



# Journal of Biological Sciences

ISSN 1727-3048

**science**  
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## Taxonomic Studies of Tetriginae (Tetrigidae:Orthoptera) of Thal Area (Punjab) Pakistan

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**Abstract:** Six species and five genera, viz., *Ergatettix*, *Euparatettix*, *Formosatettix*, *Hedotettix* and *Paratettix*, of the tetrigids (pygmy grasshoppers) under the subfamily Tetriginae have been collected from various localities of Thal Area of the Punjab. Out of these, genus *Formosatettix* with the species *F. larvatus* is a new record from Pakistan, while the species, *Hedotettix attenuatus*, is a new record from the Punjab.

**Key words:** Taxonomy, orthoptera, tetrigidae, tetriginae, that area, Pakistan

### Introduction

The taxonomic studies on Tetrigidae of Indo-Pak subcontinent have been made mainly by Kirby (1914) and Hancock (1915). Subsequently a number of genera and species were described by Hancock (1912, 1913), Bei-Bienko and Mishchenko (1951), Pajni and Shaila (1983), Wagan and Kevan (1992) and Suhail *et al.* (1994).

Very little systematic work has been done on the tetrigid fauna from Pakistan. The fragmentary notes and descriptions available include those of Moeed (1971), Ahmad (1977, 1975) but most of their species needed confirmation. Keeping this fact in view, an extensive survey was carried out in various localities of a diversified area "Thal" of the Punjab during 1994 to 1995 which revealed that genus *Formosatettix* with the species *F. larvatus* is a new record from Pakistan, while the species *Hedotettix attenuatus* is a new record from Punjab.

### Materials and Methods

The specimens were killed in a cyanide bottle and pinned. Most of the specimens were with wings folded on their bodies and legs improperly placed. In order to make a study of such specimens, they were kept in a relaxing jar for 1-2 days, 8-10 specimens at a time. After relaxation, they were mounted on spreading boards and the left tegmen and wing of each specimen were fully spread so that the maculation could be studied.

Hind legs were placed in an inverted "V" position. All the mounted material was left on spreading boards for 4-6 days; then transferred to boxes after labelling for preservation. Naphthaline balls mounted on pins and BHC powder were used as fumigant to save the preserved specimens from the attack of insects. These collections were supplemented with specimens from the students' collection of the Department of Agri. Entomology, University of Agriculture, Faisalabad.

'A revolving stage and a WILD M3B binocular microscope (10X X 1.6X) were used for identifying the specimens up to the specific level. The measurements (maximum length and width) of body, pronotum, tegmen and hind femur were taken with a finely pointed divider and a ruler and their means and standard deviation were worked out. The type specimens have been deposited in the Insect Museum, Department of Agricultural Entomology, University of Agriculture, Faisalabad. A list of six species under five genera including their measurements of different body parts along with standard deviation and ratio, distribution and habitat is given in this paper.

**Subfamily Tetriginae:** It is represented by 6 species and 5 genera.

**Genus *Hedotettix* Bolivar:** 1842. *Acridium (Tettix)*, de Haan, Temm. Verh, Orth., p. 167.

1871. *Tettix* Walker, Cat. Derm. Salt., 5: 824.

1887. *Hedotettix* Bolivar, Ann. Soc. Ent. Belg., 31: 195, 283.

**Type: *Acridium (Tettix) gracile* de Haan:** Two species recorded under this genus exactly tally with the published descriptions (Kirby, 1914; Hancock, 1915; Bei-Bienko and Mishchenko, 1951) of this genus.

**1) *Hedotettix gracilis* (de Haan):** 1842. *Acridium (Tettix) gracilis* de Haan, Temminck, Verhandel, Orth., pp. 167, 169.

1) Measurements (mm): 1 ♂ 7 ♀

	Male		Female	
	Range	Mean	S.D.	
Body length	8.0	10.0-11.25	10.75	0.540
Antenna! length	3.5	4.0-4.25	4.125	0.125
Head length	0.75	0.75	0.75	0
Pronotal length	8.5	11.0-15	12.5	1.780
Pronotal width	2.5	3.0	3.0	0
Tegmen length	1.5	2.0	2.0	0
Hind femur length	5.0	6.0-7.0	6.5	0.408
Hind femur width	1.75	2.25-2.5	2.417	0.118
Hind tibia length	5.0	4.5-5.0	4.833	0.236
H.L/A.L	0.214	0.176-0.18	70.182	0.006
H.L/P.L	0.088	0.058-0.06	80.061	0.008
P.L/P.W	3.4	3.666-5.0	4.166	0.593
HF.L/T.L	3.333	3.0-3.5	3.25	0.204
HT.L/HF.L	1.0	0.692-0.83	30.746	0.062

**Material examined:** Jhang: Athara Hazari 1 ♀, 11.VI.93; Layyah: Karor 1 ♀ 5 ♂, 20.111.94; 1 ♀ 12.VI.94.

**Habitat:** These specimens were collected from grasses near the sugarcane fields and along the river bank.

**New record:** It has been recorded for the first time from Thal area.

**2) *Hedotettix attenuatus* Hancock:** 1904. *Hedotettix attenuatus* Hancock, spol. Zeyl., 2: 151.

**Material examined:** Bhakkar: Notak 1 ♂, 30.VI.11.94; Jhang: Athara Hazari 3 ♂, 11.VI.93; Khushab: Oaidabad 2 ♀, 2.IX.94; Layyah: Karor 9 ♂ 16 ♀, 20.111.94; 1 ♂ 1 ♀ 12.VI.94.

**Habitat:** These specimens have been collected from grasses near sugarcane, sorghum and rice crops.

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2) Measurements (mm): 14 ♂ G 19 ♀

	Male			Female		
	Range	Mean	S.D.	Range	Mean	S.D.
Body length	8.0-8.5	8.25	0.204	9.5-1.5	10.0	0.408
Head length	0.5-0.75	0.583	0.118	0.75-1.0	0.917	0.118
Pronotal length	9.0-9.5	9.25	0.204	11.5-12.25	11.917	0.312
Pronotal width	2.25-2.5	2.333	0.118	2.5-3.0	2.833	0.236
Tegmen length	1.5	1.5	0	2.0	2.0	0
Hind femur length	5.0-5.5	5.25	0.204	5.5-6.5	6.167	0.471
Hind femur width	1.75-2.25	2.00	0.204	2.0-2.5	2.250	0.204
Hind tibia length	4.5	4.5	0	4.5-5.0	4.833	0.236
H.L/P.L	0.052-0.081	0.063	0.013	0.061-0.086	0.077	0.011
P.L/P.W	3.8-4.111	3.970	0.129	4.0-4.6	4.228	0.265
1-F.L/T.L	3.333-3.666	3.50	0.136	2.75-3.25	3.083	0.236
HT.LIHF.L	0.818-0.9	0.864	0.34	0.769-0.818	0.725	0.023

3) Measurements (mm): 8 ♂ 10 ♀

	Male			Female		
	Range	Mean	S.D.	Range	Mean	S.D.
Body length	5.0-6.0	5.333	0.471	6.5-7.5	7	0.408
Anternal Length	2.75-3.0	2.875	0.125	3.25-3.5	3.375	0.125
Head length	0.75	0.75	0	0.75-1.0	0.833	0.118
Pronotal length	4.0-5.0	4.417	0.425	6.25-8.0	6.917	0.773
Pronotal width	2.0	2.0	0	2.0-2.5	2.25	0.204
Hind femur length	3.75-4.0	3.917	0.118	5.0-6.0	5.333	0.411
Hind femur width	1.5-2.0	1.667	0.236	2.0-2.5	2.167	0.236
Hind tibia length	3.25-3.5	3.333	0.118	3.5-4.25	3.917	0.312
H.L/A.L	0.272-0.6	0.436	0.164	0.214-0.307	0.261	0.047
H.L/P.L	0.15-0.187	0.169	0.019	0.093-0.153	0.122	0.025
P.L/P.W	2.0-2.5	2.208	0.212	2.5-3.555	3.102	0.443
HT.LIHF.L	0.812-0.875	0.851	0.028	0.666-0.85	0.739	0.08

4) Measurements (mm): 2 ♂ 10 ♀

	Male			Female		
	Range	Mean	S.D.	Range	Mean	S.D.
Body length	6.5-7.25	6.917	0.312	10.0-11.5	10.5	0.707
Anternal Length	3.5	3.5	0	3.5-4.0	3.75	0.250
Head length	0.7-1.0	0.833	0.118	1.0-1.25	1.083	0.118
Pronotal length	9.25-9.5	9.417	0.118	8.75-9.5	12.5	0.408
Pronotal width	2.0-2.5	2.167	0.236	3-3.25	3.167	0.118
Tegmen Length	1.5	1.5	0	1.75-2.5	2.00	0.204
Hind femur length	5.0-5.5	5.25	0.204	6.25-6.9	6.467	0.306
Hind femur width	1.75-2.0	1.833	0.118	2.25-2.75	2.5	0.204
Hind tibia length	4.5-5.0	4.733	0.205	5-5.9	5.383	0.379
H.L/A.L	0.285	0.285	0	0.25-0.357	0.304	0.054
H.LIP.L	0.078-0.108	0.088	0.014	0.076-0.1	0.386	0.434
P.L/P.W	3.8-4.75	4.392	0.421	3.846-4.0	3.949	0.073
HF.L/T.L	2.833-3.666	3.217	0.342	2.777-3.571	3.266	0.349
HT.L/HF.L	0.857-0.94	0.902	0.034	0.8-0.855	0.832	0.023

5) Messuremesks (mm): 17 ♂ 22 ♀

	Male			Female		
	Range	Mean	S.D.	Range	Mean	S.D.
Body length	6.25-7.5	6.688	0.480	8.75-10.5	9.583	0.717
Anternal Length	3.0-3.5	3.25	0.25	4.0-4.5	4.25	0.25
Head length	0.75-1.0	0.813	0.108	0.75-1.0	0.917	0.118
Pronotal length	9.0-11.0	10.125	0.740	11.0-12.0	11.417	0.425
Pronotal width	2.0-2.75	2.25	0.306	2.75-3.0	2.917	0.118
Tegmen Length	1.5-1.8	1.638	0.139	1.5-2.0	1.667	0.236
Hind femur length	5.5-5.9	5.225	0.390	2.75-6.25	6	0.204
Hind femur width	1.9-2.25	2.038	0.129	2.25-2.5	2.417	0.118
Hind tibia length	4.25-5.0	4.563	0.272	5.0-5.25	5.117	0.103
H.LIA.L	0.25-0.285	0.238	0.013	0.166-0.25	0.208	0.042
H.L/P.L	0.068-0.095	0.08	0.01	0.066-0.090	0.08	0.01
P.L/P.W	3.818-5.0	4.552	0.462	3.666-4.090	3.919	0.182
HF.L/T.L	2.777-3.371	3.204	0.247	3.0-4.166	3.666	0.499
HT.LIHF.L	0.847-0.9	0.874	0.026	0.8-0.913	0.854	0.046

**New record:** It has been collected for the first time from Punjab.

**Genus *Formosatettix* Tinkham:** 1937. *Formosatettix* Tinkham, Trans. nat. Hist. Soc. Formosa, XXVII: 237.

**Type: *Formosatettix arisanensis* Tinkham:** One species recorded under this genus exactly conforms to the published description (Bei-Bienko and Mishchenko, 1951) of this genus.

**3) *Formosatettix larvatus* Bei-Bienko:** 1951. *Formosatettix*

*larvatus* Bei-Bienko, keys Faun. USSR., p. 285.

**Material examined:** Khushab: Qaidabad 3 ♂ 9 ♀ 2.IX.94; Layyah: Karor 4 ♂, 20.11.94; Muzaffargarh: Daira Din Panah 1 ♂ 1 ♀ 8.IX.93.

**Habitat:** It has been collected from grasses near stagnant water.

**New record:** This species has been recorded for the first time from Thal as well as Pakistan. Genus *Paratettix* Bolivar 1838. *Tetrix* Rambur, Faun. Ent. Audalus, 11: 65. 1887. *Paratettix* Bolivar, Ann. Soc. Ent. Belg., 31: 195, 270.

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6) Measurements (mm): 4 ♂ 22 ♀

	Male			Female		
	Range	Mean	S.D.	Range	Mean	S.D.
Body length	5.5-6.0	5.750	0.204	6.0-7.5	6.750	0.612
Anternal Length	3.0-3.25	3.089	0.118	3.5	3.5	0
Head length	0.75	0.75	0	0.75-1.0	0.833	0.118
Pronotal length	8.0-8.5	8.167	0.236	8.75-9.5	9.083	0.312
Pronotal width	2.0-2.25	2.083	0.118	2.25-2.5	2.333	0.118
Tegmen Length	1.25-1.5	1.417	0.118	1.25-1.5	1.333	0.118
Hind femur length	4.0-4.25	4.167	0.118	4.5-4.75	4.583	0.118
Hind femur width	1.5	1.5	0	1.75-2.0	1.883	0.103
Hind tibia length	3.0-3.25	3.083	0.118	4.0-4.25	4.083	0.118
H.L/A.L	0.23-0.25	0.243	0.009	0.214-0.285	0.250	0.036
H.L/P.L	0.088-0.093	0.091	0.002	0.078-0.114	0.092	0.016
1 <sup>3</sup> .1JP.W	3.555-4.25	3.935	0.287	3.8-4.0	3.896	0.082
HF.L/T.L	2.666-3.4	2.766	0.314	3.0-3.8	3.467	0.340
HT.L/HF.L	0.705-0.764	0.740	0.025	0.842-0.944	0.891	0.042

**Type:** *Paratettix (Tettix) meridionalis* (Rambur): One species recorded under this genus exactly conforms to the published descriptions (Kirby, 1914; Hancock, 1915; Bei-Bienko and Mishchenko, 1951) of this genus.

**4) *Paratettix nigrescens* Sjostedt:** 1921. *Paratettix nigrescens* Sjostedt, Kurf. Sevenk. Vet. Handb., 62(3): 15,17.

**Material examined:** Jhang: Mehmood Kot 2 ♀ 24.IX.93; Khushab: Qaidabad 2 ♀ 2.IX.93; Layyah: Karor 2 ♂ 2 ♀ 20.111.94; 1 ♀ 12.V1.94; Muzaffargarh: Muzaffargarh 3 ♀ 8.VIII.94.

**Habitat:** These specimens have been collected from grasses near rice sorghum and sugarcane crops.

**New record:** It has been recorded for the first time from Thal.

**Genus *Euparatettix* Hancock:** 1904. *Euparatettix* Hancock, Spol. Zeyl., 11: 145.

**Type:** *Euparatettix (Paratettix) personatus* (Bolivar): One species recorded under this genus entirely tallies with the published descriptions (Hancock, 1912, 1913, 1915; Kirby, 1914; Bei-Bienko and Mishchenko, 1951) of this genus.

**5) *Euparatettix ~ Was* (Bolivar):** 1887. *Paratettix personatus* Bolivar, Ann. Soc. Ent. Belg., 31: 276.

**Material examined:** Bhakkar: Notak 1 ♂, 30.V111.94; Jhang: Mehmood Kot 2 ♂ 1 ♀ 24.IX.93; Khushab: Qaidabad 3 ♂ 2 ♀ 2.IX.94; Layyah: Karor 10 ♂ 12 ♀, 20.111.94; 1 ♂, 12.VI.94; Sargani 3 ♀ 24.V111.93; Muzaffargarh: Daira Din Panah 1 ♀ 1 ♀, 8.IX.93; Muzaffargarh 2 ♀ 8.V111.94.

**Habitat:** These specimens have been collected from the grasses near sugarcane, sorghum and rice crops as well as river and canal banks.

**New record:** It has been recorded for the first time from That area.

**Genus *Ergatettix* Kirby:** 1873, *Tettix* Walker, Cat. Derm. Salt. Brit. Mus., 5: 825.  
1912, *Euparatettix* Hancock, Mem. Dept. Agric. Ind., 4: 153-156.  
1914, *Ergatettix* Kirby, Faun. Brit. Ind. Acrid., pp: 69. 1915, *Indatettix* Hancock, Rec. Ind. Mus., 11: 127-132.

**Type:** *Ergatettix (Tettix) dorsiferus* (Walker): One species

under this genus exactly tallies with the published descriptions (Kirby, 1914; Hancock, 1915) of this genus.

**6) *Ergatettix crassipes* (Hancock):** 1912, *Euparatettix crassipes* Hancock, Mem. Dept. Agric. Ind., pp: 153-157.

**Material examined:** Bhakkar: Notak 4 ♂ 19 ♀, 30.V111.94; Khushab: Qaidabad 1 ♀, 2.IX.94; Layyah: Karor 1 ♀, 20.111.94; Muzaffargarh: Sultan Colony 1 ♀, 8.V111.94.

**Habitat:** These specimens have been collected near the sugarcane fields.

**New record:** It has been recorded for the first time from Thal area.

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