

Study of Lygaeidae (Lygaeoidea: hemiptera) species from Dumna Nature Park, Jabalpur, Madhya Pradesh

¹ Altaf Hussain Sheikh, ² Sandeep Kushwaha, ³ Moni Thomas, ⁴ Rita Bhandari

¹ R D University Jabalpur, Madhya Pradesh, India

² Zoological Survey of India, M Block, New Alipore, Kolkata, West Bengal, India

³ Directorate of Research Services, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh, India

⁴ Department of Zoology, Government O. F. K. College, Jabalpur, Madhya Pradesh, India

Abstract

Five species of family Lygaeidae are reported first time from Dumna Nature Park. The species are *Graptostethus servus*, *Spilostethus pandurus militaris*, *Spilostethus hospes*, *Metochus uniguttatus* and *Elasmolomus sordidus*. The present paper provides the systematic account of the Lygaeidae species recorded from the park.

Keywords: lygaeidae, dumna nature park, antennae, rostrum, fuliginous, corium

1. Introduction

The state of Madhya Pradesh is located in the center of India and lies between 210 to 250 N and longitudes 740 to 840 E. Jabalpur district lies in the Eastern half of Madhya Pradesh. Geographically it lies between 23° 10' North latitude and 79° 59' East longitude with a total geographic area of 5211 sq. km. Dumna Nature Park (DNP) is located (23° 10' North latitude and 80° 1' East longitude) on Dumna Airport Road in district Jabalpur. The Park has an area of 1058 ha is a mixed forest under Jabalpur Municipal Corporation managed by the Department of Forestry, government of Madhya Pradesh. DNP is almost unexplored area, only few species of Hymenoptera and Hemiptera have been reported so far (Sheikh *et al.*, 2016abcd; Sheikh *et al.*, 2017abc) [13, 8, 9, 14].

In India family Lygaeidae is represented by nine subfamilies viz. Heterogastrinae, Pachygronthinae, Rhyparochrominae, Cyminae, Blissinae (chinch bugs), Geocorinae (big-eyed bugs), Artheneinae, Lygaeinae and Orsillinae (milk-weed bugs). The diagnostic character of the Lygaeidae is having a pair of ocelli between the compound eyes, 4-segmented antennae, four segmented rostrum and absence of cuneus in hemelytra. They are phytophagous but few (subfamily Geocorinae) are predators (Saha *et al.*, 2016) [7]. The Lygaeidae family comprises of about 4000 species under 500 genera worldwide (Henry, 2009) [6]. About 292 species belonging to 112 genera of Lygaeidae has been recorded from India (Saha *et al.*, 2016) [7]. More than eight species of this family have been reported from Madhya Pradesh (Chandra and Kushwaha, 2012, 2013, 2014) [2, 3, 9]. However, no species of Lygaeidae has been reported from DNP so far. The present paper reports five Lygaeidae species from DNP.

2. Methodology

The Lygaeidae fauna from DNP was collected through two sampling methods namely Sweep net and Light trap. Sweep net made up of 11 inch diameter circular iron frame attached to an aluminum handle of 30 inches long and 2.5 inch

diameter was used for the collection of diurnal Lygaeidae fauna while as nocturnal species were collected by a mercury light trap. The trapped insects were carefully transferred to the killing bottle. The identification of the collected Lygaeidae fauna was carried out at the Zoological Survey of India, Jabalpur, Madhya Pradesh.

3. Results

The systematic list and systematic account of the five species collected from Dumna Nature Park is presented as under:

3.1 Systematic list

- | | |
|-------------|--|
| Order | Hemiptera |
| Sub-order | Heteroptera |
| Superfamily | Lygaeoidea |
| Family | Lygaeidae |
| Subfamily | Lygaeinae |
| Genus | <i>Graptostethus</i> Stål, 1868 |
| 1. Species | <i>Graptostethus servus</i> (Fabricius, 1787) |
| Genus | <i>Spilostethus</i> Stål, 1868 |
| 2. Species | <i>Spilostethus pandurus militaris</i> (Fabricius, 1763) |
| 3. Species | <i>Spilostethus hospes</i> (Fabricius, 1794) |
| Subfamily: | Rhyparochrominae |
| Genus | <i>Metochus</i> Scott, 1874 |
| 4. Species | <i>Metochus uniguttatus</i> (Thunberg, 1922) |
| Genus | <i>Elasmolomus</i> Stål, 1872 |
| 5. Species | <i>Elasmolomus sordidus</i> (Fabricius, 1787) |

3.2 Systematic account

Genus: *Graptostethus* Stål, 1868

Diagnostic characters

Antennae moderate in length, about one half the length of the body, the second and third joints subequal in length, or second longer than third; rostrum moderate in length, the first joint reaching or just passing the anterior margin of the presternum; pronotum with the posterior margin straight, a central carina

absent or sub-obsolete; femora unarmed.

1. *Graptostethus servus* (Fabricius, 1787)

1787. *Cimex servus* Fabricius, *Mant. Ins.*, 2: 300.

1988. *Graptostethus servus* (Fabricius), Mukhopadhyay, *Rec. Zool. Surv. India, Occ. Paper No.* 107:18.

Diagnostic characters

Body pale red in colour and pilose; basal spot and apical margin to membrane greyish; apex of head, a small spot at inner margin of eyes, scutellum, a large sub-claval spot and a smaller marginal spot to corium, membrane, a large spot on the lateral area of each sternal segment, legs, antennae, and rostrum black; basal spot and apical margin to membrane grayish; rostrum reaching posterior coxae; the apical margin of the corium is often pale ochraceous. Length: 9 mm (Fig. A).

Material examined: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 14.vii.2014, Coll. Altaf Hussain Sheikh.

Distribution

India: Chhattisgarh, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttaranchal and West Bengal. *Elsewhere*: Australia, China, Myanmar, Sri Lanka, South Africa (Chandra and Kushwaha, 2012; Saha *et al.*, 2016)^[7, 2].

Genus: *Spilostethus* Stål, 1868

Diagnostic characters

Posterior margin of the pronotum straight; the scutellum more or less distinctly carinate from about middle to apex; the clavus posteriorly is sub-ampliated.

2. *Spilostethus pandurus militaris* (Fabricius, 1775)

1763. *Cimex pandurus* Scopoli, *Ent. Carn. Exhib. Ins. Carnid.*, 4, 368: 126-127.

1775. *Cimex militaris* Fabricius, *Syst. Ent.*, 717.

1988. *Spilostethus pandurus militaris*: Mukhopadhyay, *Rec. Zool. Surv. India, Occ. Paper No.* 107: 15.

Diagnostic characters

Head as broad as thorax; body pale reddish; antennae, rostrum, pronotum, scutellum, a small spot near apex of clavus, a transverse fascia to corium, prosternum, margins of meso- and metasterna, and the legs black; rostrum reaching the intermediate coxae; membrane pale brownish ochraceous with a white spot at base; femora distinctly spined beneath. Length: 14 mm (Fig. B).

Material examined: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 03.ix.2015, Coll. Altaf Hussain Sheikh.

Distribution

India: Himachal Pradesh, Karnataka, Punjab, Rajasthan, Uttar Pradesh and West Bengal; *Elsewhere*: Australia, Myanmar and South Africa (Chandra and Kushwaha, 2012)^[2].

3. *Spilostethus hospes* (Fabricius, 1794)

1794. *Lygus hospes* Fabricius, *Ent. Syst.*, 4: 150.

1988. *Spilostethus hospes* (Fabricius), Mukhopadhyay, *Rec.*

*Zool. Surv. India, Occ. Paper no.*107:15.

Diagnostic characters

Head as broad as thorax; body pale reddish, finely pilose; rostrum passing the posterior coxae; apex of head and a spot at inner margins of eyes, antennae, rostrum, two broad central discal fasciae to pronotum, scutellum, excluding apex, apex of clavus, a large central spot to corium, membrane, disks of sternum and abdomen, and legs black; Maximum width of pronotum 1.83 x as long as maximum width of head, 1.65 x as long as length of pronotum and 2.22 x as long as length of scutellum; length of scutellum 0.82x as long as maximum width of head; femora unarmed. Length: 12.5 mm (Fig. C).

Material examined: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 12.iii.2015, Coll. Altaf Hussain Sheikh.

Distribution

India: Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Uttaranchal and West Bengal; *Elsewhere*: Australia, Myanmar, Pakistan and Sri Lanka (Chandra and Kushwaha, 2012)^[2].

Genus: *Metochus* Scott, 1874

Diagnostic characters

Pronotum constricted near middle; corium yellowish brown, punctuate; lateral margin of pronotum and legs longly pilose.

4. *Metochus uniguttatus* (Thunberg, 1922)

1922. *Pendulinus uniguttatus* Thunberg, *Hem. Rost. Cap.*, 4: 6.

1988. *Metochus uniguttatus* (Thunberg), Mukhopadhyay, *Rec. Zool. Surv. India, Occ. Paper No.*, 107: 5.

Diagnostic characters

Head more or less triangular; pronotum strongly constricted near middle, posterior pronotal lobe with a central elongate spot; maximum width of pronotum 1.65 x as long as maximum width of head, 1.41 x as long as length of scutellum, as long as length of pronotum; corium yellowish brown, punctuate; length of scutellum 1.17x as long as maximum width of head; lateral margin of pronotum and legs longly pilose. Length: 12 mm (Fig. D).

Material examined: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 08.x.2015, Coll. Altaf Hussain Sheikh.

Distribution

India: Andaman and Nicobar Islands, Assam, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya and Uttaranchal. *Elsewhere*: China, Myanmar and Sri Lanka (Chandra and Kushwaha, 2012)^[2].

Genus: *Elasmolomus* Stål, 1872

Diagnostic characters

Rostrum yellowish brown, the basal joint reddish brown, apex pitchy black; legs yellowish brown; abdomen beneath pale reddish brown.

5. *Elasmolomus sordidus* (Fabricius, 1787)

1787. *Cimex sordid* Fabricius, *Mant. Ins.*, 2: 302.

1988. *Elasmolomus sordidus* (Fabricius), Mukhopadhyay,

Rec. Zool. Surv. India, Occ. Paper No., 107: 50.

Diagnostic characters

Head broad; body brown; apex of scutellum brownish yellow; anterior lobe of pronotum, base of scutellum and sternum dark reddish brown; membrane fuliginous, with a dark reddish brown spot at base; antennae pale yellowish brown; rostrum yellowish brown, the basal joint reddish brown, apex pitchy black; length of scutellum 1.14x as long as maximum width of head; maximum width of pronotum 1.62 x as long as maximum width of head, 1.33 x as long as length of pronotum and 1.41 x as long as length of scutellum; legs yellowish brown; abdomen beneath pale reddish brown. Length: 10 mm (Fig. E).

Material examined: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 08.x.2015, Coll. Altaf Hussain Sheikh.

Distribution

India: Assam, Bihar, Chhattisgarh Himachal Pradesh, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Uttaranchal and

West Bengal; Elsewhere: China, Myanmar and Sri Lanka (Chandra and Kushwaha, 2012)^[2].

Conclusion

Five species belonging to four genera and two subfamilies viz. Lygaeinae and Rhyparochrominae of family Lygaeidae were reported first time from DNP. The five species are *G. servus*, *S. pandurus militaris*, *S. hospes*, *M. uniguttatus* and *E. sordidus*. These species has already been reported from Madhya Pradesh, however, this is the first account of Lygid bugs from the DNP.

Acknowledgement

The authors are thankful to Dr. S. Sambath, Scientist D., Officer-in-Charge of Jabalpur Regional Centre, Zoological Survey of India, Jabalpur for providing sophisticated laboratory facilities. We are very grateful to Commissioner, Jabalpur Municipal Corporation and the Conservator Forests, Forest division Jabalpur, for permitting us to carry out the diversity of insect fauna in Dumna Nature Park.

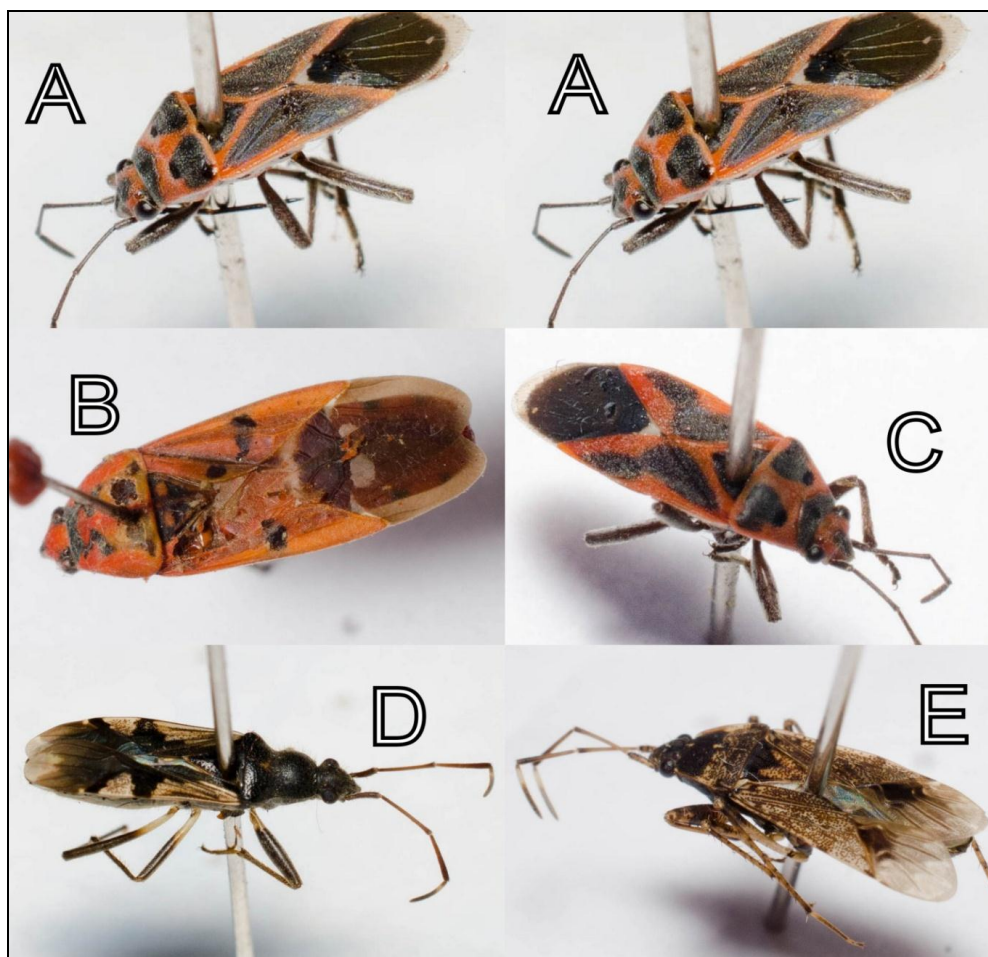


Fig 1: A. *Graptostethus servus* B. *Spilostethus pandurus militaris*. C. *Spilostethus hospes*. D. *Metochus uniguttatus* and E. *Elasmolomus sordidus*.

References

1. Chandra K, Kushwaha S. Ground bugs (Hemiptera: Lygaeidae) of Madhya Pradesh, with their distribution in India. Mun. Ent. Zool. 2014; 9(1):535-539.
2. Chandra K, Kushwaha S. Addition to True bugs (Insecta: Hemiptera) Fauna of Pachmarhi Biosphere Reserve, Madhya Pradesh, India. Annals of forestry. 2012; 20(I):250-254.

3. Chandra K, Kushwaha S. Distribution and diversity of Hemiptera Fauna of Singhori Wildlife Sanctuary, Raisen District, Madhya Pradesh, India. *Mun.Ent. Zool.* 2013; 8(2):644-681.
4. Distant WL. *Fauna Brit. India Including Ceylon and Burma, Rhynchota.* 1902; 2:196-430.
5. Distant WL. *Fauna Brit. India Including Ceylon and Burma, Rhynchota.* 1910; 5:1-100.
6. Henry TJ. Biodiversity of Heteroptera in *Insect Biodiversity Science and Society* Edt. By Robert, G. Footitt and Piter, H. Adler. 2009, 224-263.
7. Saha PC, Biswas B, Hassan ME, Chandra K, Praveen K. On an account of family Lygaeidae (Hemiptera: Heteroptera) Chhattisgarh, India. *Rec. zool. Surv. India:* 2016; 116(Part-2):129-158.
8. Sheikh AH, Jubiraj T, Lone MM, Azad Z, Lone MM. New records of Xylocopa (Hymenoptera: Apidae: Xylocopinae) from Dumna Nature Park Jabalpur, India. *International Journal of Current Advanced Research.* 2017c; 6(3).
9. Sheikh AH, Bhandari R, Thomas M, Kushwaha S, Bunkar K. Studies on assassin bug (Reduviidae: Hemiptera: Insecta) fauna of Dumna Nature Park, Jabalpur, Madhya Pradesh. *The Journal of Zoology Studies.* 2016a; 3(5):83-86.
10. Sheikh AH, Bhandari R, Thomas M, Yousf B. Additional Records of Reduviid (Hemiptera: Reduviidae) Assassin bugs from Dumna Nature Park, Jabalpur, Madhya Pradesh, India. *Bio Bulletin.* 2017a; 3(1):25-29.
11. Sheikh AH, Kumar G, Thomas M, Bhandari R. First record of three species of hairy wasps (Hymenoptera: scoliidae) from Madhya Pradesh. *Records of the zoological survey of India.* 2016c, 116.
12. Sheikh AH, Kumar G, Thomas M, Bhandari R. Taxonomic studies on vespid wasps (hymenoptera: vespoidea: vespidae) of Dumna Nature Park, Jabalpur, Madhya Pradesh. *Records of the zoological survey of India.* 2016d, 116.
13. Sheikh AH, Thomas M, Bhandari R. New records of Scoliid wasps (Insecta: Hymenoptera: Scoliidae) from Dumna Nature Park, Jabalpur, Madhya Pradesh, India. *The Journal of Zoology Studies.* 2016b; 3(5):24-27.
14. Sheikh AH, Yousf B, Azad Z, Lone MM. Four new records of Xylocopa (Hymenoptera: Apidae: Xylocopinae) from Dumna Nature Park, Jabalpur, Madhya Pradesh India. *International journal of recent scientific research.* 2017b; 8(10).