



E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2017; 5(1): 279-281
© 2017 JEZS
Received: 12-11-2016
Accepted: 13-12-2016

Shoaib Ali
Department of Zoology Hazara
University, Mansehra, Pakistan

Waheed Ali Panhwar
Department of Zoology Hazara
University, Mansehra, Pakistan

Riffat Sultana
Department of Zoology
University of Sindh Jamshoro,
Pakistan

Sardar Azhar Mehmood
Department of Zoology Hazara
University, Mansehra, Pakistan

Muhammad Saeed Wagan
Department of Zoology
University of Sindh Jamshoro,
Pakistan

Correspondence
Waheed Ali Panhwar
Department of Zoology Hazara
University, Mansehra, Pakistan

First record of the genus *Mermiria* Stål with its species *Mermiria bivittata* (Serville, 1838) from Pakistan (Orthoptera, Acrididae, Gomphocerinae)

Shoaib Ali, Waheed Ali Panhwar, Riffat Sultana, Sardar Azhar Mehmood and Muhammad Saeed Wagan

Abstract

The Slant faced *Mermiria bivittata* (Serville, 1838) and its genus *Mermiria* Stål, 1873 (Orthoptera, Acrididae, Gomphocerinae) are recorded for the first time for the Pakistan fauna. The species was collected from Mansehra, in the Khyber Pakhtunkhwa province of Pakistan. This record expands the known distributional range of *Mermiria bivittata*. Descriptions of the genus and species is given by using multiple diagnostic characters. The descriptions are supplemented by photographs of the species is provided.

Keywords: Pakistan, new record, Gomphocerinae, *Mermiria bivittata*

Introduction

The genus *Mermiria* Stål, 1873 is a member of the subfamily Gomphocerinae. At present it includes 4 species, mainly distributed over the Nearctic region^[7]. *Mermiria* is arguably one of the rarer but morphologically distinct genera in the Gomphocerinae. However, its species are not easily distinguished morphologically as many previous descriptions considered probably the most striking feature of variation in the external morphology of the species of this genus is in the form of the fastigium, when viewed from the dorsum. Practically the only satisfactory method of comparison in the variation of this feature is to measure the angle, and the extremes have been figured and discussed under each species. The folly of using a feature of this sort in a strictly diagnostic sense is evident when it is known that certain species show variations of from 33° to 65° (*alacris*), 52° to 84° (*intertexta*), and 62° to 87° (*maculipennis maculipennis* and *mac. macclungi*) in the male sex, and 42° to 70°, 80° to 95°, and 65° to 95° respectively in the female sex^[17]. The very slender or the average form of the caudal femora are also features of value, but there is much individual variation in that considered average, although the very slender type is more constant. The antennae show certain specific types which, however, are very difficult to compare satisfactorily. The general form, whether average or very slender, is also an important feature in this genus.

Sporadic faunistic investigations had been made to record Pakistan insect species in different regions of the country. Some information about the insect fauna was reported by^[1-3, 5, 9-15]; however, they did not record *Mermiria bivittata* (Serville, 1838).

Mansehra (34°20'N 73°12'E) is situated at elevation of 1,088 m (3,570 ft) surrounded by groups of mountains, and is considered a distinct phytogeographic region of Pakistan^[16]. Moreover, it is considered to be a transitional zone between the Afrotropical and the Palaearctic biogeographical regions with a special ecogeographical area located in Pakistan.

This contribution is the first record of genus *Mermiria* from Pakistan. Based on microscopic observations of external morphological characters and a comparison to earlier literature dealing with the description of different species of this genus, especially from Nearctic region^[8], the available Slant faced specimen was identified as *Mermiria bivittata* (Serville, 1838), which was described originally from Northern America, Southeastern U.S.A., South Carolina, Lane^[7].

Materials and Methods

The specimen was collected from Mansehra Khyber Pakhtunkhwa, Pakistan during year 2016 and then it was dried and mounted. The terminology of morphological characters used here is

adopted from [4, 6]. Morphological features were measured with an ocular micrometer and a camera lucida attached to a Hund Wetzlar SM33 stereomicroscope. Photographs of the species were taken by a Canon IXY430F digital camera. The measurements are in millimeters and the whole length of the specimen was measured along the midline from fastigium of the vertex to the distal end of the external genitalia that of hind femur was measured from the basal to the most apical point and the tegminal length was measured laterally along its greatest length.

Results

Family Acrididae MacLeay, 1821

Subfamily Gomphocerinae Fieber, 1853

Tribe Mermiriini Brunner von Wattenwyl, 1893

Genus *Mermiria* Stål, 1873

Type species: *Mermiria belfragii* Stål (= *picta*)

Description. Form typically Truxaloid, elongate, alate. Head with facial line decidedly retreating; fastigio-facial angle evident: fastigium produced, angulate to rounded, weakly or not at all carinate, weakly or moderately impressed: lateral foveole obsolete to appreciably indicated, sub-ventral in position, not visible from the dorsum: frontal costa sharply indicated, continuous, in part at least sulcate: lateral facial carina-, prominent, diverging ventrally: eyes ovoid to ovoid-elliptical, axis dorso cephalad to ventro-caudad, moderately prominent from dorsum: antennae ensiform, deplanate. Pronotum longitudinal, median carina indicated, with or without lateral carina: lateral lobes normal, with or without supplementary longitudinal carinae at middle, ventral margin of lateral lobes distinctly or scarcely thickened: caudal margin of disk arcuate or angulate; prozona of dorsum always longer than metazona. Tegmina and wings fully developed. Prosternum with low median protuberance or slight transverse ridge: mesosternal lobes separated by a distinct interspace or subattinent: metasternal lobes separated by a narrow interspace to attinent. Subgenital plate of very bluntly, moderately or strongly conoid produced, hardly compressed. Cephalic and median limbs short, slender. Caudal femora moderately robust to slender, genicular lobes and angles not produced; caudal tibiae with spines of external margin more numerous than those of internal margin.

Mermiria bivittata (Serville)

Material examined. Pakistan: Khyber Pakhtunkhwa, Mannsehra, 6♂s, Shoaib & Waheed (22°11'16"N, 36°22'14"E), 09.09.2016 & 18.10.2016 (Dadar, Dhodial, Khakhi, Oghi).

Measurement (mm): Length of Pronotum, 0.5; Length of Head, 0.2; Length of Tegmina, 3; Length of femur, 1.8; Length of tibia, 1.9

Description

Head having facial line decidedly retreating with dorsal and lateral lines. This species have a relatively small degree of variation in the dorsal fastigial form, viewed from the standpoint of the genus, although there is quite an appreciable difference between the extremes found in male. In the male the extremes measure from about 52° to 84° in their angulation, or from a moderately acute angle to nearly a right angle, with its horizontal apex from narrowly rounded to

rather broadly and bluntly rounded. The strength of the very short median carina on the cephalic section of the male fastigium varies greatly; it is never really strongly marked and is occasionally absent. The exact width of the marginal rim of the fastigium, due to the position of the intermarginal depression, varies as much in this as in the other species of the genus. The median fastigial carina is frequent.

The lateral aspect the fastigio-facial angle is always well rounded in the male. This is, in fact, one of the chief distinguishing features of the species. There is quite a little variation in the basal form of the eye, this ranging from ovoid-elliptical to narrowly. The pronotum with some little variation in the relative proportions of the dorsum of the prozona and metazona. The caudal margin of the disk of the pronotum is always angulate, broadly obtuse, varying slightly in its degree. The relative breadth to length of the pronotum shows a negligible amount of -variation. We have made a count of the caudal tibial spines of ten males

Comparative note: This species resemble in general appearance to *maculipennis*. The most conspicuous feature of the species is found only in the male sex and is purely a color character, i. e., the absence of a pale subcostal stripe on the tegmina. In all the other species of the genus this is constantly indicated, although rarely sub obsolete in males of *intertexta*, however, are quite distinct in other features. The other features of difference in this species from *maculipennis* is the usual presence of a short, weak, cephalic median carina on the fastigium; the proportionately shorter dorsum of the fastigium. The fastigio-facial angle also more broadly rounded. The caudal margin of the pronotal disk distinctly angulate.

Coloration

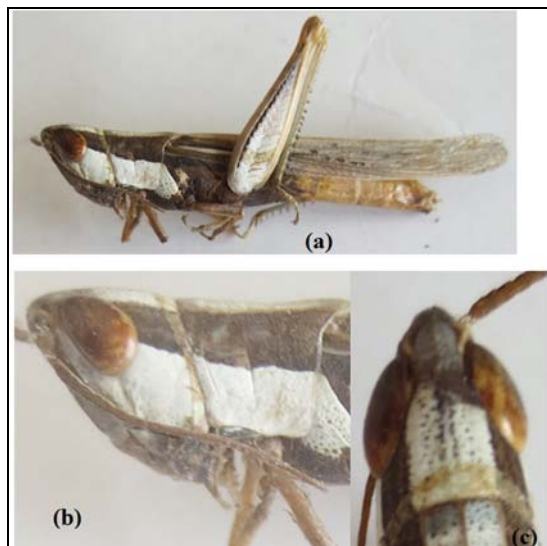
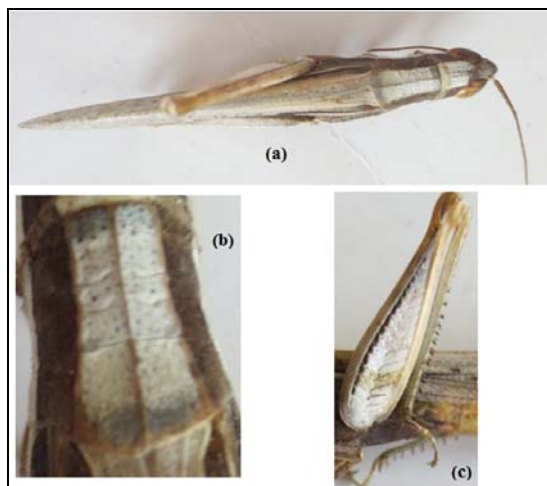
The pale base coloration of the male ranges from citron yellow (on the abdomen mustard yellow), through yellowish citrine to oil green.

Discussion

Although, Mansehra is situated at elevation of 1,088 m (3,570 ft) surrounded by groups of mountains, and is considered a distinct phytogeographic region of Pakistan [16]. Moreover, it is considered to be a transitional zone between the Afrotropical and the Palearctic biogeographical regions with a special ecogeographical area located in Pakistan. As a result of present study *Mermiria bivittata* (Serville, 1838) and its genus *Mermiria* Stål, 1873 (Orthoptera, Acrididae, Gomphocerinae) are recorded for the first time for the Pakistan fauna. The species was collected from Mansehra, in the Khyber Pakhtunkhwa province of Pakistan. This record expands the known distributional range of *Mermiria bivittata*. Recent studies directing orthoptera biodiversity confirmed the need of exploring unknown regions for obtaining complete picture of the species of topographical ranges [16]. Earlier, Slant faced specimen was identified as *Mermiria bivittata* (Serville, 1838), which was described originally from Northern America, Southeastern U.S.A., South Carolina, Lane [7]. The present finding is a comprehensive field work in previously poor studied zone could produce surprising results, providing a better understanding of the presently sporadic distribution of this species.

Table 1: showing the data of species of genus *Mermiria* [7]

Species	Synonym	Type locality	Kind of type	Specimen category	Location of type
<i>Mermiria bivittata</i> (Serville, 1838)	<i>macclungi</i> Rehn, 1919 <i>maculipennis</i> Bruner, 1889	Northern America, Southeastern U.S.A., South Carolina, Lane Pakistan	Neotype	Male	ANSP Philadelphia
<i>Mermiria intertexta</i> Scudder, 1899	---	Northern America, Southeastern U.S.A., Georgia, Morrison	Lectotype	Male	ANSP Philadelphia
<i>Mermiria picta</i> (Walker, 1870)	<i>alacris</i> Scudder, 1877 <i>belfragii</i> Stål, 1873 <i>neomexicana</i> (Thomas, 1870) <i>rostrata</i> McNeill, 1897 <i>vigilans</i> Scudder, 1899	Northern America, USA: unknown locality	Holotype	Male	BMNH London NH Museum
<i>Mermiria texana</i> Bruner, 1889	<i>arizonensis</i> (Bruner, 1904)	Northern America, South-Central U.S.A., Texas, El Paso	Lectotype	Male	ANSP Philadelphia

**Fig 1:** *Mermiria bivittata* (Serville), (a) Habitus Lateral view (b) Pronotum Head Lateral view (c) Head dorsal view**Fig 2:** *Mermiria bivittata* (Serville), (a) Habitus dorsal view (b) Pronotum dorsal view (c) Leg lateral view

References

- Bughio BA, Sultana R, Wagan MS *et al.* A new species of the genus *Hilethera* Uvarov (Oedipodinae: Acrididae: Orthoptera) from Pakistan. *J Cell Anim. Biol.* 2012; 6:29-32
- Cardinale BJ, Diane S, Srivastava JE, Duffy PW, Justin

D, Amy LM, Sankaran Jouseau C *et al.* Effects of biodiversity on the functioning of trophic groups and ecosystems. *Nature*, 2006; 443:989-992.

- Chapman RF. The structure and wear of mandibles in some African grasshoppers. *Proc. zool. Soc. Lond.* 1964; 142:107-121.
- Chopard L, Orthoptéroïdes de L'Afrique, du Nord *et al.* Faune de l'Empire Français. Librairie Larose, Paris. 1943, 450.
- Dadd RH. Feeding behavior and nutrition in grasshoppers and locusts. *Adv. Insect Physiol.* 1963; 1:47-109.
- Dirshm VM. The African Genera of Acridoidea. Cambridge University Press, Cambridge, 1965, 579.
- Eades DC, Otte D, Cigliano MM, Braun H *et al.* Orthoptera Species File Online (OSF). 2016. <http://Orthoptera.SpeciesFile.org> [Version 5.0/5.0, retrieval date 10.9.2016]
- Ingrisch S. Orthopteroid Insects of Yemen. *Esperiana, Buchreihe zur Entomologie Bd.* 1999; 7:349-376.
- Isley FB. Correlation between mandibular morphology and food specificity in grasshoppers. *Ann entomol. Soc. Am Florida University, Florida.* 1944, 1-5.
- Joern A. Feeding patterns in grasshoppers (Orthoptera: Acrididae): Factor influencing diet specialization. *Ecologia.* 1979; 38:325-347.
- Joern A, Lawlor LR. Food and microhabitat utilization by grasshoppers from arid grasslands: comparisons with neutral models. *Ecology.* 1980; 61:591-599.
- Lomer CJ, Bateman RP, Johnson DL, Langewald J, Thomas M *et al.* Biological control of Locusts and grasshoppers. *Annu. Rev. Ent.* 2001; 46:667-702.
- Mahmood K, Idris AB, Salmah Y *et al.* Tetrigidae (Orthoptera: Tetrigoidea) from Malaysia with the description of six new species. *Acta Entomologica Sinica.* 2007; 50:1272-1284.
- Nadia A, Irfan A, Tanveer H, Ishtiaq A *et al.* American-Eurasian *J Agric & Environ. Sci.* 2015, 15(8):1693-1699.
- Otte D. The North American grasshopper. *Acrididae: Gomphocerinae and Acridinae.* Harvard University Press, Cambridge, MA. 1981; 1:1-275.
- Panhwar WA. Studies on the Systematic and Ecological Status of Tettigonioidae (Ensifera) Of Pakistan. PhD Thesis Submitted To Department of Zoology, University of Sindh, 2015, 1-242.
- Rehan AG. A study of Orthopterous genus *Mermiria* Stal. *Proceed. Acad. Natural. Sci. Phil.* 1919; 71(1):55-120.