

THE LYGAEINAE OF WEST PAKISTAN

Part I. *Spilostethus* Stal (Heteroptera:Lygaeidae) in West Pakistan

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Abstract. Four species of the genus *Spilostethus* Stal have been reported from West Pakistan. All the four species have been redescribed and a key is provided for their identification. The male and female genitalia and dorsal views of the adults have been illustrated. Information about known general distribution and distribution of each species in Pakistan is included.

The present paper is one of a series on the systematics and biology of the Lygaeidae of West Pakistan.^{1-3,5} The main difficulty that one encounters in studying the fauna of countries like Pakistan is procurement of specimens and literature. While we are fortunate to have been able to overcome the latter difficulty, the former problem is one of the reasons that forced us to abandon our original plan of treating Lygaeidae of West Pakistan in one paper. The material that we have available for study has been collected primarily by various workers in the Zoology Department of the University of Karachi during the past few years. Since the main object of these collectors was to collect Heteroptera in general, lygaeids, due to their specialized habits and habitats, have only been obtained occasionally. A few species of Lygaeidae that come in sweeping or occur in large numbers have been collected more often. On the other hand, species having restricted flight ability, smaller population size or cryptic habits have been picked up less frequently. We are, therefore, inclined to think that many more species of Lygaeidae are found in West Pakistan than are presently represented in various museums of this country. Keeping this in mind, we are first reporting those genera whose members have been collected most often.

To facilitate species identification by Pakistani students of Heteroptera, all species reported here are redescribed. The measurements given are in millimeters. The key to the genera of Pakistani Lygaeinae³ should be consulted for the generic identification. Reference should be made to Slater⁴ for all synonymy and literature searching as well as for detailed information on known distribution of various species. The material studied is deposited in the Zoological Museum, University of Karachi (A. Hamid collection).

Spilostethus Stal

Lygaeus s.g. *Spilostethus* Stal 1868, K. Svenska Vetensk Akad. Handl. 7,72 (1868).

The various species of this genus occur in Australia, Asia, Europe and Africa. The four species described in this paper are all reported for the first time from

Pakistan. *Spilostethus* differs from other genera of Lygaeinae by its obsolete metathoracic scent gland orifice and in that the femora are mutic only in the males.³

Key to the Pakistani species of *Spilostethus*

1. Longitudinal black fasciae on pronotum interrupted in area of calli; transverse fascia on corium extending throughout corial width, never lacking mesally (Fig. 1).....*S. longulus*
Longitudinal black fascia on pronotum not interrupted in area of calli, running from anterior to posterior margin; transverse fascia on corium extending from lateral margin at most mesad to cubital vein (Figs 2-4).....2
2. Membrane of hemelytra uniformly black; inner margins of longitudinal black fasciae on pronotum parallel (Fig. 2).....*S. hospes*
Membrane of hemelytra black with three white spots; inner margins of longitudinal fasciae on pronotum not parallel, divergent posteriorly (Figs. 3, 4).....3
3. Clavus with distinct oval black spot near apex of scutellum (Fig. 3); large species, 14.5 mm. long.....*S. pandurus militaris*
Clavus without a black oval spot, posterior one-third uniformly black (Fig. 4); small species, 9.5 mm. long.....*S. saxatilis*

Spilostethus longulus (Dallas) (Fig. 1)

Lygaeus longulus Dallas, List Hem. B.M., 2,545 (1852).

General coloration red; tylus, area between eyes and ocellus, anterior pronotal margin, two longitudinal broad divergent rays on pronotum, anterior two-thirds of scutellum black; black pronotal longitudinal fascia separated from black anterior pronotal margin by a red area; clavus with a dark brown spot near apex of scutellum, area posterior to this spot often light brown, corium with a transverse dark brown to black band extending from costal margin to near apex of clavus, membrane light brown with a triangular area at base, a median circular area and an irregular area near apex of corium white, irregular area usually connected to circular area and also extending along membrane margin; antennae, legs, bucculae, labium,

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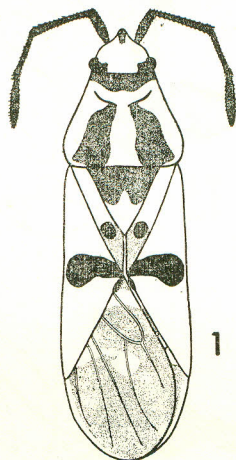


Fig. 1. *Spilostethus longulus*, dorsal view.

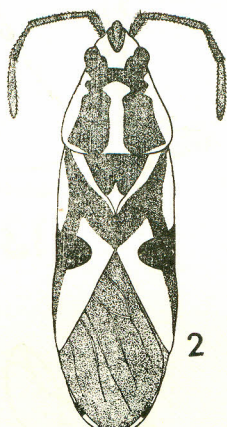


Fig. 2. *Spilostethus hospes*, dorsal view.

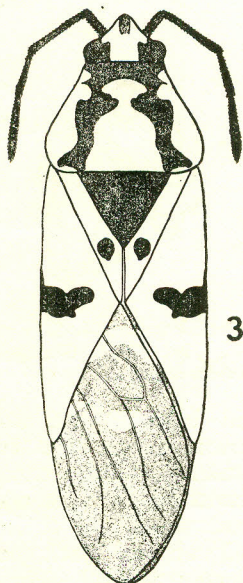


Fig. 3. *Spilostethus pandurus militaris*, dorsal view.

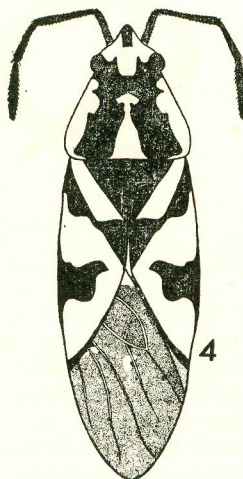
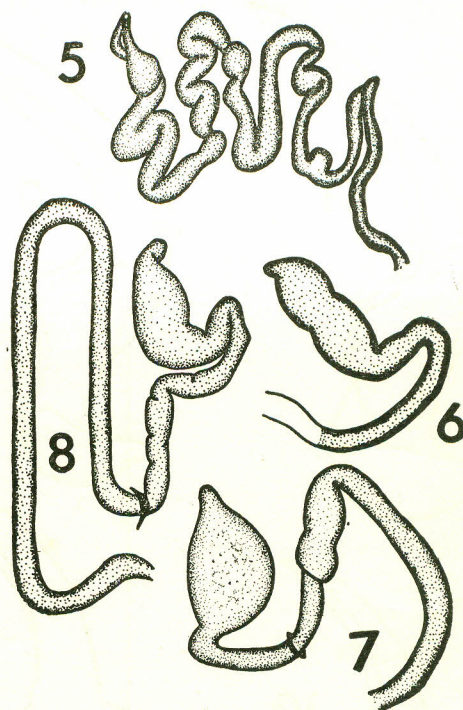


Fig. 4. *Spilostethus saxatilis*, dorsal view.

thoracic sterna and pleurites dark brown; abdominal sterna 4-7 each with a dark brown spot laterally; body clothed with short depressed hairs.

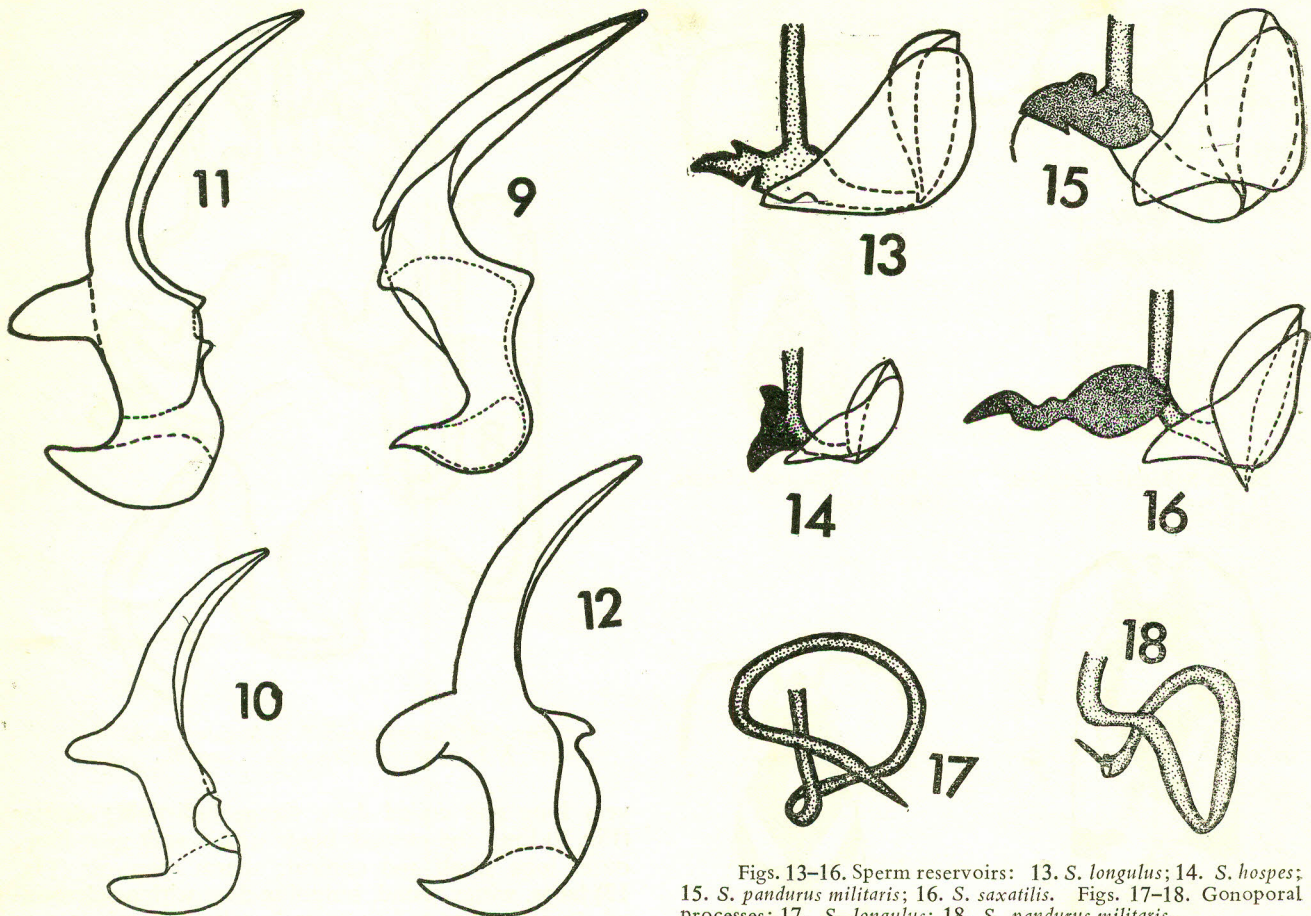
Form elongate; head moderately convex, tylus not exceeding basal one-half of first antennal segment, eyes touching anterior pronotal margin, ocelli nearer to eyes than to each other, length head 1.4, width 1.75, interocular distance 1.25, interocellar distance 0.9, eye-ocellus distance 0.1; pronotum with caller area and lateral margins posterior to calli slightly elevated, posterior margin straight, length pronotum 2.1, width 2.8; scutellum with a T-shaped elevation, apex pointed, length scutellum 1.5, width 1.6; costal margins of corium parallel in basal one-half, length hemelytra 6.75, length corium 4.9, length membrane 4.4, width 2.1; labium long, reaching hind coxae, length labial segments I, 1.2, II, 1.1, III, 1.0; IV, 0.8; length antennal segments I, 0.6, II, 1.7, III, 1.1; IV, 1.3; spermatheca knob-like (Fig. 5), small, with a



Figs. 5-8. Spermathecae: 5. *S. longulus*; 6. *S. hospes*; 7. *S. pandurus militaris*; 8. *S. saxatilis*.

very long and coiled duct, flange indistinct; clasper (Fig. 9) long and curved, blade with a split near base, outer lobe small and conical; sperm reservoir (Fig. 13) large, wings broad, outgoing duct with a sclerotized structure directed posteriorly; phallosomal process (Fig. 19) moderately long and simple, distal end round, apical margin straight, gonoporal process (Fig. 17) with apex gradually tapering; total length 8.0.

Material Examined. West Pakistan. Abbotabad: 1 specimen, 30.6.70, (Azhar); Bahrin: 2 spec., 3.7.70, (Azhar); Balakot: 1 spec., 17.9.69, (Ahmed I.); Campbellpur: 2 spec., 15.7.68, (Farid A.); Fort Sandaman: 1 spec., 4.5.69, (Qamar Abbasi); Hyderabad: 1 spec., 18.8.68, (Saleem); 6 spec., 7.6.70, (Ali Khan); 4 spec., 7.6.70, (Ahmed I.); 3 spec., 7.6.70, (Azhar); 2 spec., 14.6.70, (Ahmed I.); 1 spec., 14.6.70, (Ali Khan); 1 spec., 14.6.70, (Azhar); Hyderabad: Miani Forest: 5 spec., 7.6.70, (Ali Khan); 1 spec., 7.6.70, (Azhar); 2 spec., 7.6.70, (Ahmed I.); Islamabad: 1 spec., 10.7.68, (Farid A.); Karachi: Gutter Bagicha: 1 spec., 10.3.68, (Farid Ahmed); Karachi: Malir: 1 spec., 5.3.68, (Farid); 1 spec., 21.3.68, (Farid A.); 5 spec., 14.7.68, (N. Nasim); 1 spec., 10.8.68, (Farid); 1 spec., 8.10.68, (Saleem); 1 spec., 23.1.69, (Farid A.); 5 spec., 12.2.69, (Farid A.); 4 spec., 6.4.69, (Ahmed I.); 3 spec., 23.5.70, (Ali Khan); Karachi: Malir Cantonment: 1 spec., 4.2.68, (Farid Ahmed); 14 spec., 5.3.68, (Farid Ahmed); 20 spec., 7.3.68, (Farid Ahmed); 9 spec., 8.3.68, (Farid Ahmed); 14 spec., 9.3.68, (Farid Ahmed); Kujwani: 3 spec., 6.7.70, (Azhar); Lahore: 3 spec., 15.4.68, (Farid A.); 1 spec., 16.4.68, (Farid Ahmed); 1 spec., 24.6.70, (Aslam); Lahore: Changa Manga: 1 spec., 15.6.69, (Ahmed I.); Lahore: Shadra: 7 spec., 15.6.69, (Ahmed I.); Lyallpur: 10 spec., 16.6.69, (Ahmed I.); 5 spec., 17.6.69,



Figs. 9-12. Claspers. 9. *S. longulus*; 10. *S. hospes*; 11. *S. pandurus militaris*; 12. *S. saxatilis*.

(Ahmed I.); Madyan: 1 spec., 3.7.70, (Azhar); Mand: 1 spec., 27.4.69, (Ahmed I.); Mirpurkhas: 1 spec., 20.8.68, (Qamar Abbasi); Muzaffarabad: 1 spec., 27.7.69, (Farid A.); Ravi: 3 spec., 4.7.70 (Aslam); Rawalpindi: Ayub Park: 1 spec., 11.7.68, (H. Rehman); Sham Nagar: 1 spec., 9.7.70, (Aslam); Swat: 1 spec., 18.6.68, (Razi); 1 spec., 16.9.68, (Shadab); Swat: Chutair: 1 spec., 8.5.69, (Shadab); 3 spec., 8.5.69, (Qamar Abbasi); 1 spec., 9.5.69, (Qamar Abbasi); Swat: Mengora: 1 spec., 2.8.68, (Farid A.); Swat: Sedo Shariff: 1 spec., 1.8.68, (Farid Ahmed); Tandojam: 2 spec., 19.8.68, (Ahmed I.); 1 spec., 19.8.68, (Q. Abbasi); 1 spec., 3.5.69, (Qamar Abbasi); 4 spec., 8.6.70, (Ahmed I.); 2 spec., 8.6.70, (Azhar), 3 spec., 8.6.70, (Ali Khan); 1 spec., 8.6.70, (Saleem); Turbat: 3 spec., 25.4.68, (Farid); 3 spec., 24.4.69, (Ahmed I.); 1 spec., 26.4.69, (Ahmed I.); 33 spec., 17.6.69, (Farid); Ziarat: 1 spec., 14.5.69, (Qamar Abbasi).

Known Distribution. This species is distributed mainly along the southern shores of the Mediterranean. It has so far been reported from Aden, Algeria, Arabia, Egypt, Ethiopia, India, Iran, Israel, Libya, Nigeria, Morocco, Sahara, Sudan and Tunisia.

Spilostethus hospes (Fabricius) (Fig. 2)

Lygaeus hospes Fabricius Ent Syst., 4, 150 (1794).

Figs. 13-16. Sperm reservoirs: 13. *S. longulus*; 14. *S. hospes*; 15. *S. pandurus militaris*; 16. *S. saxatilis*. Figs. 17-18. Gonoporal processes: 17. *S. longulus*; 18. *S. pandurus militaris*.

General coloration red and black; tylus, area around eyes and ocelli, anterior margin and two longitudinal fascia on pronotum, scutellum except apex, legs, antennae, labium, clavus except inner margin and base, and longitudinal streak on corium dark brown to black; corium with an oval black spot, membrane uniformly dark brown; ventral side of body like *S. pandurus militaris* except that abdominal sterna 3-7 each has a black spot laterally.

General shape elongate; head moderately convex, length head 1.5, width 1.75, interocular distance 0.9, interocellar distance 0.75, eye-ocellus distance 0.1 pronotum with caller area, lateral sides and median area posterior to calli slightly elevated, length pronotum 2.1, width 3.0; scutellum with a T-shaped elevation, length scutellum 1.4, width 1.6; length hemelytra 7.0, length corium 5.0, length membrane 4.7, width 2.7; labium long, exceeding hind coxae, length labial segments I, 1.25; II, 1.25; III, 1.25, IV, 0.9; length antennal segments I, 0.6, II, 1.6, III, 1.25, IV, 1.6; spermatheca (Fig. 6) elongate with curved margins, duct short and of uniform width, flanges lacking; claspers (Fig. 10) with a broad thumb-like outer lobe and a small conical inner lobe and grooved area on inner margin basad to inner lobe; sperm reservoir (Fig. 14) relatively small with distinct median piece and wings, sclerotized structure on posterior side of outgoing *ductus seminis* prominent; phallosomal process (Figs. 20, 21) truncate apically and with a lateral process also truncate, gonoporal

process as in *S. pandurus militaris* (Fig. 18); total length 9.0.

Material Examined. West Pakistan. Bahawalpur: 7 specimens, 13.9.68, (Farid A.); Gilgit: 2 spec., 23.9.68, (Shadab); 3 spec., 24.9.68, (Shadab); 1 spec., 24.9.68, (Ahmed I.); Hala: 6 spec., 23.3.69, (Farid); Hyderabad: 1 spec., 18.8.68, (Qamar Abbasi); 1 spec., 13.4.69, (Ahmed I.); 4 spec., 7.6.70 (Ahmed I.); 2 spec., 7.6.70, (Ali Khan); 4 spec., 7.6.70, (Azhar); 1 spec., 14.6.70, (Ahmed I.); 3 spec., 14.6.70, (Ali Khan); Hyderabad: Miani Forest: 1 spec., 21.8.68, (Ahmed I.); 3 spec., 23.3.69, (Farid); 3 spec., 23.3.69, (Ahmed I.); 2 spec., 23.3.69, (Saleem); 1 spec., 7.6.70, (Ali Khan); 5 spec., 7.6.70, (Ahmed I.); 5 spec., 7.6.70, (Azhar); Jacobabad: 3 spec., 27.3.69, (Farid A.); 4 spec., 27.3.69, (Ahmed I.); Karachi: Malir: 2 spec., 24.1.68, (Farid Ahmed); 1 spec., 30.6.68, (Farid); 1 spec., 10.8.68, (Farid Ahmed); 1 spec., 29.8.68, (N. Yasmin); 1 spec., 8.10.68, (Saleem); 1 spec., 9.10.68, (Qamar Abbasi); 3 spec., 9.11.68, (Farid Ahmed); 2 spec., 18.1.69, (N. Yasmin); 1 spec., 21.1.69, (Farid Ahmed); 11 spec., 6.4.69, (Ahmed I.); 1 spec., 13.4.69, (Ahmed I.); 2 spec., 25.5.70 (Ali Khan); Karachi: Malir Cantonment: 3 spec., 7.3.68, (Farid A.); 1 spec., 8.3.68, (Farid Ahmed); Khairpur: 1 spec., 20.11.68, (Farid A.); Khanewal: 1 spec., 30.11.69, (Farid A.); 2 spec., 30.12.69, (N. Yasmin); Kot Diji: 1 spec., 19.11.68, (Ahmed I.); 25 spec., 20.11.68, (Farid A.); 38 spec., 20.11.68, (Ahmed I.); 2 spec., 26.3.69, (Saleem); Lahore: 1 spec., 27.9.68, (Ahmed I.); 7 spec., 27.9.68, (Qamar Abbasi); 1 spec., 3.7.70, (Aslam); Lahore: Changa Manga: 1 spec., 16.6.69, (Ahmed I.); 1 spec., 20.6.70, (Aslam); 1 spec., 20.6.70, (Azhar); 1 spec., 21.6.70, (Ahmed I.); 1 spec., 26.6.70 (Aslam); 1 spec., 15.7.70, (Azhar); Lahore: Shadra: 10 spec., 15.6.69, (Ahmed I.); 3 spec., 24.6.70, (Aslam); 1 spec., 26.6.70, (Aslam); Lyallpur: 2 spec., 22.3.69, (Aslam); 1 spec., 22.3.69, (Azhar); 2 spec., 22.3.69, (Ahmed I.); 8 spec., 16.6.69, (Ahmed I.); 8 spec., 17.6.69, (Ahmed I.); 2 spec., 3.10.69, (Ahmed I.); 6 spec., 4.11.69, (Aslam); 4 spec., 5.11.69, (Aslam); 2 spec., 3.1.70, (Aslam); 4 spec., 22.6.70, (Azhar); 1 spec., 22.6.70, (Ahmed I.); 1 spec., 27.7.70, (Aslam); Mirpurkhas: 2 spec., 20.8.68, (Shadab); Multan: 5 spec., 16.6.68, (Farid Ahmed); Nawabshah: 1 spec., 28.8.69 (Saleem); 14 spec., 10.5.70, (Ali Khan); 2 spec., 11.5.70 (Ali Khan); Pano Aquil: 7 spec., 19.11.68, (Ahmed I.); Qasoor: 1 spec., 25.6.70, (Aslam); Ravi: 4 spec., 4.7.70, (Aslam); Sukkher: 1 spec., 26.3.69, (Ahmed I.); Tando Gul Mohammed: 2 spec., 20.11.68, (Farid); 3 spec., 20.11.68, (Ahmed I.); Tandojam: 1 spec., 10.8.68, (Ahmed I.); 1 spec., 19.8.68, (Ahmed I.); 2 spec., 22.3.69, (Saleem); 2 spec., 8.6.70, (Ali Khan); 7 spec., 8.6.70, (Azhar); 3 spec., 8.6.70, (Ahmed I.); 1 spec., 19.8.70, (Saleem); 1 spec., 19.8.70, (Ahmed I.); Turbat: 1 spec., 26.4.69, (Ahmed I.).

Known Distribution. This species is primarily oriental but has also been reported from the Australian region. It has been recorded from Burma, Celebes, Ceylon, China, Formosa, Hong Kong, India, Iran, Japan, Java, Malaya, Philippines, Sumatra, Australia, New Caledonia, New Guinea, New Zealand and Tasmania.

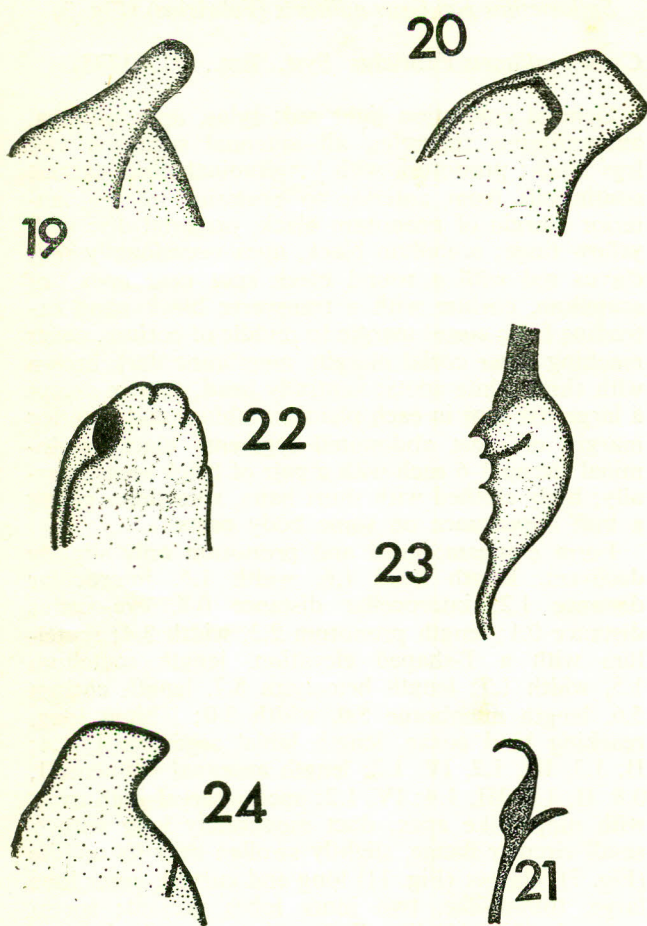
Spilostethus pandurus militaris (Fabricius) (Fig. 3)

Cymex militaris Fabricius Syst. Ent., 717(1775).

General coloration light red; tylus, apex of juga, antenniferous tubercles, all antennal segments and legs black; pronotum with longitudinal black fasciae continuous from anterior to posterior margin, anterior margin of pronotum black, pronotal disc with yellow tinge; scutellum black, apex occasionally red; clavus red with a round black spot near apex of scutellum, corium with a transverse black band extending from costal margin to middle of corium, never reaching inner corial margin, membrane dark brown with three white spots; ventrally head, thorax except a large red spot in each pleuron, labium and anterior margin of most abdominal segments black, abdominal sterna 3-6 each with a pair of black spots laterally; body clothed with short hairs, sometimes giving a buff appearance on some body parts.

Form elongate: head and pronotum only slightly declivent, length head 1.6, width 1.6, interocular distance 1.2, interocellar distance 0.8, eye-ocellus distance 0.1; length pronotum 2.3, width 3.4; scutellum with a T-shaped elevation, length scutellum 1.5, width 1.7; length hemelytra 8.7, length corium 5.6, length membrane 5.0, width 3.0; labium long, reaching hind coxae, length labial segments I, 1.4; II, 1.3, III, 1.2, IV, 1.2; length antennal segments I, 0.8, II, 1.8, III, 1.4; IV, 1.2; spermathecal bulb oval, with nipple-like apex, duct moderately long with a small circular flange, slightly swollen near its middle (Fig. 7); clasper (Fig. 11) long and curved, outer lobe large, thumb-like, two inner lobes present; sperm reservoir (Fig. 15) like *S. longulus*, sclerotized structure on posterior side of outgoing *ductus seminis* large and with lateral processes at posterior end; phallosome process (Figs. 22, 23) dentate apically, gonoporal process (Fig. 18) with distinct secondary gonoporal process; total length 14.5.

Material Examined. West Pakistan. Bahawalpur: 1 specimen, 19.9.68, (Farid Ahmed); Balakot: 1 spec., 28.6.70, (Azhar); Campbellpur: 1 spec., 15.7.68, (Farid Ahmed); Chutair: 1 spec., 9.5.69, (Qamar Abbasi); Hyderabad: 3 spec., 7.6.70, (Ahmed I., Ali Khan, Azhar); Hyderabad: Miani Forest: 1 spec., 7.6.70, (Azhar); 2 spec., 7.6.70, (Ali Khan); Karachi: Malir: 1 spec., 12.3.68, (Farid); 1 spec., 10.8.68, (Farid Ahmed); 1 spec., 28.8.68, (Qamar Abbasi); 1 spec., 12.2.69, (Farid Ahmed); Kujwani: 2 spec., 6.7.70, (Azhar); Lahore: 4 spec., 15.4.68, (Farid Ahmed); 1 spec., 27.9.68, (Qamar Abbasi); Lahore: Changa Manga: 1 spec., 16.6.69, (Ahmed I.); Lahore: Shadra: 2 spec., 15.6.69, (Ahmed I.); 1 spec., 24.6.70, (Aslam); Lyallpur: 1 spec., 21.4.68, (Farid); 4 spec., 16.6.69, (Ahmed I.); 1 spec., 17.6.69 (Ahmed I.); 1 spec., 12.6.70, (Azhar); 2 spec., 22.6.70, (Ahmed I.); Muzaffarabad: 1 spec., 23.7.68, (Farid Ahmed); Ravi: 1 spec., 4.7.70, (Aslam); Rawalpindi: 1 spec., 23.6.70, (Ahmed I.); Sham Nagar: 1 spec., 9.7.70, (Aslam); Tandojam: 1 spec., 19.8.68, (Ahmed I.); 1 spec., 19.8.68, (Qamar Abbasi); Taxila: 2 spec., 14.7.68, (Farid Ahmed); Turbat: 11 spec., 17.6.69, (Farid).



Figs. 19–24. Phallosome processes: 19. *S. longulus*, lateral view; 20, 21. *S. hospes*, lateral and apical views respectively; 22, 23. *S. pandurus militaris*, lateral and apical views respectively; 24. *S. saxatilis*, lateral view.

Known Distribution. This is a very widely distributed species. It has been reported from the Palearctic, Ethiopian, Oriental and Australian regions.

Spilostethus saxatilis (Scopoli) (Fig. 4)

Cimex saxatilis Scopoli, Ent. Carn. Exhib. Ins. Carniol., 128, 371 (1763).

General coloration bright red with jet-black markings; tylus, antennae, areas around eyes and ocelli, anterior pronotal margin, scutellum, apex of clavus, base and costal margin of corium, membrane, legs, bucculae and labium black; pronotum with longitudinal black markings continuous from anterior to posterior margin, corium with a large black transverse spot running from costal margin towards apex of clavus, not reaching inner corial margin, membrane with three relatively small white spots; ventral side of thorax black except one red patch on

each pleuron, anterior margin of each abdominal sternum black, sometimes incompletely, abdominal sterna 3–6 each with a pair of oval black spots, seventh sternum and pygophore black.

Form elongate; head slightly convex, length head 1.5, width 1.8, interocular distance 1.1, interocellar distance 0.9, eye-ocellus distance 0.1; pronotum with lateral margins and caller area elevated, length pronotum 2.1, width 3.0; scutellum with a T-shaped elevation, length scutellum 1.5, width 1.9; length hemelytra 7.8, length corium 5.0, length membrane 5.0, width 2.7; labium long, almost reaching hind coxae, length labial segments I, 1.2, II, 1.2, III, 0.9, IV 0.75; length antennal segments I, 0.6, II, 1.5, III, 1.0, IV, 1.4; spermatheca (Fig. 8) with a proximal flange, duct of uniform width throughout; clasper (Fig. 12) long and stout with a large outer and a small inner lobe; sperm reservoir (Fig. 16) with well developed median piece and wings, structure on posterior side of *ductus seminis*, leaving sperm reservoir, long; phallosome process (Fig. 24) simple with broad apical end, gonoporal process (Fig. 17) like *S. longulus*; total length 10.0.

Material Examined. West Pakistan. Abbotabad: 4 specimens, 2.5.71, (S.M. Kaleem); Ayubia: 3 spec., 3.5.69, (S.M. Kaleem); Rawalpindi: 1 spec., 2.5.71, (S.M. Kaleem); Swat: 1 spec., 18.9.68, (Qamar Abbasi); Turbat: 1 spec., 17.6.69, (Farid).

Known Distribution. This species is primarily Palearctic but has also been collected in India. It has been reported from several countries in Europe and from Algeria, Egypt, Morocco, Tunisia, Afghanistan, India and several Middle Eastern countries.

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