

THE GENERA OF LYGAEINAE (HETEROPTERA:LYGAEIDAE) IN WEST PAKISTAN

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Abstract. Only four genera of Lygaeinae were previously known from West Pakistan. Present study records seven more to bring the total to eleven. A key to these genera and brief diagnostic characters are given. The subfamily Lygaeinae is credited to Schilling 1829, contrary to an earlier practice of crediting to Stol 1862.

Only four genera, with one species each, of Lygaeinae have previously been reported from West Pakistan.^{8,11} They are *Arocatus pilosus* Distant, *Caenocoris nerii* (Germar), *Spilostethus hospes* (Fabricius), and *Karachicoris seidenstueckeri* Stys. We have been able to collect an additional seven genera and about twenty species of this subfamily from West Pakistan. We are including in this study a key to these eleven genera, their known distribution, and a few diagnostic characters for their identification. Work on the species of these genera will be reported later.

Most of the synonymy is not recorded here. Slater⁸ should be referred to for such purposes. The subfamily Lygaeinae is credited to Schilling 1829 here,⁶ contrary to earlier practice.^{8,12,23}

Subfamily Lygaeinae Schilling 1829

Lygaeides Schilling 1829, Beitr. Entomol. Schles. Fn., 1:35,37.

Although the habits of the majority of species of Lygaeinae are unknown, they probably are all phytophagous. Many of them feed upon the mature seeds of plants, but sap feeding is also apparently widespread. Frequently they occur in litter on the ground below the host plants. Many species also occur above the ground on the seeds, flowers and stems of plants. Most of the Pakistani species are bright coloured, having shades of black, red and orange, often arranged in beautiful contrasts. Most of the species are macropterous but *Karachicoris seidenstueckeri* is found in both the macropterous and micropterous form, the latter being more common. Information about biology, immature stages, and host plants of only a few Pakistani species has been studied in Pakistan or elsewhere.^{1,4,5,8}

The subfamily can be characterized by the presence of ocelli; all abdominal spiracles dorsal, straight abdominal sutures, attaining the lateral margin on all segments; straight apical corial margins, impunctate hemelytra, membrane of forewing with a distinct basal cell, hindwing with subcosta present basally, inter-vannals absent, hamus present; phallus with phallosomal processes, secondary gonoporal processes long and coiled; no m chromosome and usually $2n = 12A + X + Y$; and nymphal abdominal scent glands present between terga 4-5 and 5-6.

Key to the Pakistani genera of Lygaeinae†

1. Metathoracic scent gland orifice obsolete, represented laterally only by a simple groove, never with a raised ear-like lobe (Fig. 1a).... *Spilostethus*
Metathoracic scent gland orifice well developed, represented laterally by a raised lobate process (Fig. 1b, c).....2
2. Posterior margin of metapleuron angulate, extending cephaloventrad from dorsal angle (Fig. 1b).....3
Posterior margin of metapleuron either nearly straight dorsoventrally or conspicuously rounded and convex (Fig. 1c).....5
3. Head usually light in colour, if black at least with a maculate spot at base of vertex red or yellow (Fig. 2a)..... *Graptostethus*
Head usually black, if marked with paler coloration then at least base of head mesally black (Fig. 2b).....4
4. Pleural surfaces impunctate, body clothed with very short sericeous pile; scent gland orifice black.....*Aspilocoryphus*
Pleural surfaces strongly punctate, body clothed with upstanding hairs, very hirsute; scent gland orifice pale or reddish.....*Lygaeosoma*
5. Eyes set well away from anterolateral pronotal angles (Fig. 2c), area behind eyes tumid.....6
Eyes contiguous or nearly contiguous with anterolateral pronotal angles (Fig. 2d, e).....7
6. Antennal segment four very long, much longer (about one-third or more) than segment two..... *Caenocoris*
Antennal segment four slightly, if any, longer than segment two.....*Arocatus*
7. Wings usually reduced to tiny pads; pronotum and legs black..... *Karachicoris*
Wings well developed, never reduced to small pads; pronotum or legs with red markings....8
8. Scutellum somewhat flattened but never deeply excavated on either side of midline, usually smooth; pronotum with a complete median longitudinal ridge, sometimes obsolete near posterior margin; scent gland orifice red or orange, never black.....*Tropidothora*
Scutellum deeply excavated on either side of median carina; pronotum with median carina incomplete, interrupted near anterior margin or in region of calli; scent gland orifice black. .9

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†Adapted from Slater.⁹

- 9. Legs orange red, pronotum black.....
..... *Cosmopleurus*
Legs black, pronotum with red markings....10
- 10. Head usually completely black, at least always
with base of head black mesally (Fig. 2d)....
..... *Melanocoryphus*
Head usually red or testaceous, rarely black but
always with at least a small pale median basal
macula on vertex (Fig. 2e).....
..... *Lygaeus*

Genus *Arocatus* Spinola 1837

Arocatus Spinola 1837, Essai Hem., p. 257

Type species *Lygaeus melanocephalus* Fabricius 1789. Monobasic.

This genus is composed of 24 species. They are distributed in Ethiopian (1), Palearctic (19), Oriental (2) and Australian (2) regions. One of the Oriental species, *A. continctus*, is also found in the Ethiopian and Palearctic regions. *A. soricoris* is distributed in India, China and Japan. Thus the genus is essentially Palearctic. The species which we have at hand is different from the three species so far reported from India. A detailed description with illustrations of male and female genitalia of this species will appear in Part II of this report, and will increase the number of species reported from Pakistan to two.

This genus can be distinguished from most other Pakistani Lygaeinae genera by the linear body, the eyes being markedly separate from the anterior pronotal margin, and the area of the head posterior to the eyes being tumid. It can be separated from *Caenocoris*, the genus which it resembles in the characters mentioned above, by the characters in the preceding key and in that the ventral side of the head is bright red in *Arocatus* and black at least along the labium in *Caenocoris*.

Genus *Aspilocoryphus* Stal 1874

Aspilocoryphus Stal 1874, Enum. Hem., 4.99, 117

Types species *Lygaeus fasciiventris* Stol 1858. Fixed by Distant 1904.

This genus contains eight species distributed in the Oriental (4), Ethiopian (3) and Australian (1) regions. We have collected two species of this genus from West Pakistan.

The genus can be identified by its black head at least basally, black scent gland orifice and impunctate pleural surfaces. Unlike *Lygaeosoma* it has only short and irregularly distributed hairs.

Genus *Caenocoris* Fieber 1860

Caenocoris Fieber 1860, Eur. Hem., pp. 44, 166

Type species *Lygaeus nerii* Germar 1847. Monobasic.

This genus contains twenty species distributed in the Australian (3), Oriental (12), Ethiopian (4) and

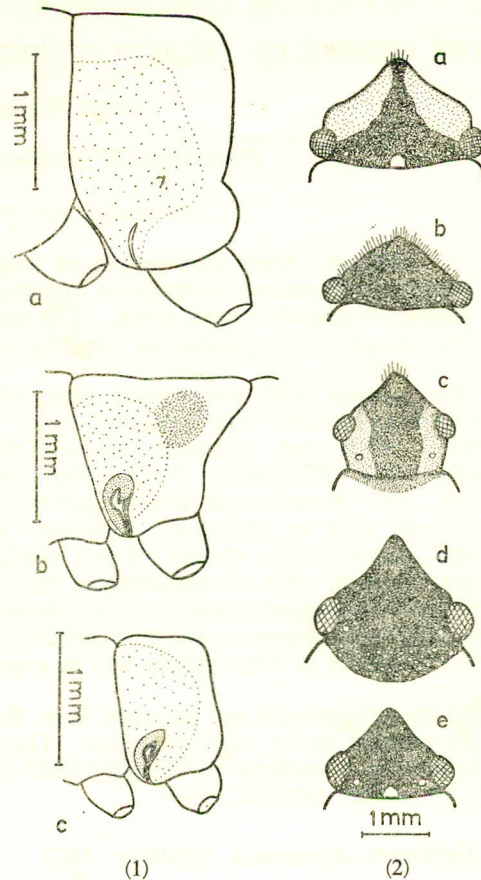


Fig. 1. Metapleuron and scent gland orifice. (a) *Spilostethus* sp. (b) *Graptostethus* sp. (c) *Tropidothorax* sp. Fig. 2. Head, dorsal view, antennae omitted. (a) *Graptostethus* sp. (b) *Lygaeosoma* sp. (c) *Caenocoris* sp. (d) *Melanocoryphus* sp. (e) *Lygaeus* sp.

Palearctic (1) regions. The species found in southern Europe, *C. nerii*, is very widely distributed and is found in Oriental and Ethiopian regions also. We have taken only one species of this genus thus far in West Pakistan.

This genus is closely related to *Arocatus*. The distinguishing characters of the two are mentioned under *Arocatus*.

Genus *Cosmopleurus* Stal 1872

Lygaeus s.g. *Cosmopleurus* Stal 1872, Ofv. Vet. Akad. Forh., 29:41.

Type species *Lygaeus fulvipes* Dallas 1852. Monobasic.

This genus includes only two species, distributed all along the southern coast of the Mediterranean sea and extending up to Syria and Iran. We have collected only one species from West Pakistan.

The genus can be easily identified by its crimson red legs, in addition to the characters mentioned in the key.

Genus *Graptostethus* Stal 1868

Lygaeus s.g. *Graptostethus* Stal 1868, Kong. Svensk. Vet. Akad.

Hand., (11):7:73:74

Type species *Climex servus Fabricius 1787* Fixed by Distant 1904.

This genus contains thirty eight species distributed in the Ethiopian (16), Oriental (16), Australian (6) and Palearctic (2) regions and also in some Pacific islands like Hawaii and Fiji (3). We have been able to collect only two species of this genus but additional species should occur.

The genus may be recognized by its angulate metapleuron and light coloured head. If the head is darker then at least it has a red or yellow area mesally near its base.

Genus *Karachicoris* Stys 1972

Karachicoris Stys 1972, Acta Entomol. Bohemoslov, 69-XXX-XXX.

Types species *Karachicoris seidenstueckeri Stys 1972*. Monobasic.

This genus has only one species known previously only from its type locality of Karachi. We have collected specimens from Kunker, Gadap and Malir. Most of the specimens are micropterous, with wings very small and pad-like, but macropterous specimens also occur with well-developed wings. Among several hundred specimens that we have been only one specimen is macropterous. The micropterous forms resemble nymphal instars and may, therefore, be overlooked by collectors.

The genus can be identified by its micropterous wings and tricarinate pronotum with two oval or rectangular shining depressions.

Genus *Lygaeosoma* Spinola 1837

Lygaeosoma Spinola 1837, Essai Gen. Ins. Hem., pp. 254-256

Type species *Lygaeosoma sardea Spinola 1837*. Monobasic.

This genus contains twenty two species distributed in the Palearctic (7), Ethiopian (7) and Oriental (8) regions. One of the African species also occurs in Syria and one Oriental species in Timor. We have three species of this genus in our collection.

This genus can be identified by the thick and long hairs found all over the body and also by the pale or red scent gland orifices.

Genus *Lygaeus* Fabricius 1794

Lygaeus Fabricius 1794, Entomol. Syst., 4:133.

Type species *Cimex equestris Lin. 1758*. Fixed by Curits 1833.

This is a very widely distributed genus and contains large numbers of species.⁸ We have only one species of this genus in our collection.

It can be differentiated by its black legs, red corium and clavus each with a round black spot, and black head with a basal pale spot. It resembles *Cosmopleurus* in the coloration of scutellum and corium but has a red and black pronotum as compared to an entirely black pronotum in *Cosmopleurus*. Also the legs in *Cosmopleurus* are crimson red, antennae are light orange, markedly lighter than the head or pronotum, and clavus is uniformly black. In *Lygaeus* the antennae are concolorous with the head.

Genus *Melanocoryphus* Stal 1872

Lygaeus s.g. *Melanocoryphus* Stal 1872, Ofv. Vet. Akad. Forh., 29:7:41

Type species *Cimex albomaculatus Goeze*.

This genus as treated here includes fourteen species, distributed in the eastern hemisphere. Josifov⁷ revised this genus and erected a new genus *Horvathiolus* to include all but four species. He based this division on the structure of the pygofer. Slater and Sperry,¹⁰ however, found these characters difficult to use. In view of the difficulty we are treating *Melanocoryphus* here to include all fourteen species. We shall have further observations about this genus in Part II.

This genus can be identified by its black head, a red and black pronotum, and a red corium with one oval black spot, and a uniformly black or dark brown clavus. It resembles *Cosmopleurus* in the coloration of the scutellum and hemelytra but has black legs and a red and black pronotum.

Genus *Spilostethus* Stal 1868

Lygaeus s.g. *Spilostethus* Stal 1868, Kong. Svensk. Vet. Akad.

Hand., 7:11:72

Type species *Cimex militaris Fabricius 1775*. Fixed by Slater 1964.

This genus contains thirty three species distributed in the Ethiopian (18), Oriental (5), Palearctic (9) and Australian (1) regions. Africa shares five species with the Palearctic and three with the Oriental region and the Palearctic shares three species with the Oriental and two of these also with the Australian region. We have four species of this genus in our collection.

The genus can be easily identified by its obsolete scent gland orifice.

Genus *Tropidothorax* Bergroth 1894

Tropidothora Bergroth 1894, Ann. Soc. Entomol. Belg., 38:547

Type species *Lygaeus venustus Herrich-Schaefer 1835*. Fixed by Reuter, 1888.

This genus contains fourteen species distributed in the Palearctic (8), Oriental (4), and Ethiopian (1) regions. One species has also been recorded from New Caledonia. A few Palearctic species are also found in the Oriental region. We have two species of this genus in our collection.

The genus can be differentiated on the basis of its red or orange scent gland orifice, flat scutellum and carinate pronotum.

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References

1. N.S. Bhattacharjee, Ind. J. Entomol., **21**, (1961).
2. W. E. China and N.C.E. Miller, Bull. Brit. Museum, **8**, 1(1959).
3. W.L. Distant, *Fauna of British India Including Ceylon and Burma* (Thacker, Berlin, 1904), vol. II, p. 2.
4. A. Hamid and A.A. Ahmed, Pakistan J. Sci. Ind. Res., **15**, 181 (1972).
5. A. Hamid and K. Meher, Acta Entomol. Bohemoslov (in press).
6. International Code of Zoological Nomenclature, adopted by the Fifteenth International Congress of Zoology, 1964, article 36, p. 39.
7. M. Josifov, Acta Entomol. Mus. Nat. Prague, **36**, 311 (1965).
8. J.A. Slater, A catalogue of the *Lygaeidae* of the World, University Connecticut Publication, Storrs, Connecticut, U.S.A., p. 1, 1964.
9. J. A. Slater, S. African Animal Life, **10**, 15 (1964).
10. J.A. Slater and B.L. Sperry, The Biology, Immature Stages and Distribution of the Lygaeinae of South Africa with the Description of Four New Species (Hemiptera : Lygaeidae), 1972
11. P.Stys, Acta Entomol. Bohemoslov., **69**, (in press).
12. E.P. Van Duzee, Univ. Calif. Tech. Bull., **2**, 1 (1971).