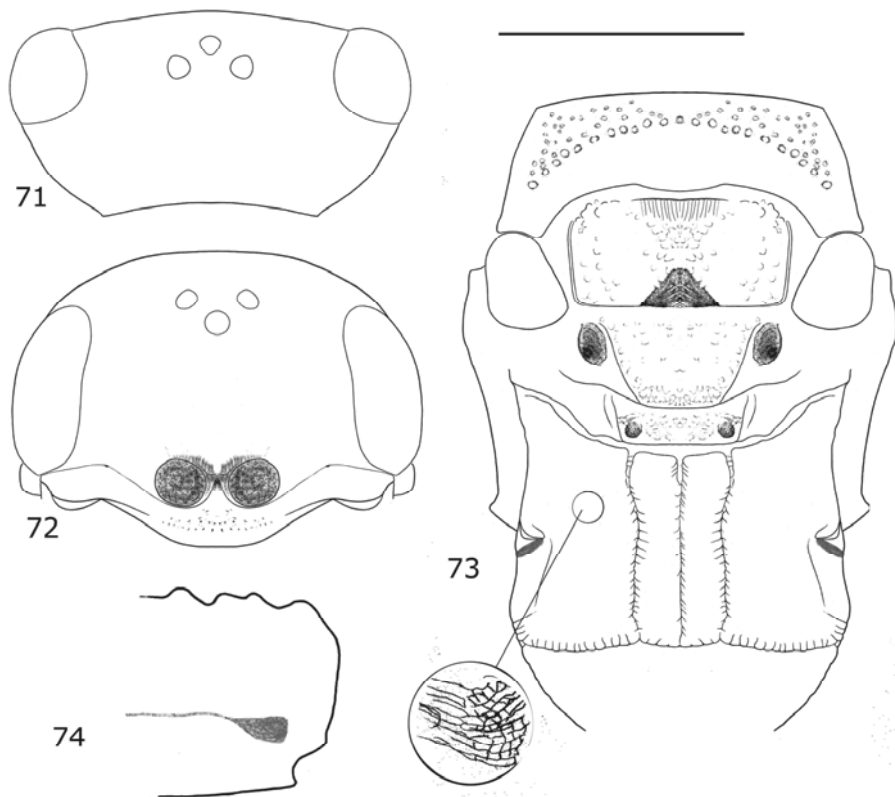


Figs. 50-62. *Tiphia lucai* nova sp. ♂ - (50): head, dorsal aspect; (51): head frontal aspect; (52): head lateral aspect; (53): labrum, frontal aspect; (54): pronotum, dorsal aspect; (55): pronotum, lateral aspect; (56): apical forewing; (57): propodeum, dorsal aspect; (58): gonosquama, inner lateral aspect; (59): aedeagus ventral aspect. ♀; (60): head, dorsal aspect; (61): head frontal aspect; (62): Pam and labrum. (50, 51, 52, 54, 55, 56, 57, 60, 61: scale bar = 1 mm) (53, 58, 59, 62: scale bar = 0.5 mm)

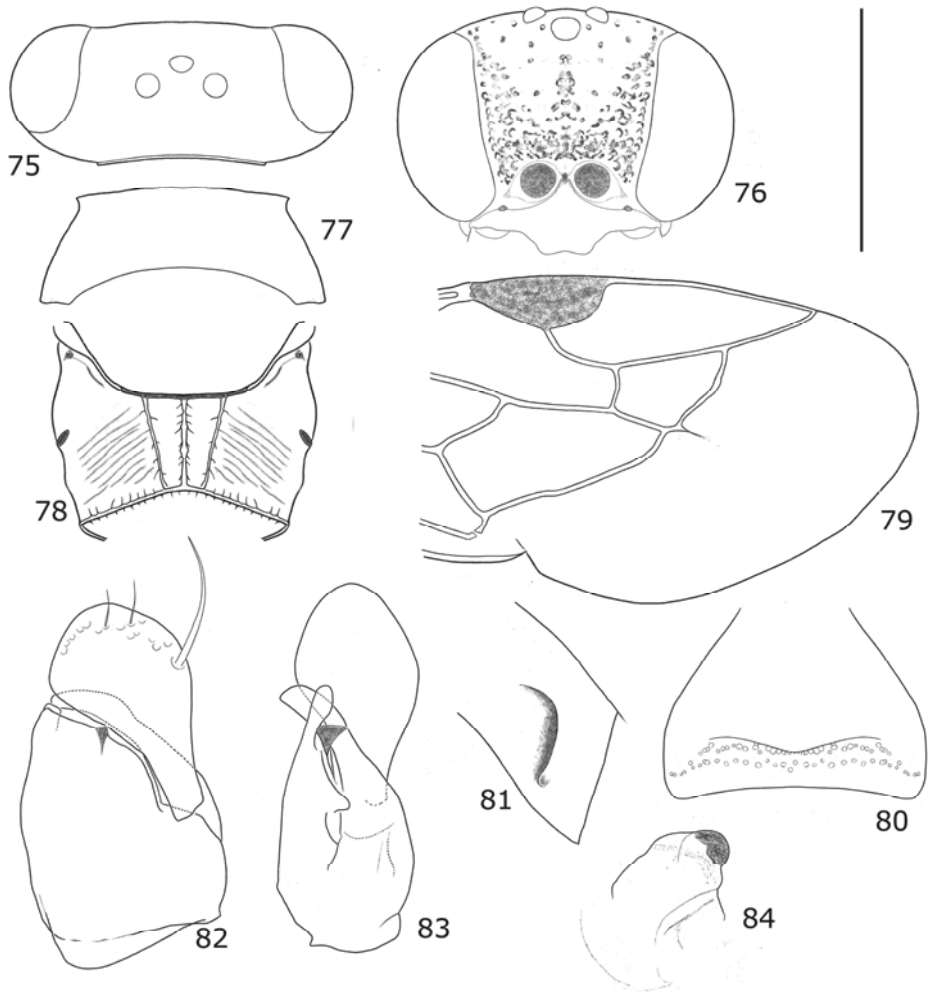


Figs. 63-70. *Tiphia mastigophora* nova sp. ♂ - (63): head, dorsal aspect; (64): head frontal aspect; (65): labrum, frontal aspect; (66): apical fore wing; (68): gonosquama, outer lateral aspect; (69): gonosquama, ventral aspect; (70): aedeagus lateral aspect. (63, 64, 66: scale bar = 2 mm) (67: scale bar = 1 mm) (65, 68, 69, 70: scale bar = 0.5 mm)

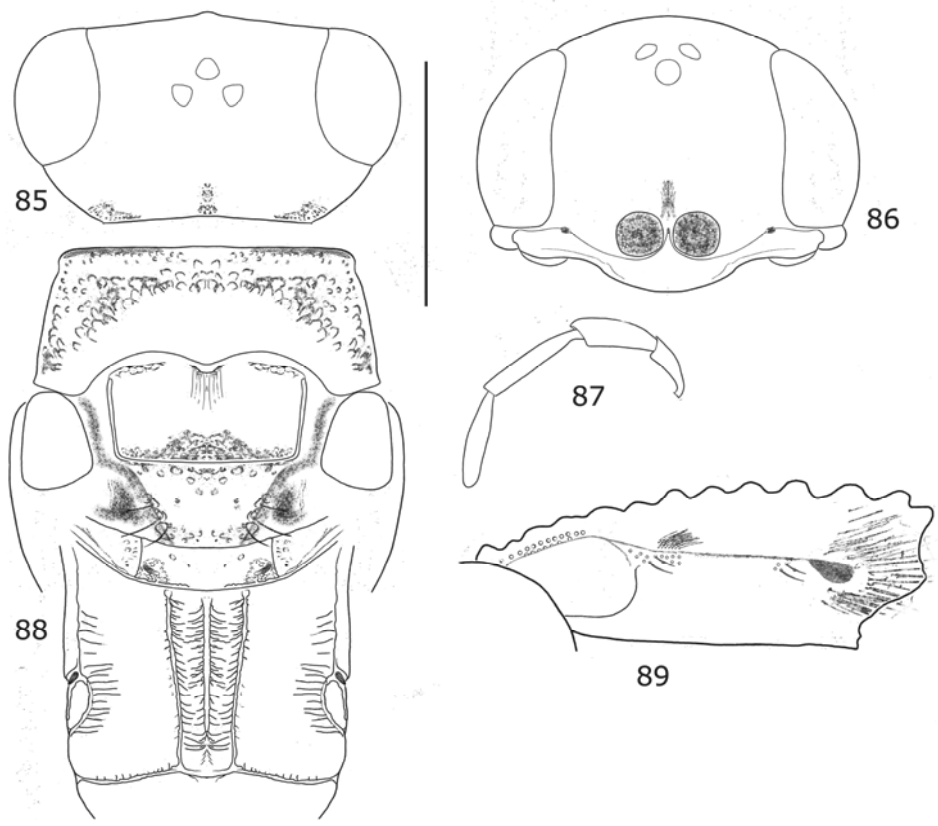




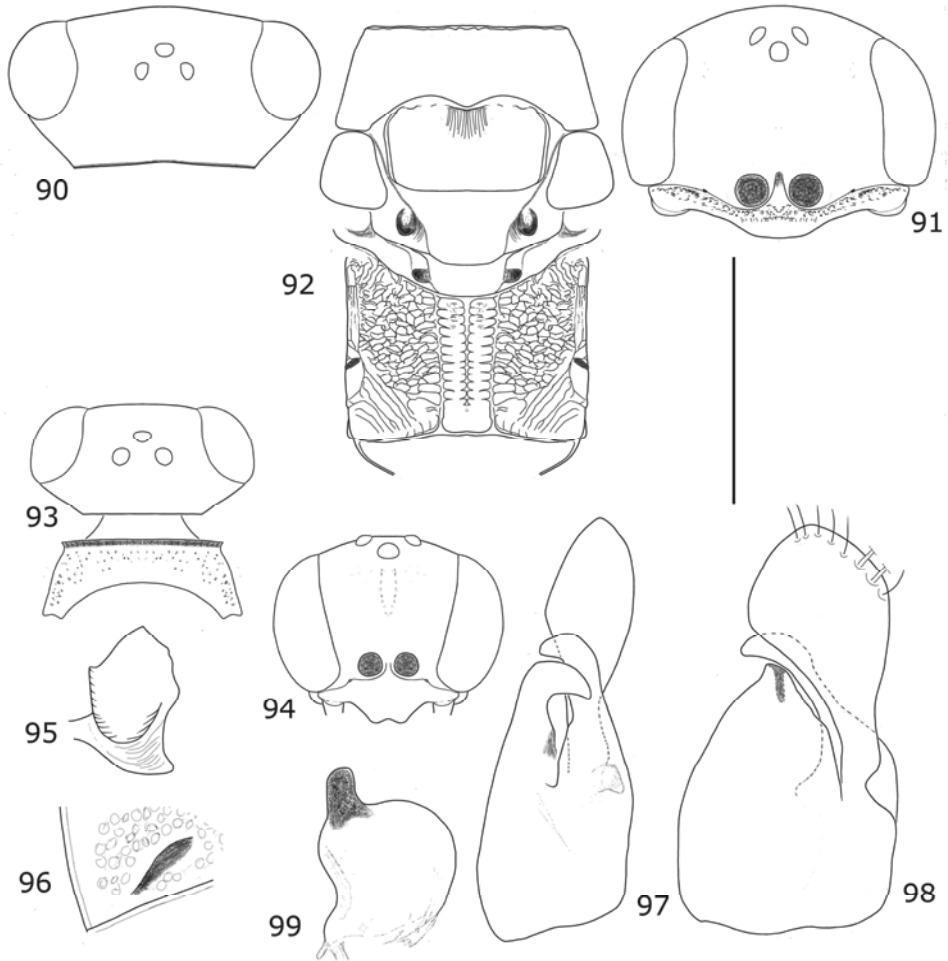
Figs. 71-74. *Tiphia mastigophora* nova sp. ♀ - (71): head, dorsal aspect; (72): head frontal aspect; (73): mesosoma, dorsal aspect; (74). (71, 72, 73: scale bar = 2 mm) (74: scale bar = 1 mm)



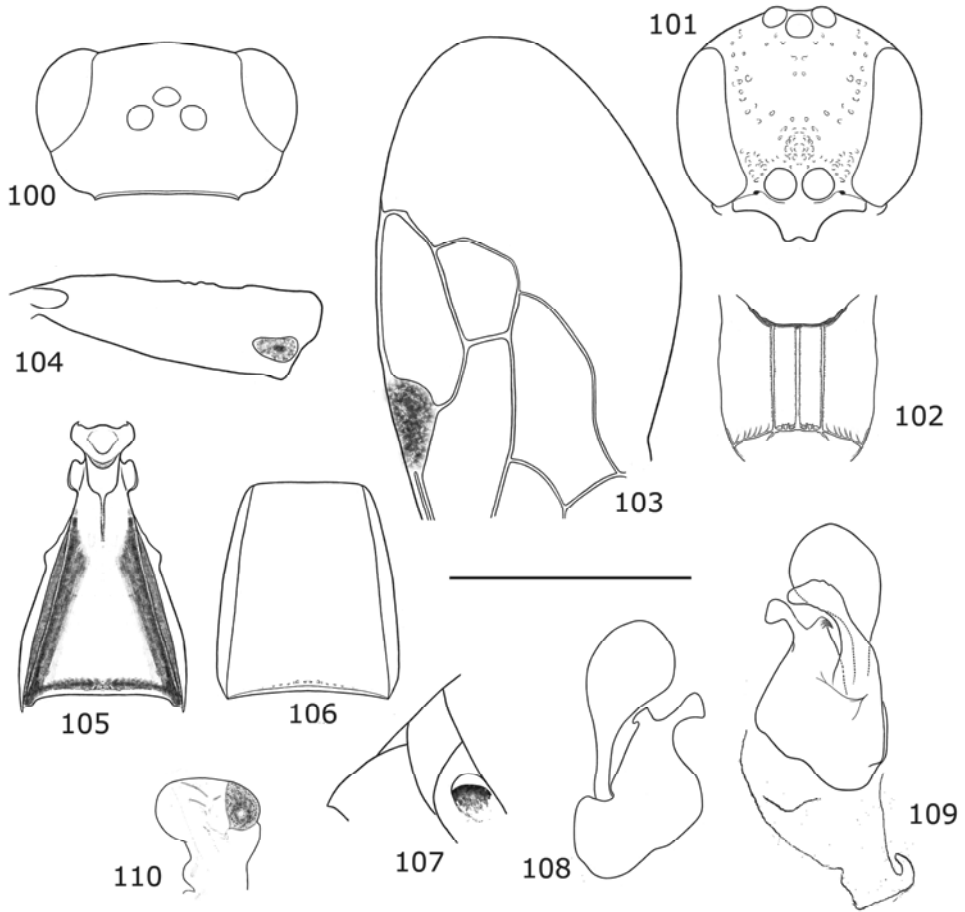
Figs. 75-84. *Tiphia oxycittara nova* sp. ♂ - (75): head, dorsal aspect; (76): head frontal aspect; (77): pronotum, dorsal aspect; (78): propodeum, dorsal aspect; (79): apical fore wing; (80): 1<sup>st</sup> tergum, dorsal aspect; (81): side of 5<sup>th</sup> sternum, ventral aspect; (82): gonosquama, outer lateral aspect; (83): gonosquama, ventral aspect; (84): aedeagus ventral aspect. (75, 76, 77, 78, 79, 80: scale bar = 1 mm) (81, 82, 83, 84: scale bar = 0.5 mm)



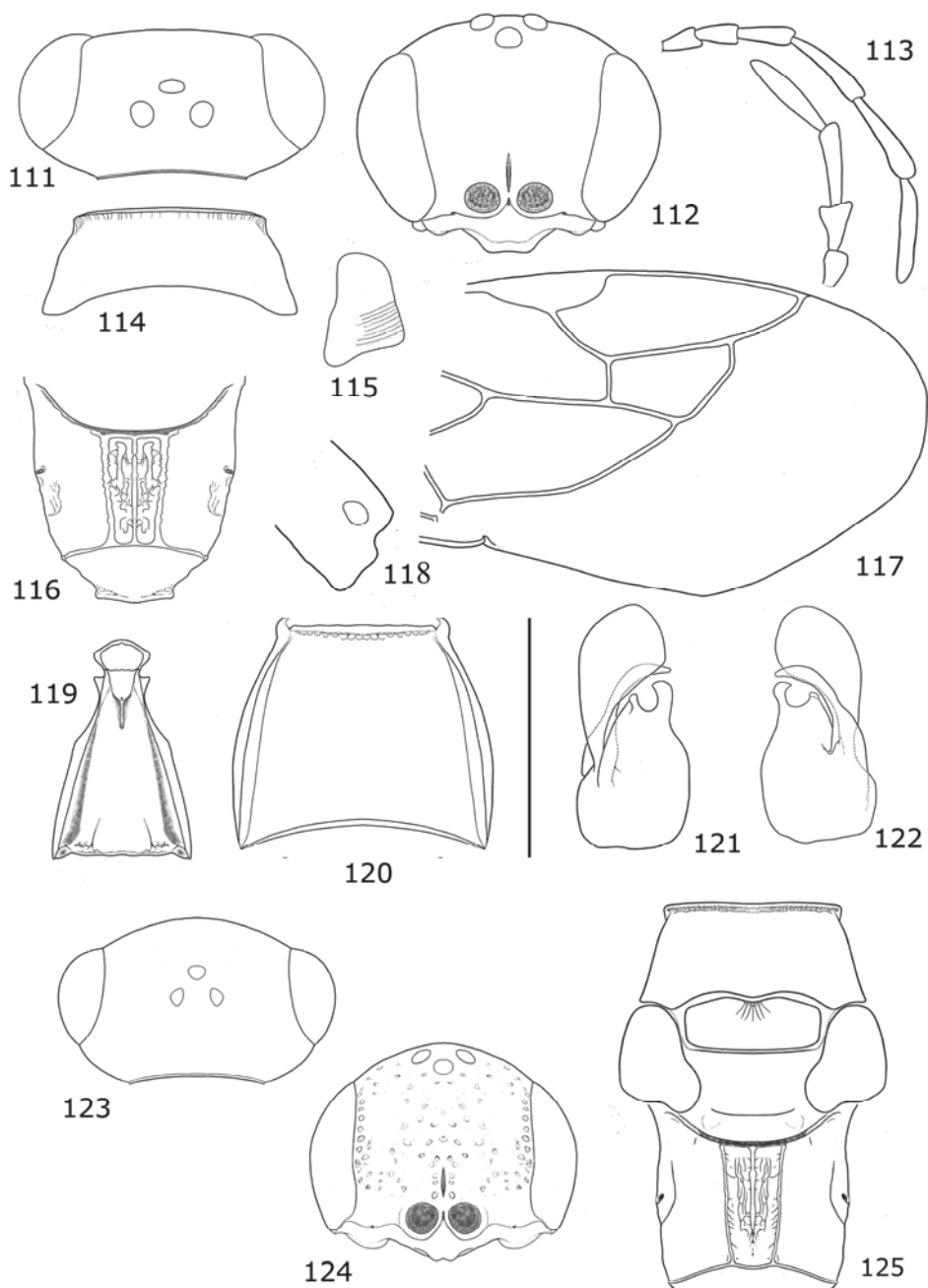
Figs. 85-89. *Tiphia rhouiokalyptra* nova sp. ♀ - (85): head, dorsal aspect; (86): head frontal aspect; (87): Pal; (88): mesosoma, dorsal aspect; (89): hind tibia, inner aspect. (85, 86, 88: scale bar = 2 mm) (89: scale bar = 1 mm) (87: scale bar = 0.5 mm)



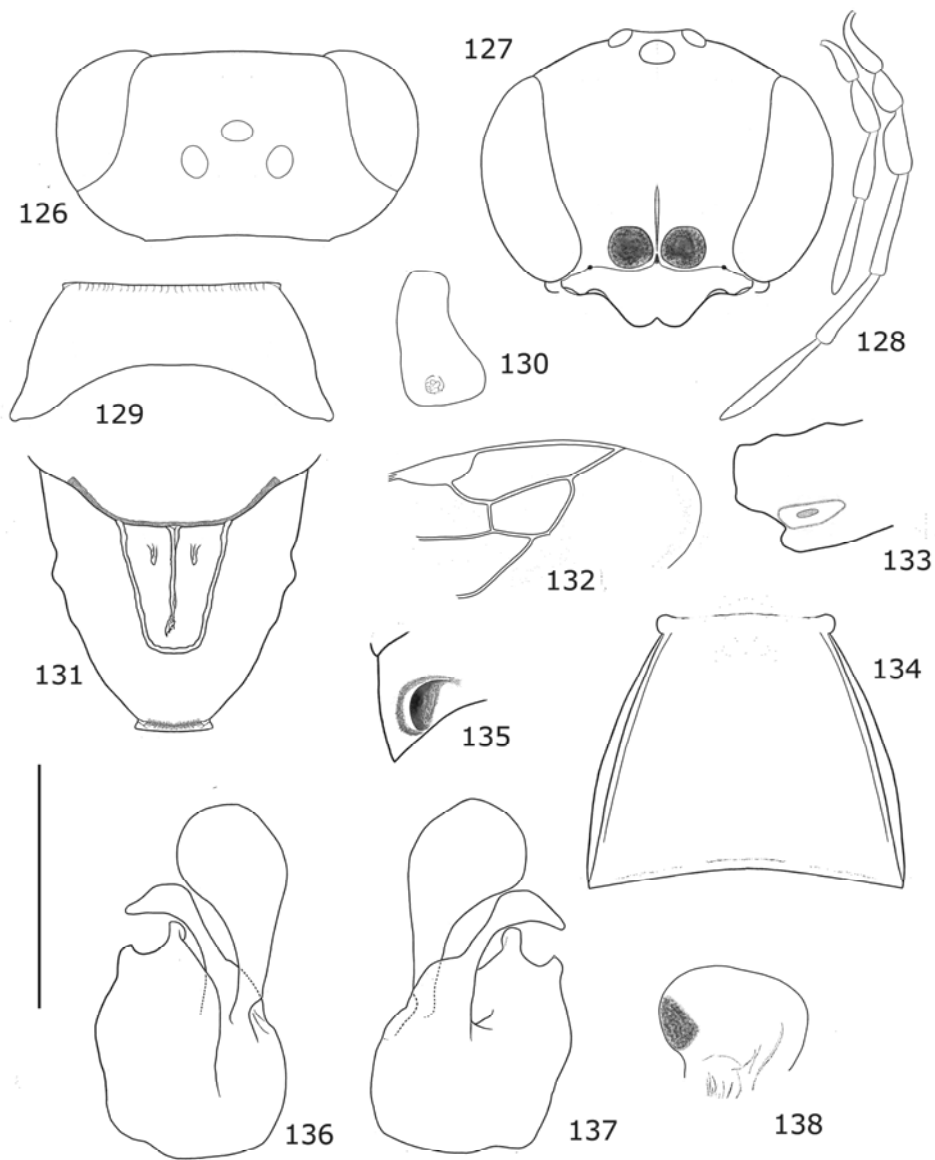
Figs. 90-99. *Tiphia toreuta nova* sp. ♀ - (90): head, dorsal aspect; (91): head frontal aspect; (92): mesosoma, dorsal aspect. ♂; (93): head and pronotum, dorsal aspect; (94): head frontal aspect; (95): pronotum, lateral aspect; (96): side of 5<sup>th</sup> sternum, ventral aspect; (97): gonosquama, ventral aspect; (98): gonosquama, outer lateral aspect; (99): aedeagus lateral aspect. (90, 91, 92, 93, 94, 95: scale bar = 2 mm) (96, 97, 98, 99: scale bar = 0.5 mm)



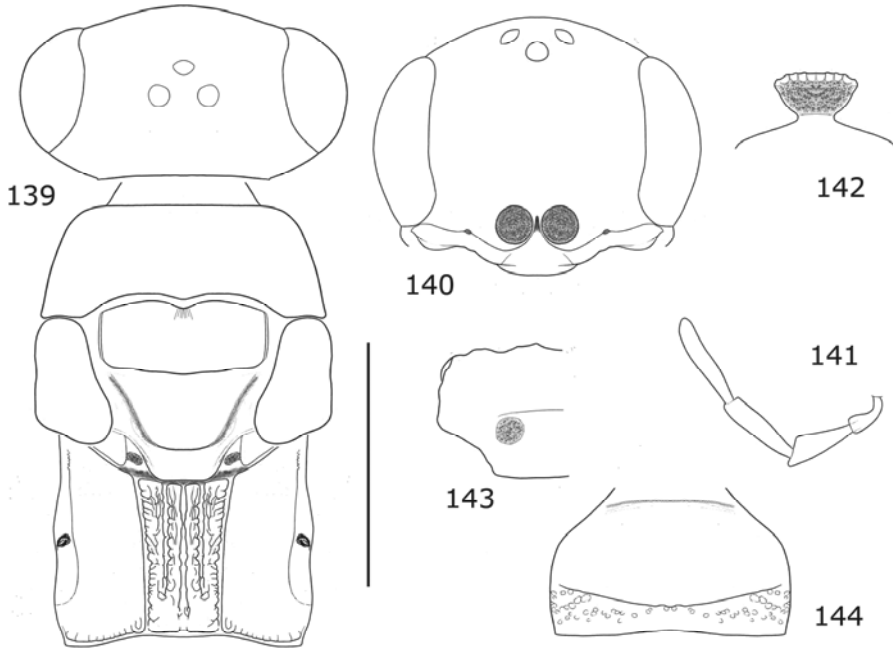
Figs. 100-110. *Tiphia tegulita* Allen 1975. ♂ - (100): head, dorsal aspect; (101): head frontal aspect; (102): propodeum, dorsal aspect; (103): apical fore wing; (104): hind tibia, inner aspect; (105): 1<sup>st</sup> sternum, ventral aspect; (106): 2<sup>nd</sup> sternum, ventral aspect; (107): side of 5<sup>th</sup> sternum, lateral aspect; (108): gonosquama, outer lateral aspect; (109): gonosquama, inner lateral aspect; (110): aedeagus lateral aspect. (100, 101, 102, 103, 105, 106: scale bar = 1 mm) (104, 107, 108, 109, 110: scale bar = 0.5 mm)



Figs. 110-125. *Tiphia platykalymma* nova sp. ♂ - (111): head, dorsal aspect; (112): head frontal aspect; (113): palpi; (114): pronotum, dorsal aspect; (115): tegula; (116): propodeum, dorsal aspect; (117): apical fore wing; (118): apical hind tibia, inner aspect; (119): 1<sup>st</sup> sternum, ventral aspect; (120): 2nd sternum, ventral aspect; (121): gonosquama, outer lateral aspect; (122): gonosquama, inner lateral aspect. ♀; (123): head, dorsal aspect; (124): head frontal aspect; (125): mesosoma, dorsal aspect. (111-112, 114-117, 119-120, 123-125: sc. bar = 1 mm) (113, 118, 121-122: sc. bar = 0.5 mm)

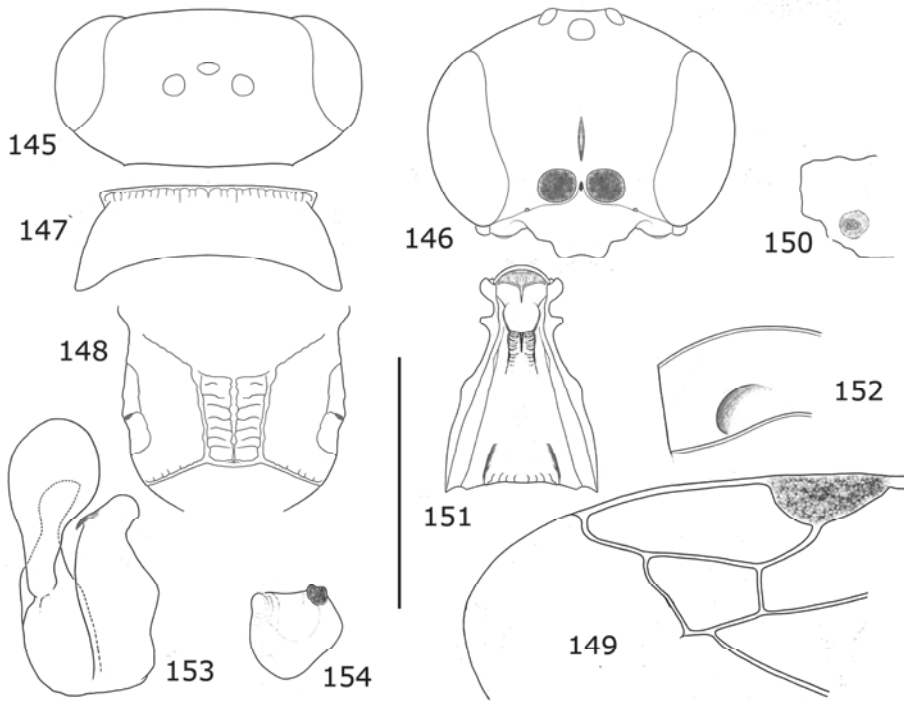


Figs. 126-138. *Tiphia macroplaka nova* sp. ♂ - (126): head, dorsal aspect; (127): head frontal aspect; (128): palpi; (129): pronotum, dorsal aspect; (130): tegula; (131): propodeum, dorsal aspect; (132): apical fore wing; (133): apical hind tibia, inner aspect; (134): 2nd sternum, ventral aspect; (135): side of 5<sup>th</sup> sternum, sub ventral aspect; (136): gonosquama, outer lateral aspect; (137): gonosquama inner lateral aspect; (138): aedeagus lateral aspect. (132: scale bar = 2 mm) (126, 127, 129, 130, 131, 134, 135: scale bar = 1 mm) (128, 133, 136, 137, 138: scale bar = 0.5 mm)

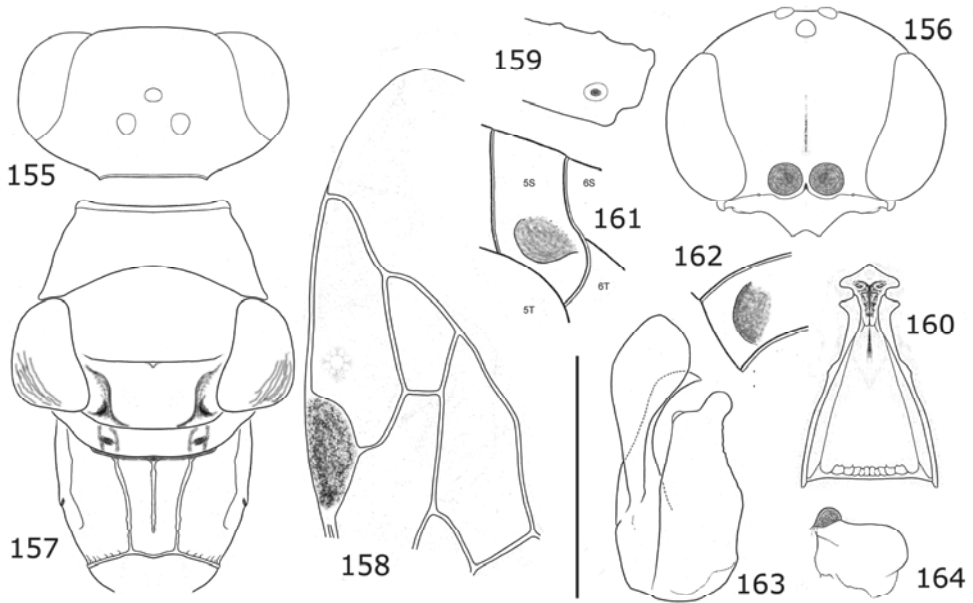


Figs. 139-144. *Tiphia macroplaka* nova sp. ♀ - (139): head, dorsal aspect; (140): head frontal aspect; (141): Pal; (142): labrum; (143): apical hind tibia, inner aspect; (144): 1<sup>st</sup> tergum, dorsal aspect. (139, 140, 144: scale bar = 1 mm) (141, 142, 143: scale bar = 0.5 mm)

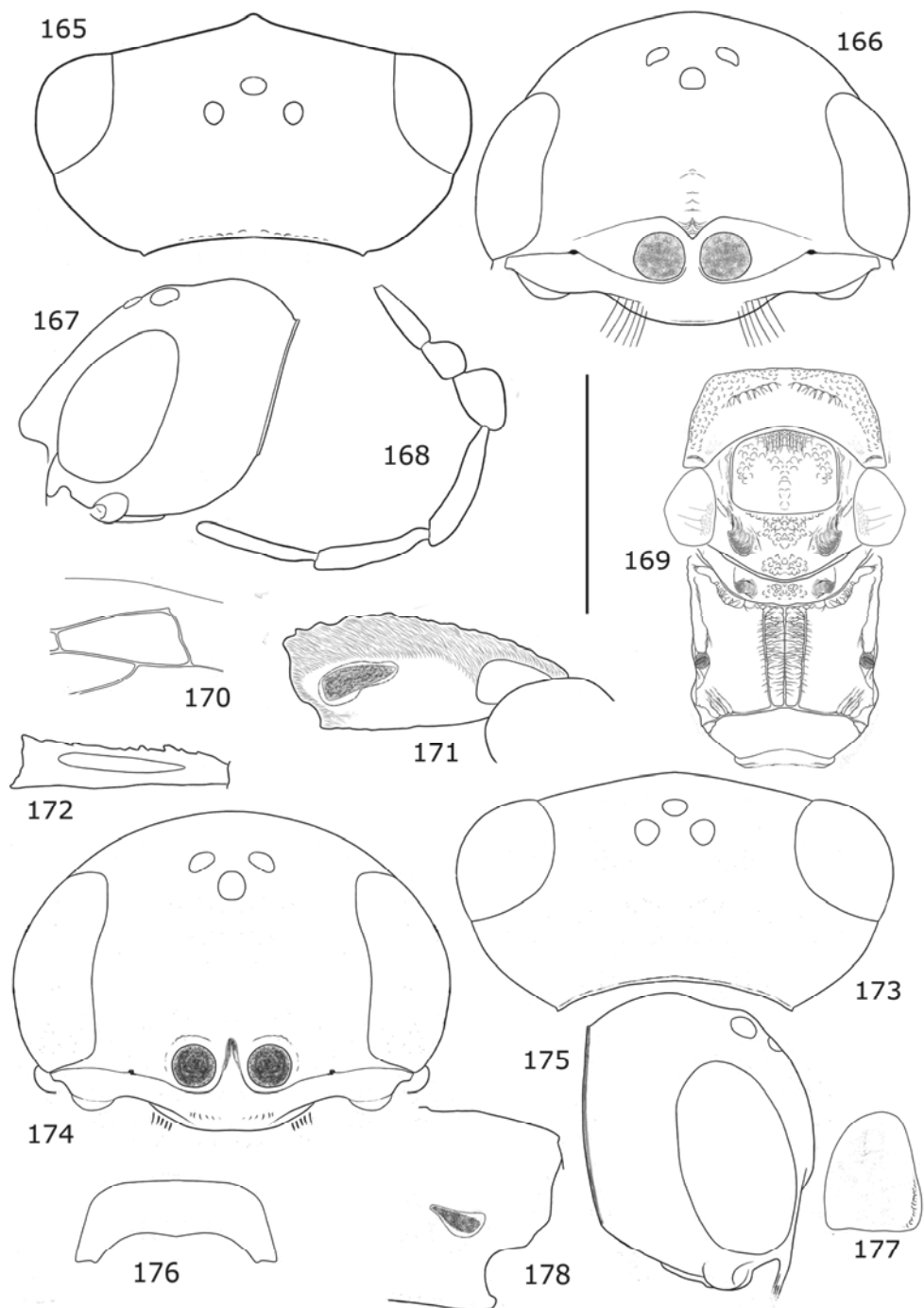




Figs. 145-154. *Tiphia platykerama* nova sp. ♂ - (145): head, dorsal aspect; (146): head frontal aspect; (147): pronotum, dorsal aspect; (148): propodeum, dorsal aspect; (149): apical fore wing; (150): apical hind tibia, inner aspect; (151): 1<sup>st</sup> sternum, ventral aspect; (152): side of 5<sup>th</sup> sternum, sub ventral aspect; (153): gonosquama, outer lateral aspect; (154): aedeagus lateral aspect. (145, 146, 147, 148, 149, 151: scale bar = 1 mm) (150, 152, 153, 154: scale bar = 0.5 mm)



Figs. 155-164. *Tiphia platysma* nova sp. ♂ - (155): head, dorsal aspect; (156): head frontal aspect; (157): mesosoma, dorsal aspect; (158): apical fore wing; (159): apical hind tibia, inner aspect; (160): 1<sup>st</sup> sternum, ventral aspect; (161): side of 5<sup>th</sup> sternum, lateral aspect; (162): side of 5<sup>th</sup> sternum, sub ventral aspect; (163): gonosquama, outer lateral aspect; (164): aedeagus lateral aspect. (155, 156, 157, 158, 160: scale bar = 1 mm) (159, 161, 162, 163, 164: scale bar = 0.5 mm)



Figs. 165-178. *Tiphia dolichaula* nova sp. ♀ - (165): head, dorsal aspect; (166): head frontal aspect; (167): head, lateral aspect; (168): Pam; (169): mesosoma, dorsal aspect; (170): fore wing, particular; (171): hind tibia, inner aspect; (172): hind basal tarsomerus.

*Tiphia annandalei*. ♀; (173): head, dorsal aspect; (174): head frontal aspect; (175): head, lateral aspect; (176): pronotum, dorsal aspect; (177): tegula; (178): hind tibia, inner aspect. (169, 170, 176,,: scale bar = 4 mm) (165, 166, 167, 171, 172, 173, 174, 175, 177: scale bar = 2 mm) (168, 178: scale bar = 1 mm)

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Author address: Mario Boni Bartalucci, Museo di Storia Naturale dell'Università degli Studi di Firenze, Sezione di Zoologia "La Specola", Via Romana 17, 50125 Firenze (Italy), bartaluc@gmail.com