

Tetrigidae (Orthoptera : Tetrigoidea) from Malaysia with the description of six new species

Khalid MAHMOOD^{1,*}, A. B. IDRIS², Y. SALMAH²

(1. University of Azad Jammu and Kashmir, Faculty of Agriculture, Rawalakot 12350, Pakistan ;

2. Centre for Insect Systematics, School of Environmental and Natural Resource Sciences, Faculty of Science and Technology, University Kebangsaan Malaysia, 43600, Bangi, Selangor, Malaysia)

Abstract : The present study lime light the identification of 28 tetrigid species from Malaysia. Six species viz. *Phaesticus azemii* sp. nov. , *Discotettix adenarii* sp. nov. , *Discotettix selangori* sp. nov. , *Scelimenella hafizaii* sp. nov. , *Scelimenella razalii* sp. nov. , and *Gavialidium phangensum* sp. nov. are new to science which are described in detail. Eleven species are new records for Malaysia. In addition, key to the local genera and species has also been constructed.

Key words : Orthoptera ; Tetrigoidea ; Tetrigidae ; pygmy grasshoppers ; fauna ; new species ; Malaysia

The tetrigid grasshoppers usually occur in more natural habitat and can be used as indicator for environmental quality. The tropical countries are very rich in faunal diversity by virtue of their climatic conditions and natural habitats. The possibilities for studying the diversity of insect fauna in the natural habitats of tropics are decreasing due to deforestation and other devastating activities (Deshmukh , 1986). The grasshoppers are the most important insect group in making biodiversity on land (Joern , 1979). There are many published records available on tetrigid grasshoppers of Indo-Malaya region (Brunner De Wattenwyl , 1893 ; Hancock , 1907 , 1909 , 1912 , 1915 ; Kirby , 1914 ; Hebard , 1929 ; Willems , 1930 , 1951 ; Gunther , 1938a , b , 1939 ; Blackith , 1988 , 1992 ; Wagan and Kevan , 1992 ; Mahmood *et al.* ,

2004) but no systematic account for only Malaysia exists. The present report is the pioneer study of the faunal survey of Tetrigidae from Malaysia that lime lights the identification of 28 tetrigid species from this area out of which six species are new to science. Our study was based on only bachelor students ' collection present in Center for Insect Systematics , University Kebangsaan Malaysia , so , it is expected that this number will increase and more new materials will be added when more detailed and extensive survey is undertaken.

All type specimens have been deposited in Center for Insect Systematics , School of Environmental and Natural resource Sciences , Faculty of Science and Technology , Universiy Kebangsaan Malaysia.

Subfamily Tetriginae

Key to the Malaysian genera of Tetrigininae

- | | |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1 Antennae filiform , 20 – 22 segmented | 2 |
| Antennae 11 segmented , 8th and 9th segments compressed , foliaceous | <i>Phaesticus</i> Uvarov |
| 2 Pronotum short , not extended behind the abdomen ; median carina low linear | <i>Copotettix</i> Bolivar |
| Pronotum long , extended behind the abdomen ; median carina raised | 3 |
| 3 Eyes and vertex well raised above the level of pronotum ; median carina prominent through the length of pronotum | 4 |
| Eyes and vertex not raised above the level of pronotum ; median carina only well marked in front of shoulder | <i>Paratettix</i> Bolivar |
| 4 Posterior femora with distinct nodosities on external surface | <i>Ergatettix</i> Kirby |
| Posterior femora with less distinct nodosities on external surface | <i>Euparatettix</i> Hancock |

* Address for correspondence : Dr. Khalid Mahmood , Professor , Department of Entomology , Faculty of Agriculture , University of Azad Jammu and Kashmir , Rawalakot , 12350 , Pakistan ; Phone : + + 9258710 42688 ; Fax : + + 9258710 42826 ; Email : kmmaldial@yahoo.com

***Phaesticus* Uvarov , 1940**

Type species : *Phaesticus mellerborgi* (Stål , 1885) = *Tettix mellerborgi* Stål , 1885

Key to species of *Phaesticus* Bolivar

- Pronotum compressed , foliaceous ; body smooth *azemii* sp. nov.
 Pronotum slightly tectiform anteriorly ; body finally granulated *insularis* Hancock

***Phaesticus azemii* sp. nov.** (Fig. 1)

Description : Body : very small ; Color : reddish brown .
 Head : very small , frontal furrow prominent , bifurcated between antennae , rami parallel , slightly projecting anteroid between antennae ; antennae inserted distinctly below eyes , 11 segmented , 7th slightly compressed , 8th and 9th segment compressed foliaceous ; lateral ocelli present between antennae ; eyes prominent , oval ; vertex very short , hardly discernable ; pronotum compressed , archuated , posteriorly not reaching the tip of abdomen , median carina touching the frontal furrow on vertex , lateral lobes deflexed with slightly rounded truncated posterior margins ; tegmina and wings absent ; hind femora , short , broad , with compressed dorsal carinae , dorsal and ventral carinae smooth ; hind tibia with small spines ; first segment of the hind tarsus larger than the 3rd ; male subgenital plate short , pointed ;

cercus short , pointed , pilose .

Measurements (mm) : Total body length , 7 ; hind femur length , 3 ; hind femur width , 1.5 .

Material examined : Holotype , 1 male , Mohammad Azemi , 9. VIII . 1974 , Selangor , Malaysia .

Distinguishing characters : It is separated from all the species of this genus by having , pronotum compressed , foliaceous , archuate throughout its length and vertex very short . Median carina of pronotum also compressed (Fig. 1) .

Note : We have only one male specimen in our collection and we think it sufficient for the designation of a new species as its morphological characters are very clear .

Derivation of name : The name of this species has been dedicated to its collector .

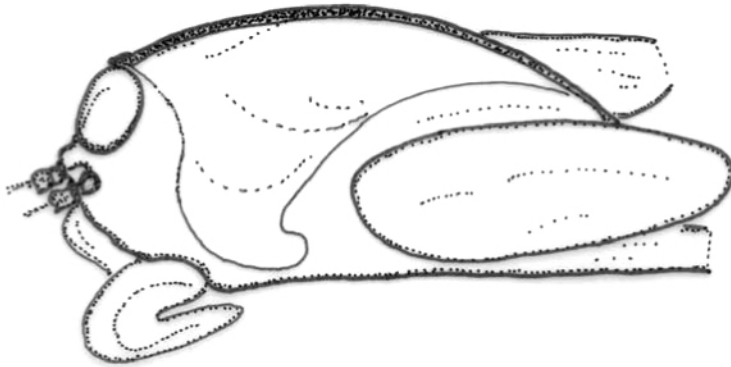


Fig. 1 *Phaesticus azemii* sp. nov. , lateral view of pronotum

***Phaesticus insularis* Hancock , 1907**

Our specimens show the same characters as given by Hancock (1907) except minor variations in measurements and deep sulcation of frontal furrow .

Measurements (mm) : Male : total body length , 11 – 11.5 , pronotum length , 9.00 , hind femur length , 4 – 5 . Female : total body length , 11.5 , pronotum length , 9 – 10 , hind femur length , 5.2 – 5.5 .

Material examined : 1 male , Kepong , 3. III . 74 ,

Selangor (Malaysia) ; 1 male , Neora Kamal , 12. XII . 82 , Selangor ; 1 female , Halija , 10. I . 80 , Selangor ; 1 female , Zaid , 6. X . 74 , Selangor .

Geographical distribution : Earlier , Hancock (1907) reported this species from East Malaysia (Borneo) . We confirm its distribution extent and presence in Peninsular Malaysia (West Malaysia) .

New record : This species has been recorded for the first time from Peninsular Malaysia .

***Copotettix* Bolivar , 1887**

Type species : *Copotettix asperatus* Bolivar , 1887

Key to the species of *Copotettix* Bolivar

- Body comparatively large ; tegmina and wings crossing the tip of abdomen *interruptus* Bolivar
 Body comparatively small ; tegmina and wings not crossing the tip of abdomen *capitatus* Bolivar

***Copotettix interruptus* Bolivar , 1887**

Our specimens are similar to the published description of Kirby (1914), Gunther (1992), and Blackith (1942) of this species. In our specimens , vertex narrow with median carina only on anterior half , lateral margins raised ; pronotum posteriorly slightly produced behind knee of hind femur ; wings slightly longer than pronotum .

Measurements (mm) : Male : total body length , 10 , hind femur length , 5.5 . Female : total body length , 10 – 11 , hind femur length , 5.5 – 6 .

Material examined : 2 females , Sharoza , 5. XI . 2004 , Selangor (Malaysia) ; 1 male , Ruslan , 15. VII . 76 , Selangor .

Geographical distribution : Burma , Java . We confirm its distribution and presence in Malaysia .

New record : This species has been recorded for the

first time from Malaysia .

***Copotettix capitatus* Bolivar , 1887**

Our specimens of this species conform to the published description of Kirby (1914) and Blackith (1992) of this species .

Measurements (mm) : Male : total body length , 7.5 , hind femur length , 5.5 . Female : total body length , 8.5 ; hind femur length , 5.5

Material examined : 1 female , Norlindawati , 20. VII . 2003 , Pahang (Malaysia) ; 1 male , Sulaiman , 15. I . 71 , Bangsar (Malaysia) .

Geographical distribution : Earlier , this species has been reported from Mayar and Java . We confirm its presence in Malaysia .

New record : This species has been recorded for the first time from Malaysia .

***Paratettix* Bolivar , 1887**

Type species : *Paratettix meridionalis* (Ramber , 1839) = *Tetrix meridionalis* Ramber , 1839

Key to the species of *Paratettix* Bolivar

Median carina of pronotum well marked , archuated anteriorly ; body comparatively large *cingalensis* Walker
Median carina of pronotum not prominent , depressed anteriorly ; body Comparatively small *scaber* Thunberg

***Paratettix cingalensis* (Walker , 1871)**

Tettix cingalensis Walker , 1871

Our specimens completely agree with the published description of Kirby (1914), Blackith (1988 , 1992) and Shishodia (1991) of this except slight variation in measurements. In addition , our specimens show hind femora compressed , broad with expanded upper and lower carinae .

Measurements (mm) : Male : total body length , 12.50 ; pronotum length , 10 ; hind femur length , 5 . Female : total body length , 11 – 14 ; pronotum length , 10 – 11 ; hind femur length , 5 – 7 .

Material examined : 1 male , Rahim , 1. I. 1980 , Selangor (Malaysia) ; 1 female , Ali , 30. I. 1980 , Kedah (Malaysia) ; 2 females , Shaereza , 5. XI . 2004 , Selangor (Malaysia) .

Geographical distribution : This is a widely distributed species almost present in all Southeastern countries including Malaysia .

***Paratettix scaber* (Thunberg , 1815)**

Acrydium scabrum Thunberg , 1815

Our specimens agree with the description given by Kirby (1914) and Blackith (1992) for this species except color pattern as our specimen have no white sport on the dorsum of pronotum .

Measurements (mm) : Male : total body length , 10.5 ; pronotum length , 9.5 ; hind femur length , 5.5 . Female : total body length , 12.00 ; pronotum length ,

9.5 – 10.5 ; hind femur length , 4.70 – 5 .

Material examined : 1 male , Zalia , 10. IV . 74 , Selangor (Malaysia) ; 3 females , Mahbob , 16. X . 75 , Selangor .

Geographical distribution : Earlier , this species has been reported from India and Africa . We accept its presence in Malaysia .

New record : This species has been recorded for the first time from Malaysia .

***Ergatettix* Kirby , 1914**

Type species : *Ergatettix dorsifera* (Walker , 1871) = *Tettix dorsifera* Walker , 1871 = *Ergatettix tarsalis* Kirby , 1914

***Ergatettix interruptus* (Brunner von Wattenwyl , 1893)**

Paratettix interruptus Brunner Von Wattenwyl , 1893

Our specimens key out as *Euparatettix interruptus* according to Kirby (1914) but latter on Blackith (1992) shifted it under *Ergatettix* .

Measurements (mm) : Female : total body length , 11 – 15 ; hind femur length , 4 – 5 .

Material examined : 3 females , Faizal , 12. VIII . 2004 ; 4 females , Razak , 24. II . 1985 .

Geographical distribution : Earlier , this species has been reported from India , Myanmar , Thailand and Laos . We confirm its existence in Malaysia .

New Record : This species has been recorded for the first time from Malaysia .

***Euparatettix* Hancock , 1904**

Type species : *Euparatettix parvus* Hancock , 1904

Key to the species of *Euparatettix* Hancock

- 1 Vertex and eyes in level of pronotum 2
 Vertex and eyes slightly raised from the level of pronotum 3
 2 Body moderately inflated ; hind femur with finely serrated dorsal carina ; width of Vertex almost equal to an eye *semihirsutus* Brunner von Wattenwyl
 Body moderate ; hind femur with smooth dorsal carina ; vertex slightly narrower than an eye *indicus* Bolivar
 3 Frontal costa prominently archuated ; median carina of pronotum well marked *variabilis* (Bolivar)
 Frontal costa slightly archuated ; median carina of pronotum low , depressed *scabripes* (Bolivar)

***Euparatettix semihirsutus* (Brunner von Wattenwyl , 1893)**

Paratettix semihirsutus Brunner von Wattenwyl , 1893

Our specimens agree with the published description of Kirby (1914) of this species except wings are 4 mm longer than pronotum and hind tibia black with 2 yellow bands.

Measurements (mm) : Male : total body length , 14.5 , body length , 9.00 ; hind femur length , 5.00.

Material examined : 1 male , Ruslan , 8. VI . 2004 , Terengganu (Malaysia) .

Geographical distribution : Earlier , Kirby (1914) reported this species from Burma. We confirm its distribution extent and presence in Malaysia.

New record : This species has been recorded for the first time from Malaysia.

***Euparatettix indicus* (Bolivar , 1887)**

Paratettix indicus Bolivar , 1887

The single female specimen of this species conforms to the published description of Kirby , (1914) of this species. In addition , our specimen show smooth pronotum with two black spots behind shoulders ; posterior process of pronotum produced behind stretched hind tibia ; wings 1.5 mm longer than pronotum ; hind femora finely serrated dorsally with a black spot on external surface.

Measurements (mm) : Female : total body length ; 12.50 ; pronotum length , 11.50 ; hind femur length , 4.50.

Material examined : 1 female , Akira , 9. XI . 1987 , Sabah (Malaysia)

Geographical distribution : This species has been

recorded from India and China. We confirm its presence in Malaysia.

New record : This species has been recorded for the first time from Malaysia.

***Euparatettix variabilis* (Bolivar , 1887)**

Paratettix variabilis Bolivar , 1887

The specimens of this species completely agree with the published description of Kirby (1914) , Bei-Bienko and Mishchenko (1951) and Blackith (1992) of this species.

Measurements (mm) : Female : total body length , 11 – 12 ; hind femur length , 4.5 – 5

Material examined : 1 female , Sepu , 27. I . 1985 , Selangor ; 1 female , Zakaria , 1. IX . 1974 ; 2 females , Dr. Kurtak , 30. I 1974

Geographical distribution : This is a widely distributed species in Africa and Asia.

New record : This species has been recorded for the first time from Peninsular Malaysia.

***Euparatettix scabripes* (Bolivar , 1898)**

Paratettix scabripes Bolivar , 1898

Our specimens confirm to the published description of Kirby (1914) of this species.

Measurements (mm) : Female : total body length , 11 – 11.50 ; hind femur , 4.50 – 5.00

Material examined : 2 females , Chow , 10. X . 2003 , Selangor

Geographical distribution : Earlier , this species has been recorded from East Bengal. We confirm its presence in Malaysia.

New record : This species has been recorded for the first time from Malaysia.

Subfamily Discotettinae***Discotettix* Costa , 1864**

Type species : *Discotettix belzebuth* (Serville , 1839) = *Tetrix belzebuth* Serville , 1839 = *Tettix armatus* Costa , 1864

Key to the species of *Discotettix*

- Dorsum of pronotum with no thorn or spine ; median carina of pronotum anteriorly produced into a short horn which hardly passes the head *selangorei* sp. nov.
 Dorsum of pronotum has 7 long , upcurved thorn ; median carina of pronotum anteriorly produced into a long horn that significantly crosses the head *adenanii* sp. nov.

***Discotettix selangori* sp. nov.** (Figs. 2a , b)

Description : Color : dark brown ; body : strongly rugose and rough. Frontal ridge forked , only present between antennae where it is strongly archuated and directed forward in profile ; median ocellus present far below the antennae ; lateral ocelli present in the level of lower margins of eyes ; antennae inserted distinctly below the eyes , 10 segmented , 6th and 7th segment compressed and foliaceous ; vertex short , broad , broader than width of one eye , median carina absent , lateral carinae in the form of raised margins ; eyes prominent , slightly raised or equal the level of vertex ; pronotum long , posterior process longer than hind femur , anterior margin of median carina produced in the form of horn over the head , lateral carinae well marked with anterior margins produced in the form of small horns between eye and fore femora , lateral lobes out ward produced , posterior angle of lateral lobes out ward produced into a large , broad based spine with a small tooth posterior to it ; fore and middle femora with 3 well marked tooth on dorsal carinae and 2 small tooth on ventral carinae , both dorsal and ventral carinae finely dentated ; hind femora with 2 small tooth on dorsal carina ; hind tibiae with row of small spines on both dorsal inner and outer margins ; tegmina short , narrow ; wings as long as

pronotum ; ovipositor valves short , equal , lower valves dentated ventrally ; male subgenital plate short , pointed ; circus short , conical , pilose.

Measurements (mm) : Female : body length (including pronotum) , 16.20 – 17.50 ; hind femur length , 7.50 – 8.00 ; Male : body length , 15 – 15.20 ; hind femur length , 7.11 – 7.42

Material examined : Holotype , 1 male , Brokurtak , 12.V.1974 , Selangor , Malaysia. Allotype , 1 female , same data as holotype. Paratypes , 1 male , 1 female , same data as holotype.

Distinguishing characters : Median carina of pronotum in profile seems wavy with no tubercles or spines , its anterior margin produced forward as horn which crosses the head (Fig. 2b) ; lateral carinae of pronotum well marked with well raised margins on shoulder and behind , anteriorly produced as small horn between fore femur and eyes , posterior margin of lateral lobe produced into a large , broad based , straight spin (Fig. 2a). This species comes close to *Discotettix selysi* Bolivar but differ from it in having long anterior horn that reaches the vertex.

Derivation of name : This species has been named after the State “ Selangor ” from which this has been collected.



Fig. 2 *Discotettix selangorei* sp. nov.

a : Dorsal view of pronotum ; b : Lateral view of pronotum.

***Discotettix adenanii* sp. nov.** (Figs. 3a , b)

Description : Body : strongly , rugose , rough , pitted ;

color : pale brown. Frontal ridge biportate , only present between antennae where it is archuate , directed forward

in profile ; antennae inserted distinctly below the lower margin of eyes , long , 11 segmented , 7th and 8th segment compressed , foliaceous ; median ocellus present very below the antennae ; lateral ocelli present between eyes ; eyes oval small ; vertex short , wide , wider than eye , median carina obsolete , lateral margins raised up to the level of eyes ; pronotum rugose , posterior process crosses the middle of stretched hind tibiae , median carina on anterior margin produced into a long raised horn which crosses the head anteriorly , on dorsum along the line of median carina 3 long , upward directed , acutely pointed thorn present , lateral carinae at anterior margin of pronotum produced in the form of obtuse , rounded apex short horns below eyes , between shoulders lateral carinae lamellatedly expanded with significantly raised margins giving boat shape to dorsum , on the lateral margins of pronotum at the line of carinae on either side 2 long , upward directed acute thorn present , lateral lobe anteriorly between horn of lateral carinae and fore femora have a short blunt lobe , posterior angle with a long , broad , triangular , outward produced , straight , acutely pointed thorn ; tegmina short , triangular ; wings as long as pronotum ; fore and mid femora narrow , rounded , rugous ; hind femora externally provided with ridges , upper carina

compressed ; hind tibia with row of small , fine dents on dorsal outer and dorsal inner margins ; tarsus with 1st and 3rd segment of equal length ; male subgenital plate intermediate , pointed upwardly directed ; female ovipositor valves intermediate dorsal and ventral almost of equal length .

Measurements (mm) : Male : total body length , 17 – 20 ; hind femur length , 7 – 9 ; Female : total body length , 20 – 23 ; hind femur length , 9 – 10

Material examined : Holotype , 1 female , Adanan Bukra , 3. VI . 88 , Kuching , Borneo ; Allotype , 1 male , Adanan Bukra , 3. VI . 88 , Kuching , Borneo ; Paratypes , 3 males , 3 females , Adanan Bukra , 3. VI . 88 , Kuching , Borneo

Distinguishing characters : This species is very near to *Discotettix belzebuth* (Au-Serv) , but easily can be separated from it in having 7 long thorn on dorsum of pronotum along the line of median carina and lateral carinae , median carina anteriorly produced into long horn which crosses the head (Fig. 3b) , spine of the posterior angle of lateral lobe also broad based , long (Fig. 3a) .

Derivation of the name : This species has been dedicated to its collector .

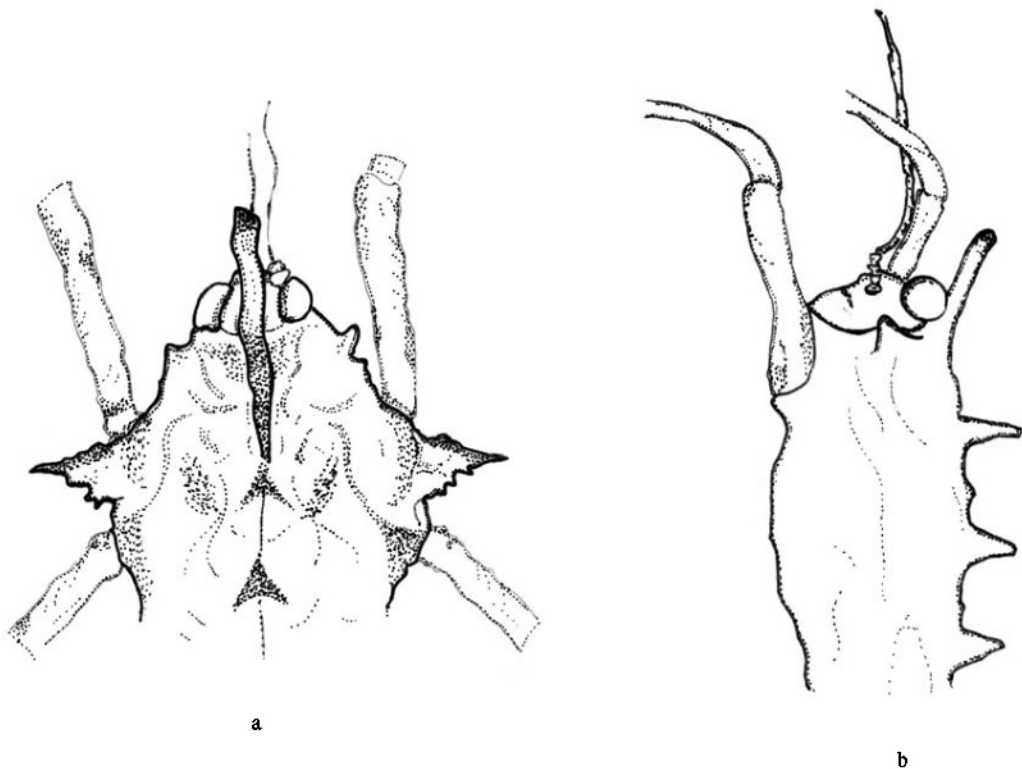


Fig. 3 *Discotettix adenanii* sp. nov.
a : Dorsal view of pronotum ; b : Lateral view of pronotum .

Subfamily Scelimeninae

Key to the Malaysian genera of Scelimeninae

- 1 Apical margin of posterior tibia and first segment of posterior tarsi with wide lamellar expansion ; pronotum very long , projecting very well behind the abdomen *Scelimena* Serville
- Apical margin of posterior tibia and first segment of posterior tarsi not lamellatedly expanded ; pronotum slightly produced behind abdomen 2
- 2 Body strongly rugose ; fore and mid femora armed with tooth *Gavialidium* Sauss
- Body smooth or finely dentate but not rugose ; fore and mid femora not armed with tooth 3
- 3 Body small , granulated ; posterior angle of lateral lobe of pronotum produced outward and backward acutely but not spine like ...
..... *Loxilobus* Hancock
- Body medium to large , not granulated ; posterior angle of lateral lobe of pronotum Produced into spine 4
- 4 Vertex wider or equal to eye ; eyes in the level of pronotum ; spine of lateral lobe acute , transverse or directed forward or backward
..... *Criotettix* Bolivar
- Vertex narrower than eye ; eyes slightly raised from the level of pronotum ; lateral spine oblique , directed backward
..... *Eucriotettix* Hebard

Scelimena Audinet-Serville , 1939

Type species : *Scelimena producta* (Audinet-Serville , 1939) = *Tettix producta* Audinet-Serville , 1939

Key to the species of *Scelimena* Audinet-Serville

- 1 Median carina of pronotum extended anteriorly over head in the form of horn ; spine of posterior angle of lateral lobe straight and very long *hafizhii* sp. nov.
- Median carina of pronotum ceased at anterior margin , not extended in the form of horn ; spine of lateral lobe short , curved forward
..... 2
- 2 Body long ; dorsum of pronotum and anterior margin of lateral lobe of pronotum provided with tubercles
..... *producta* (Audinet-Serville)
- Body not long as above ; pronotum laterally and dorsally smooth *razalii* sp. nov

Scelimena hafizhii sp. nov. (Figs. 4a – d)

Description : Body color : dark green , dorsally with

fine yellow spots , ventral side and face lime yellow.

Head : Face oblique ; frontal ridge forked between

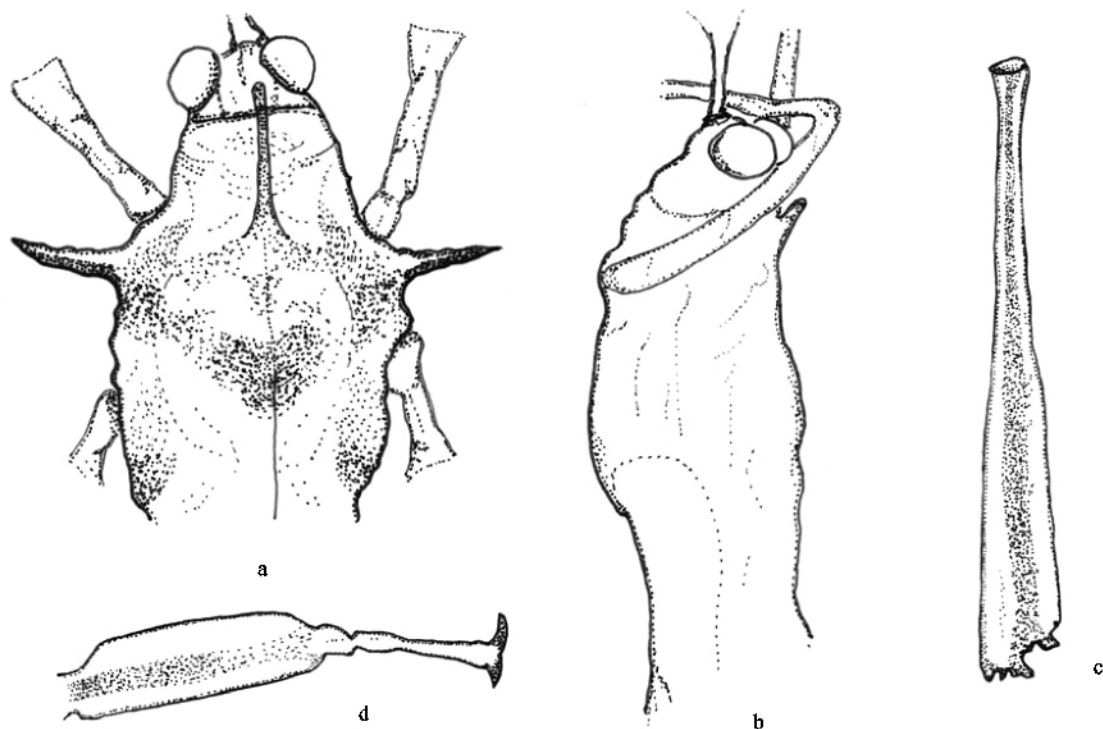


Fig. 4 *Scelimena hafizhii* sp. nov.

a : Dorsal view of pronotum ; b : Lateral view of pronotum ; c : Dorsal view of hind tibia ; d : Lateral view of hind tarsa.

antennae , margins parallel ; antennae long , filliform , inserted near to lower margins of eyes ; lateral ocelli present between lower half of eyes ; eyes prominent , raised , rounded ; vertex slightly narrower than one eye , median carina low fine , roundly merges into front , lateral margins raised up to the level of eyes ; pronotum long , smooth , posteriorly extended behind stretched hind tibiae , median carina fine , anteriorly produced in the form of short obtuse horn which reaches to vertex , lateral carinae fine , not reaching up to the anterior margin of pronotum , posterior margin of lateral lobe produced out wardly into a long , straight spine ; tegmina lateral , long ; wings as long as pronotum ; anterior and mid femora long , narrow ; hind femora with compressed smooth upper carina , lower carina smooth , venter yellow ; hind tibiae and tarsi with lamelately expanded margins ; lower and upper ovipositor valves equal , lower valves with dentate lower margins .

Measurements (mm) : Body length (including pronotum) , 25 ; Pronotum width (between shoulder) , 3.50 ; hind femur length , 9 .

Material examined : Holotype , 1 female , Hafizha Kaggin , 20.I. 1985 , Sembilan , Malaysia

Distinguishing characters : It differs from other species of *Scelimena* in having median carina anteriorly produced into an obtuse horn over the vertex (Fig. 4b) , humeral or post humeral tubercles absent , spine of the posterior angle of lateral lobe very long , quite straight and sharp Fig. 4a

Derivation of name : The name of this species has

been dedicated to its collector .

***Scelimena producta* (Audinet-Serville , 1839)**

Tettix producta Audinet-Serville , 1839

Our specimens agree with the published description of Kirby (1914) and Blackith (1992) of this species .

Measurements (mm) : Male : total body length , 25 – 28 ; hind femur length , 8 – 9 ; Female : total body length , 26 – 29 ; hind femur length , 8.40 – 9.50 .

Material examined : 2 male 5 female , Lee , 28. VIII . 2004 , Phang (Malaysia) ; 4 females , Ghazala , 4. V . 1990 , Selangor (Malaysia) ; 8 females , 5 males , Yusuf , 4 VI . 1976 , Teringganu (Malaysia) ; 9 females , 3 males , Isa , 5. VII . 1974. Selangor (Malaysia) .

Geographical distribution : Java , Sumba , Sumatra , Borneo .

New record : This species has been recorded for the first time from Peninsular Malaysia .

***Scelimena razalii* sp. nov.** (Figs. 5a , b)

Description : Color : straw brown ; body smooth : slims , long .

Head : Very slightly raised from pronotum , frontal costa narrow , deep , starts from lateral ocelli to median ocellus , in profile projected anterior between antennae ; antennae long slender , filliform , inserted distinctly below the lower margins of eyes ; lateral ocelli situated between lower margins of eyes ; vertex slightly narrower than one eye , attenuate anteriorly , fastigium roundly passes into front , median carina obsolete , lateral

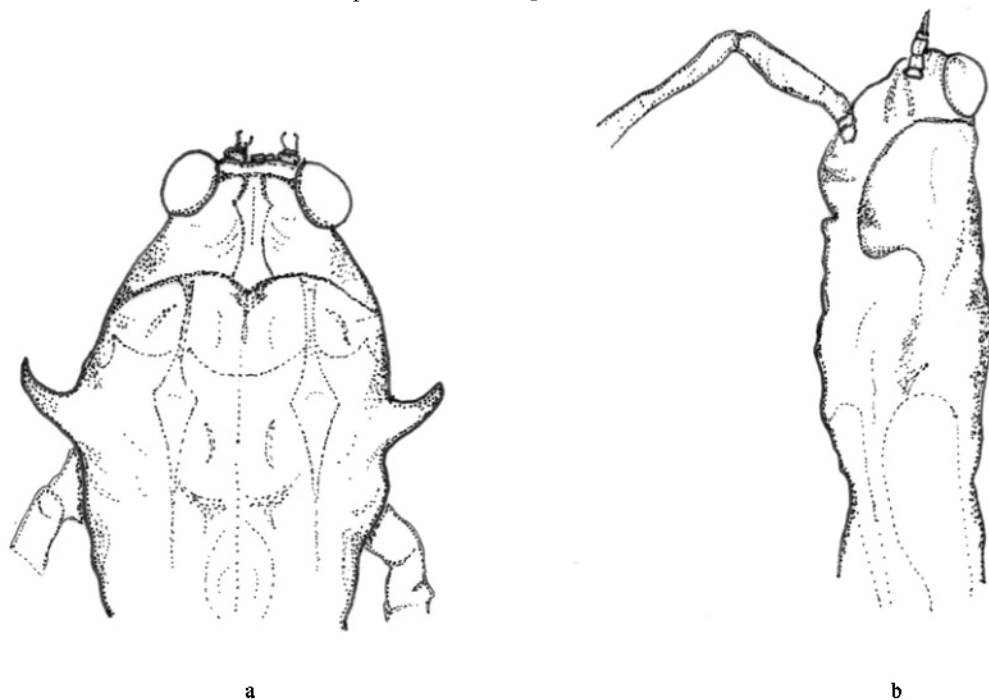


Fig. 5 *Scelimena razalii* sp. nov.

a : Dorsal view of pronotum ; b : Lateral view of pronotum .

margins raised ; eyes raised , rounded global ; pronotum smooth , long , truncated anteriorly , posterior process extended behind stretched hind tibia , posterior angle of lateral lobe produced outward provided with acute spine which is distinctly curved forward , median carina low , linear , prozonal carinae only on anterior margin , lateral carinae depressed ; tegmina elongate , punctate , acuminate ; wings as long as long pronotum ; anterior femora elongate with finely serrated superior and inferior carinae ; middle femora with fine serrations on superior margin ; hind femora elongate with two black bands on external surface , superior and inferior margins finely serrated ; hind tibiae and 1st segment of hind tarsi with lammelatedly expanded margins , 1st segment of hind tarsi longer than the 3rd one ; male subgenital plate elongate , pointed.

Measurements (mm) : Body length , 9.50 – 9.75 ; Pronotum length , 16 – 16.40 ; Pronotum width , 2.40 ; hind femur length , 4.5 – 4.75

Material examined : Holotype , 1 male , Rezwana Rezali , 24. VIII . 2004 , Selangor : Malaysia. Paratype , 1 male , Rezwana Rezali , 24. VIII . 2004 , Selangor , Malaysia.

Distinguishing characters : This species is very close to *Scelimena discalis* (Hancock) but easily can be separated from it as it has no tubercles on dorsum or lateral side of pronotum and also smaller in size (Figs. 5 a , b). It also comes near to *Scelimena indica* Hancock but clearly differs from it in having no tubercles on the anterior margin of the median carina

and lateral carinae of pronotum. Similarly it has no traces of tubercles on the lateral lobe of pronotum and body is comparatively short and slim.

Derivation of name : This species has been dedicated to its collector.

Gavialidium de Saussure , 1862

Type species : *Gavialidium crocodilum* (de Saussure , 1861) = *Scelimena crocodila* de Saussure 1861

Gavialidium phangensum sp. nov. (Figs. 6a – c)

Description : Body depressed , rugose ; color : dark brown. Head in level of pronotum ; frontal costa sulcated with low margins , projecting anterior between antennae ; antennae slender , filliform , inserted distinctly below lower margin of eyes ; lateral ocelli present adjacent to frontal costa between the lower half of eyes ; eyes prominent , situated in the level of vertex ; vertex wide , wider than the width of eye , median carina present only on fastigium where it roundly passes into front , lateral margins raised in the form of horn up to the level of eyes ; pronotum strongly rugose , tuberculated , truncated anteriorly and posteriorly , median carina strongly elevated on anterior half and widely crossed by the transvers sulcus where it appears as bifid (Fig. 6b) , prozonal carinae well marked , lateral carinae distinctly present , shoulders triangularly strongly stretched out , lateral lobe with broad based outwardly produced pointed tooth at posterior margin which is rounded , posterior process slightly or not extended back to the knee of hind femora ; front femora

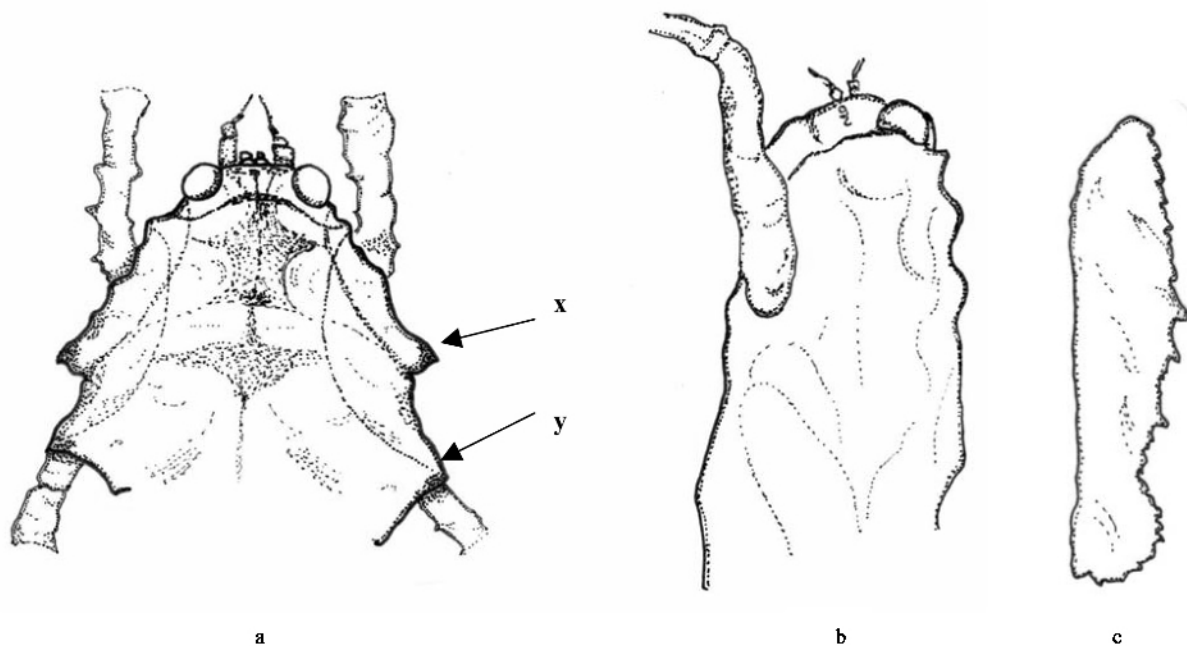


Fig. 6 *Gavialidium phangensum* sp. nov.

a : Dorsal view of pronotum (x : Lateral spine ; y : Triangular stretching of shoulder of pronotum) ;

b : Lateral view of pronotum ; c : Dorsal view of hind femur

with 3 teeth on dorsal and 2 on ventral margin ; mid femora with 4 dorsal and 3 ventral teeth ; hind femora short broad , strongly tuberculated and rugose on outer surface , dorsal carina provided with 2 teeth near knee ; hind tibia with row of short spines on both dorsal margins ; female ovipositor valves short , slender , serrated ; male subgenital plate short narrow , pointed , upcurved.

Measurements (mm) : Female : total body length , 11 – 12 ; hind femur length , 5.50 – 6 ; Male : total body length , 10 ; hind femur length , 5.00.

Material examined : Holotype , 1 female , Norliyana , 19. VII . 2003 , Kuala Lompat , Pahang , Malaysia . Allotype , 1 male , Norliyana , 19. VII . 2003 , Kuala Lompat , Pahang , Malaysia . Paratype , 1 female , Norliyana , 19. VII . 2003 , Kuala Lompat , Pahang , Malaysia .

Distinguishing Characters : This species is near to *Gavialidium crocodilumes* (Sauss. , 1861) but can easily be separated from it in having posterior process of pronotum not surpassing the hind knee , shoulder of pronotum strongly triangularly stretched out ward (Fig. 6a) , hind femora with strong rugose and tubercle on outer surface (Fig. 6c) .

Derivation of name : This species has been named after the State “ Pahang ” in which the collection locality exists .

Criotettix Bolivar , 1887

Type species : *Criotettix bispinosum* (Dalman , 1818) = *Acrydium bispinosum* Dalman , 1818

Key to the species of *Criotettix Bolivar*

- | | |
|----------------------------------------------------------------------------------------------------------|------------------------------|
| 1 Lateral spine long , straight , transverse ; vertex with 3 carinae | <i>tricarinatus Bolivar</i> |
| Lateral spine medium or long , directed forward or backward but not straight ; Vertex not as above | 2 |
| 2 Lateral spine curved forward | 3 |
| Lateral spine directed backward | <i>bispinosum (Dalman)</i> |
| 3 Lateral spine short ; eyes raised from the level of vertex and pronotum | <i>vidali Bolivar</i> |
| Lateral spine long ; eyes in the level or slightly raised from vertex and pronotum | <i>subulatus Bolivar</i> |

Criotettix tricarinatus Bolivar , 1887

Eucriotettix tricarinatus (Bolivar , 1887)

Our specimens conform to the published description of Kirby (1914) and Blackith (1992) of this species except in slight variations in measurements .

Measurements (mm) : Female : total body length , 14 – 17 ; pronotum length , 12 – 16 ; hind femur length , 6 – 7 ; Male : total body length , 12.50 – 13.50 ; pronotum length , 12 – 12.50 ; hind femur length , 5.50

Material examined : 1 male , Chee Mei , 30. VIII . 2003 , Pahang (Malaysia) ; 1 male , 1 female , Dr. Khutuk , 25. V . 1974 , Johor Bharu (Malaysia) ; 2 females , 1 male , Nurferoza Aina , 24. VIII . 2004 ; 6 females , 4 males , Marya Ismail , 13. IX . 1983 , Cmarone Highlands (Malaysia) ; 1 female , Azura , 3. VIII . 2003 , Sembilan (Malaysia) .

Loxilobus Hancock , 1904

Type species : *Loxilobus acutus* Hancock , 1904

Loxilobus assamus Hancock , 1907

We compared our specimens with Hancock (1907) , Kirby (1914) , Shishodia (1991) and Blackith (1992) . Our specimens show body rugose , vertex broader than the width of an eye or equal with median carina on anterior part ; pronotum posteriorly slightly or not extended behind knees , dorsally wavy in profile , median carina compressed , well elevated anterior to shoulders , prozonal carinae prominent , lateral lobes outwardly produced , posterior angle when viewed dorsally bilobate , anterior lobe sharp , pointed , directed backward , posterior lobe small .

Measurements (mm) : Female : total body length , 7.5 ; hind femur length , 5.00 . Male : total body length , 6 – 6.5 ; hind femur length , 3.5 – 4.5

Material examined : 1 male , Setinor , 11. I . 1974 , Selangor (Malaysia) ; 2 males , Dr. Kurtuk , 25. I . 1974 , Negei Sembilan (Malaysia) ; 2 females , Che Tam Awang , 20. VIII . 77 , Selangor (Malaysia) .

Geographical distribution : This species is only recorded from Assam , India but we confirm its distribution extent up to Malaysia ,

New record : This species has been recorded for the first time from Malaysia .

Geographical distribution : Earlier , this species has been reported from Sri Lanka and India . We confirm its presence in Malaysia .

New record : This species has been recorded for the first time from Malaysia .

Criotettix bispinosum (Dalman , 1818)

Acrydium bispinosum Dalman , 1818

The specimens before us agree with the published description of Shishodia (1991) and Blackith (1992) of this species .

Measurements (mm) : Female : total body length , 13.50 – 14.50 ; pronotum length , 13 – 14 ; hind femur length , 5.5 – 6 ; Male : total body length , 11.5 ; pronotum length , 10.80 ; hind femur length , 5.00

Material examined : 2 female , Hew Kak Wah , 17. II . 1976 , Selangor (Malaysia) ; 1 female , Shereeza , 16.

VII . 2004 , Pahang (Malaysia) ; 1 male , Sharif , 16 .
I . 1988 , Selangor (Malaysia) .

Geographical distribution : Earlier , Shishodia (1991) recorded this species from India (West Bengal) . We confirm its existence in Malaysia .

New record : This species has been recorded for the first time from Malaysia .

***Criotettix vidali* Bolivar , 1887**

Our specimens slightly larger in size than Kirby (1914) , and Blackith (1992) . In addition , our specimens show lateral lobe of pronotum produced outward with a short anteriorly curved acute spine , anterior and adjacent to this a small tooth like structure present ; shoulder of pronotum expanded , posterior process of pronotum very narrowly produced behind tibiae .

Measurements (mm) : Female : total body length , 16.5 – 17.5 ; hind femur length , 6.5 . Male : total body length , 15 ; hind femur length , 5 – 5.25 .

Material examined : 2 females , Nazirah , 26 . I . 1986 , Terengganu (Malaysia) ; 2 males , Lee Yee , 16 . X . 2004 , Selangor (Malaysia) .

***Eucriotettix* Hebard , 1929**

Type species : *Eucriotettix tricarinatus* (Bolivar , 1887) = *Crotettix tricarinatus* Bolivar , 1887

Key to the species of *Eucriotettix* Hebard

Lateral spine long , distinctly curved forward *spinilobus* (Hancock)
Lateral spine short , distinctly directed backward *exertus* (Bolivar)

***Eucriotettix spinilobus* (Hancock , 1904)**

Criotettix spinilobus Hancock , 1904

We have two female specimens which are confusing but we have placed them under this species as they resemble with the published description of Kirby (1914) of this species except measurements . Our specimens are very large with expanded hind tibiae .

Measurements (mm) : Female , total body length , 18.5 ; pronotum length , 17 ; hind femur length , 8.00 .

Material examined : 1 female , Ooi Ruo Peng , 15 . X . 2004 , Selangor (Malaysia) ; 1 female , Farhana , 12 . IX . 2004 , Melaka (Malaysia) .

Geographical distribution : Sri Lanka , India . We confirm its presence in Malaysia .

New record : This species has been recorded for the first time from Malaysia .

***Eucriotettix exertus* (Bolivar , 1902)**

Criotettix exertus Bolivar , 1902

We have three female specimens before us which are larger in size than Kirby (1914) and Blackith (1992) . In other characters our specimens agree with Kirby (loc. cit.) and Blackith (loc. cit.) .

Measurements (mm) : Female : total body length , 18 – 19 ; hind femur length , 8.00 .

Material examined : 1 female , Mazura , 2 . VIII . 2003 ,

Geographical distribution : Philippines , Myanmar , India . We confirm the presence of this species in Malaysia .

New record : This species has been recorded for the first time from Malaysia .

***Criotettix subulatus* Bolivar , 1887**

Our single female specimen agree with the published description of Kirby (1914) and Blackith (1992) of this species except that ; vertex is slightly narrower anteriorly ; spine of lateral lobe slender , long , curved forward , to anterior side , adjacent to spine there is a tooth like structure present .

Measurements (mm) : Female , total body length , 16 ; pronotum length , 14.50 ; hind femur length , 6.00 .

Material examined : 1 female , Zainab , 4 . XIII . 1978 , Kuala Lumpur .

Geographical distribution : India , Sri Lanka . We confirm its presence in Malaysia .

New record : This species has been recorded for the first time from Malaysia .

Negeri Sembilan (Malaysia) ; 2 females , Fakh Oin , 10 . IX . 2004 , Terengganu (Malaysia) .

Geographical distribution : Earlier , this species has been reported from India . We confirm its presence in Malaysia .

New record : This species has been recorded for the first time from Malaysia .

Subfamily Metrodorinae

***Systolederus* Bolivar , 1887**

Type species : *Systolederus hanni* Bolivar , 1887

***Systolederus cinereus* Brunner von Wattenwyl , 1893**

Our specimens completely agree with the published description of Kirby (1914) , Shishodia (1991) and Blackith (1992) of this species . On the bases of number of specimens , this is the most abundant species found in Malaysia . These are small beautiful insects with large eyes and testaceous brown color .

Measurements (mm) : Male : total body length , 11 – 12 ; hind femur length , 5 – 5.5 . Female : total body length , 12 – 13.50 ; hind femur length , 5.5 – 6.5 .

Material examined : 4 male , Ayub , 20 . V . 1984 , Selangor (Malaysia) ; 6 females 2 males , Hamid , 4 .

VI . 1976 , Selangor ; 8 females , 3 males , Jazura , 3.
 III . 1990 , Kedah (Malaysia) ; 1 female , Kurtak , 6.
 X . 1974 , Selangor ; 3 females , 5 males , Chunna , 8.

VI . 2004 , Selangor .

Geographical distribution : Myanmar , Malaysia .

Subfamily Batrachideinae

Saussurella Bolivar 1887

Type species : *Saussurella cornuta* (de Haan , 1842) = *Acridium cornutum* de Haan , 1842

Key to the species of *Saussurella* Bolivar

Front of pronotum straight *cornuta* (de Haan)
 Front of pronotum at the end decurved *decurva* Brunner Von Wattenwyl

Saussurella cornuta (de Haan , 1842)

We have only one female specimen in our collection which fairly agree with the published description of Kirby (1914) and Blackith (1992) of this species . Our specimen is brown with black , body covered with white fine granules ; hind tibiae with small spines on both dorsal margins . It is a beautiful insect with pronotum straight extended over head . As we have a single female specimen in our collection which is a clear cut indication of rarity of this species .

Measurements (mm) : Female : total body length , 16 ; hind femur length , 7.00 .

Material examined : 1 female , Norlindawati , 18. VII . 2003 , Pahang .

Geographical distribution : Earlier , this species has been recorded from Myanmar , China , India , Java , Vietnam , Burma . We confirm its distribution extent and presence in Malaysia .

New record : This species has been recorded from the first time from Malaysia .

Saussurella decurva Brunner Von Wattenwyl , 1893

Our specimens conform to the published description of Kirby (1914) , Willemce (1930) and Blackith (1992) of this species with slight variation in measurements . *S. decurva* is very close to *S. cornuta* but can easily be separated from the latter in having long anterior pronotal process significantly crossing the fastigium of vertex anteriorly at 60° angle with down curved tip ; larger body size and bright pale spot on external surface of hind femur .

Measurements (mm) : Male : total body length , 18 – 18.50 ; hind femur length , 8.00 . Female : total body length , 20.5 – 22 ; hind femur length , 7.5 – 9

Material examined : 1 male , 3 females , Mahadi , 12. XI . 1988 , Selangor (Malaysia) ; 2 males 3 females , Farhana , 19. VIII . 2004 , Selangor .

Geographical distribution : This is a widely distributed species in Southeast of Asia .

Subfamily Tripetalocerinae

Tripetalocera Westwood , 1834

Type species : *Tripetalocera ferruginea* Westwood , 1834

Tripetalocera ferruginea Westwood , 1834

We have only one female specimen in our collection which conforms to the published description of Kirby , (1914) , Willemce (1930) and Blackith (1992) of this species . Some additional characters are given as follows : body is finely pitted , rugose ; eyes stalked , prominent ; vertex wider than the width of an eye , median carina only on anterior half , lateral margins raised ; pronotum slightly longer than abdomen ; legs short , broad ; fore femora with 3 dorsal and 2 ventral teeth ; hind femora with a white spot in middle between outer and inner dorsal carinae .

Measurements (mm) : Total body length , 15.00 ; hind femur length , 5.5 .

Material examined : 1 female , Adenan Bukra , 5. XI . 1988 , Bintulu (Borneo , Sarawak)

Geographical distribution : Sumatra , Borneo (East Malaysia) , Myanmar , India , West Malaysia .

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马来西亚蚱科及六新种记述 (直翅目 : 蚱总科)

Khalid MAHMOOD^{1,*} , A. B. IDRIS² , Y. SALMAH²

(1. University of Azad Jammu and Kashmir , Faculty of Agriculture , Rawalakot 12350 , Pakistan ;

2. Centre for Insect Systematics , School of Environmental and Natural Resource Sciences ,

Faculty of Science and Technology , University Kebangsaan Malaysia , 43600 , Bangi , Selangor , Malaysia)

摘要 : 报道记述了采自马来西亚的蚱科 28 种 其中包括 6 新种 (*Phaesticus azemii* sp. nov. , *Discotettix adenanii* sp. nov. , *Discotettix selangori* sp. nov. , *Scelimena hafizaii* sp. nov. , *Scelimena razalii* sp. nov. 和 *Gavialidium phangensum* sp. nov.) 并包括马来西亚新记录种 11 种。提供了马来西亚已记录属和种的检索表。

关键词 : 直翅目 ; 蚱总科 ; 蚱科 ; 菱蝗 ; 区系 ; 新种 ; 马来西亚

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