

Research Article

NEW STATE RECORDS OF PYRRHOCOROIDEA (INSECTA: HEMIPTERA: HETEROPTERA) FROM DALMA WILDLIFE SANCTUARY, JHARKHAND, INDIA

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ABSTRACT

The species diversity of superfamily Pyrrhocoroidea (Hemiptera) from Dalma WLS, Jharkhand, India was studied. Eleven species belong to six genera within the families Pyrrhocoridae and Largidae under the superfamily Pyrrhocoroidea were identified, including new distributional records for ten species from Jharkhand. Distributional data for all listed species from Dalma Wildlife Sanctuary, Jharkhand, India, as well as from other regions across India and abroad, have been provided.

Keywords: Largidae, New distributional records, Pyrrhocoridae, Species diversity.

INTRODUCTION

Pyrrhocoroidea is a relatively small superfamily within the order Hemiptera, specifically classified under sub order Heteroptera under infra-order Pentatomomorpha. This superfamily consists of 663 species belonging to 69 genera pertaining to two families worldwide. These two families are Largidae, which includes 213 species under 23 genera, and Pyrrhocoridae, which comprises 450 species under 46 genera (Hemala-Kment, 2015). Generally, these bugs are red in colour and commonly known as "Red Cotton Bugs". Largidae can be distinguished from Pyrrhocoridae by the seventh abdominal sternum of female split medially whereas the seventh abdominal sternum entire in female in case of Pyrrhocoridae. The Indian fauna of Largidae consists of 18 species under 5 genera and Pyrrhocoridae consists of 49 species under 13 genera (Praveen K. et.al.,2024). This paper deals with 11 species under 6 genera belonging to 2 families of the superfamily Pyrrhocoroidea. All of the 11 species are reported for the first time from the Dalma Wildlife Sanctuary and all except *Dysdercus koenigii* (Fabr,1775) are reported for the first time from the state of Jharkhand.

Dalma Wildlife Sanctuary is a prominent wildlife sanctuary located around the Dalma Hills that is approximately 10 km from Jamshedpur in Jharkhand, India.

The sanctuary's forests, categorized as "Dry peninsular Sal" and "Northern Dry Mixed Deciduous Forest," that cover 193 km² in the East Singhbhum and Saraikela-Kharsawan districts. The sanctuary is safe home for several animals including wild elephants, pangolin, sloth bear, Indian grey wolf, snakes like Bamboo Pit Viper and copper headed trinket snakes, birds like crested serpent Eagle, plum headed parakeets, paradise flycatchers. Although numerous studies have been conducted on various animal groups in this Sanctuary and across the state of Jharkhand, no research has yet focused on the Hemipteran diversity within this Sanctuary. This study specifically investigated the species diversity of the superfamily Pyrrhocoroidea within the sanctuary.

MATERIAL AND METHODS

During the survey of the Dalma WLS, Jharkhand by the team of Zoological Survey of India Kolkata, altogether collected Pyrrhocoroid bugs by handpicking, net trap and light tarp methods. Then the specimens were pinned, dried and identified with the help of available literature. For species confirmation, genitalia of certain specimens were dissected following the method described by Ahmad & Qadri (2009). The process began by removing the label from the pinned dry specimen and immersing it in boiling

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water for 4-5 minutes. Once softened, the specimen was removed from the pin. Under a microscope, the genital capsule (pygophore) was carefully extracted using fine watchmaker's forceps (size 5 or finer). The genital capsule was then placed in a 10% KOH solution and heated to 40°C for 5-10 minutes in a cavity block. Afterward, the internal contents were cleared by thoroughly washing the capsule in distilled water 2-3 times. The parameres and aedeagus were then carefully detached from the genital capsule using fine forceps. Following dissection, the parameres and aedeagus

were preserved in 70% alcohol, stored in an Eppendorf tube, and placed beneath the corresponding specimen.

RESULTS AND DISCUSSION

From the present study area, 15 examples were collected and identified as 11 species under six genera of superfamily Pyrrhocoroidea from Dalma. All the species except *Dysdercus koenigii* (Fabr,1775) were found to be new report from the state of Jharkhand. Distributional data provided for all the reported species wherever available.

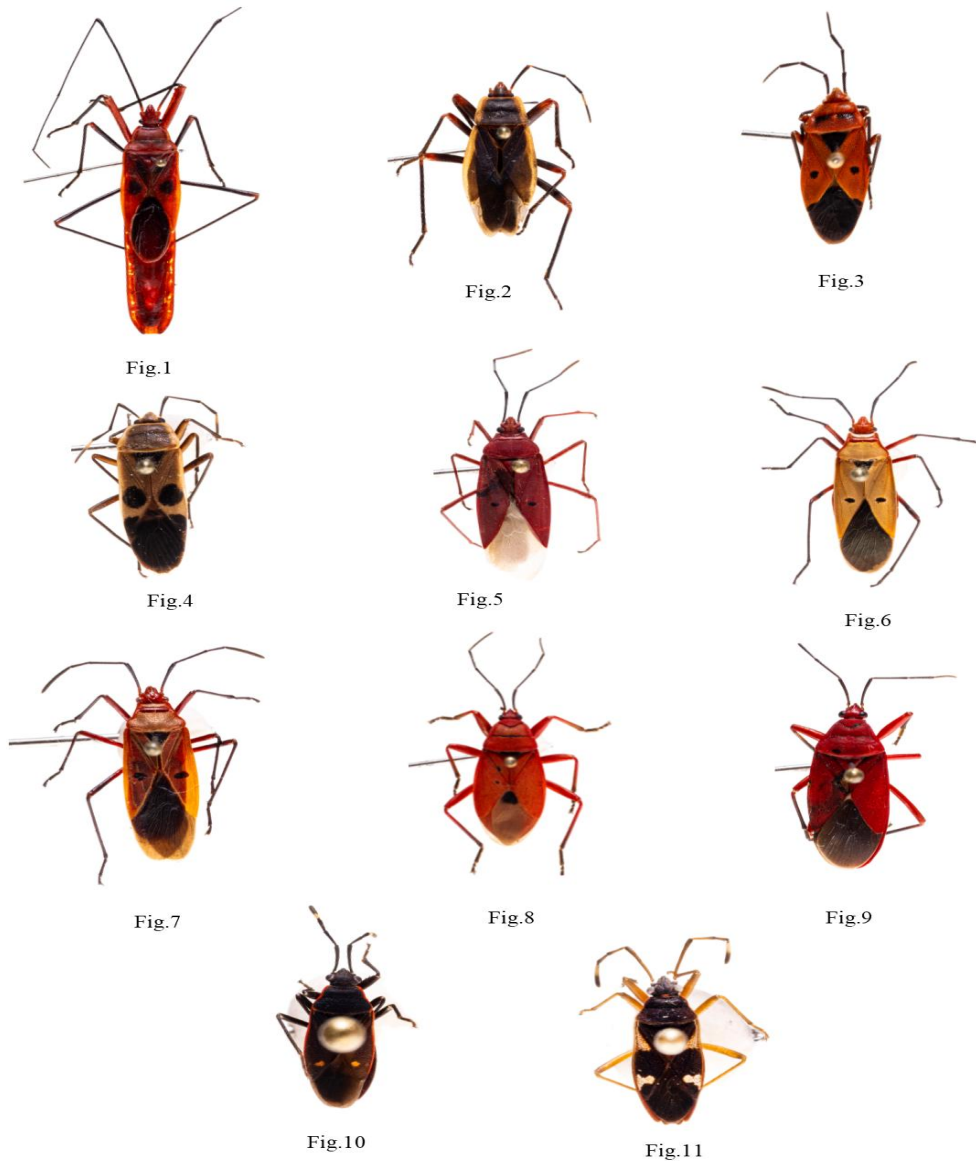


Figure 1. *Macrocheraia grandis* (Gray,1832), Dorsal view; Fig.2 *Iphita limbata* (Stal,1870), Dorsal view; Fig.3 *Physopelta schlansbuschi* (Fabricius,1787), Dorsal view; Fig.4 *Physopelta gutta* (Burmister, 1834), Dorsal view; Fig.5 *Dysdercus evanescens* (Dist,1902), Dorsal view; Fig.6 *Dysdercus olivaceus* (Fabr,1798), Dorsal view; Fig.7 *Dysdercus koenigii* (Fabr,1775), Dorsal view; Fig.8 *Antilochus russia* (Stal,1863), Dorsal view; Fig.9 *Antilochus coquebertii* (Fabr,1803),Dorsal view; Fig.10 *Euscopus indicorus* (Walk,1872),Dorsal view; Fig.11 *Euscopus albatius* (Dist,1909), Dorsal view.

Systematic account

Superfamily: Pyrrhocoroidea

Key to the Family under the Superfamily Pyrrhocoroidea

1. Sixth visible(seventh actual) ventral segment in female always cleft at base.....Largidae
- Sixth visible(seventh actual) ventral segment entire in both the sexes.....Pyrrhocoridae

Family I. Largidae

Subfamily: Physopeltinae

Key to the Tribe under the Subfamily Physopeltinae

1. Antennae in male very long. First joint of antennae longer than head and pronotum together.....Lohitini
- Antennae normal in both sexes. First joint of antennae is not longer than head and pronotum together.....Physopeltini

Tribe: Lohitini

Genus: *Macrocheraia* Guérin-Méneville, 18351. *Macrocheraia grandis* (Gray,1832) (Fig.1)1832.*Lohita grandis*, Gray (Lygreus), in *Griff. An. King.* xv; *Ins.* ii, p. 2421840. *Macrocerrea longicornis*, *Spin. Ess.* p. 1771870. *Var. longissima*, *Stal, En. Hern.* i, p. 981882. *sumatrana*, *Dz'st. Ent. Month. Mag.* xix, p. 158Lohitini is monotypic includes only the species called *Macrocheraia grandis* (Gray,1832)

Material Examined: 1ex, Forest Guest House,Dalma WLS, East Singhbhum District, Jharkhand , 22.912579N, 86.143106E,8.vii.2021,Coll: Chitra.J; 1 ex., Makula Kocha, Dalma Wls, Ranchi, Jharkhand, 24.91187N, 86.13818E, 09.vii.2021, coll: Chitra J. & Party.

Distribution: India: Maharashtra, Andhra Pradesh, Assam, Uttarakhand, West Bengal, Meghalaya, Uttarpradesh, Tamil Nadu.

Elsewhere: Myanmar, Sumatra, Philippines.

Tribe: Physopeltini

Key to the genus of the Tribe Physopeltinae

1. Lateral margin of pronotum strongly reflexed and the convexity of the anterior disc of pronotum not reaching the anterior margin.....*Iphita* (Stal,1870)
- Lateral margin of pronotum not strongly reflexed and the convexity of the anterior disc of pronotum reaching to the anterior margin.....*Physopelta*(Amy. & Serv.,1865)

Genus: *Iphita* (Stal,1870)2. *Iphita limbata* (Stal,1870) (Fig.2)1870. *Iphita limbata* Stal, *En.Hem.*, 1 : 99 .1902. *Iphita limbata* Distant, *Fauna Brit. India, Rhynchota*, 2: 96.

Material Examined: 1ex, Forest Guest House,Dalma WLS, East Singhbhum District, Jharkhand , 22.912579N, 86.143106E,8.vii.2021, Coll: Chitra J. & Party.

Distribution: India: Maharashtra, Assam,Andhra Pradesh, Bihar, Karnataka, Kerala, Meghalaya, Tamil Nadu, Uttarakhand, West Bengal.

Elsewhere: China, Bangladesh, Cambodia, Indonesia, Malaysia, Myanmar, Laos, Nepal, Vietnam, Thailand.

Genus: *Physopelta* (Amy. & Serv.,1865)Key to the species of the genus *Physopelta*

- 1 Two large transverse spot present at anterior margin of the posterior lobe of pronotum, body sanguineous in colour, a comparatively smaller round spot at the apical angles of the corium.....*slanbuschii* (Fabricius,1787)
- Posterior part of pronotum without any spot, body dull reddish-ochraceous in colour, a comparatively large discal round spot at the apical angle of corium.....*gutta* (Burmister, 1834)

3. *Physopelta schlansbuschi* (Fabricius,1787) (Fig.3)1787. *Physopelta schlansbuschi* Fabricius, *Mant. Ins.*, 2 : 299.1902. *Physopelta schlansbuschi* Distant, *Fauna.Brit. India. Rhynchota.*, 2 : 99.

Material Examined: 2exs, Tuling, Dalma WLS, East Singhbhum, Jharkhand, 22.8987N, 86.1158E, 8.vii.2021, Coll: J.Chitra & Party.

Distribution: India: Maharashtra, Madhya Pradesh, Assam, Uttarakhand, West Bengal, Chhattisgarh, Bihar

Elsewhere: China, Hong Kong, Myanmar.

4. *Physopelta gutta* (Burmister, 1834) (Fig.4)1834. *Lygaeus (Pyrrhocris) gutta* Burmeister,*Nova.Acta. Acad.Leop. Carolxvi*, suppl., 424.1902. *Physopelta gutta*: Distant, *Fauna . Brit. India, Rhynchota.*, 11 : 97.

Material Examined: 2exs, Tuling, Dalma WLS, East Singhbhum, Jharkhand, 22.8987N, 86.1158E, 8.vii.2021,Coll: Chitra J. & Party.

Distribution: India: Maharashtra, Assam, Andhra Pradesh, Uttarakhand, West Bengal, Karnataka, Madhya Pradesh, Arunachal Pradesh, Rajasthan.

Elsewhere: Australia, Borneo, Myanmar, China, Japan, Java, Philippines, Sumatra, Sri Lanka.

Family II. Pyrrhocoridae

Key to the genera of the family Pyrrhocoridae

1. Apical angle of corium elongately acute.....*Dysdercus* (Amy. & Serv,1843)
Apical angle of corium more or less rounded. Not elongately acute..... 2
2. Head transversely constricted or impressed beneath near base..... *Antilochus* (Stal,1863)
3. Anterior area of pronotum completely circumscribed by continuous impression or punctures. Head with eyes not broader than anterior margin of pronotum. Eyes not pedunculated..... *Euscopus* (Stal,1870)

Genus: *Dysdercus* Amy. & Serv (1843)

Key to the species of the genus *Dysdercus*

1. Membrane dark in colour like dark brown or black..... 2
2. Thorax wider posteriorly. White ventral fasciae varying from slightly to strongly bifid.
3. Vertical process of ninth segment broad and transparent.....*Olivaceus* (Fabr,1798)
4. Thorax narrower posteriorly, abdominal fasciae never bifid, vertical processes of ninth segment narrow*Koenigii* (Fabr,1775)

5. *Dysdercus evanescens* (Dist,1902) (Fig.5)

1902. *Dysdercus evanescens* Distant, *A.M.N.H.*, (7)9 : 43.

1904. *Dysdercus evanescens* Distant, *Fauna. Brit. Ind. Rhynchota*, 2 : 120.

Material Examined: 1ex, Tuling, Dalma WLS, East Singhbhum, Jharkhand, 22.8987N, 86.1158E, 8.vii.2021, Coll: Chitra J. & Party.

Distribution: India: Maharashtra, Assam, Meghalaya, Sikkim, Uttarakhand, West Bengal, Nagaland.

Elsewhere: Myanmar.

6. *Dysdercus olivaceus* (Fabr,1798) (Fig.6)

1798. *Dysdercus olivaceus* Fabricius, *Ent. Syst. Suppl.*, p. 540.

1868. *Dysdercus olivaceus* Stal, *Hem, Fabr*, 1-84.

1904. *Dysdercus olivaceus* Distant, *Fauna. Brit. Ind. Rhynchota*, 2 : 119-120.

Material Examined: 1ex, Forest Guest House, Dalma WLS, East Singhbhum District, Jharkhand, 22.912579N, 86.143106E, 8.vii.2021, Coll: Chitra J. & Party.

Distribution: India: Maharashtra, Tamil Nadu, Karnataka .

Elsewhere: Sri Lanka.

7. *Dysdercus koenigii* (Fabr,1775) (Fig.7)

1775. *Cimex koenigii* Fabricius, *Syst. Ent.* 720.

1904. *Dysdercus cingulatus* Distant, *Fauna. Brit. Ind. Rhynchota*, 2 : 118.

1914. *Dysdercus koenigi* Bergroth, *Ent. Mitt*, 3 : 355.

Material Examined: 1ex, Tuling, Dalma WLS, East Singhbhum, Jharkhand, 22.8987N, 86.1158E, 8.vii.2021, Coll: Chitra J. & Party; 1ex, Forest Guest House, Dalma WLS, East Singhbhum District, Jharkhand, 22.912579N, 86.143106E, 8.vii.2021, Coll: Chitra J. & Party.

Distribution: India: Jharkhand, Maharashtra, Assam, Andaman & Nicobar Inlands, Madhya Pradesh, Karnataka, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal, Chhattisgarh.

Elsewhere: Australia, Myanmar, Sri Lanka, Pakistan, Singapore, Bangkok, Sumatra, Java. Philippine, Solomon Island, Papua New Guinea.

Genus: *Antilochus* (Stal,1863)

Key to the species of the genus *Antilochus*

1. Rounded black spot near base of membrane *russus* (Stal,1863)
- Membrane black. Interior angle and apical margin of membrane pale brownish ochraceous..... *coquebertii* (Fabr,1803)

8. *Antilochus russus* (Stal,1863) (Fig.8)

1863. *Antilochus russus* Stal, *Burl. Ent. Zeitschr.*, 7 : 394.

1904. *Antilochus russus* Distant, *Fauna Brit. India, Rhynchota*, 2: 101.

Material Examined: 1 ex., Makulakocha, Dalma Wls, Ranchi, Jharkhand, 24.91187N, 86.13818E, 09.vii.2021, Coll: Chitra J. & Party;

Distribution: Andhra Pradesh, West Bengal, Sikkim, Assam, Meghalaya,

Elsewhere: Australia, Malayan Archipelago, Myanmar, Sri Lanka.

9. *Antilochus coquebertii* (Fabr,1803) (Fig.9)

1803. *Lygaeus coqueberti* Fabricius, *Syst. Rhyng.*,: 222.

1904. *Antilochus coqueberti* Distant, *Fauna Brit. India, Rhynchota*, 2: 101

Material Examined: 1ex, Tuling, Dalma WLS, East Singhbhum, Jharkhand, 22.8987N, 86.1158E, 8.vii.2021, Coll: Chitra J. & Party.

Distribution: India: Maharashtra, Andaman Islands, Madhya Pradesh, Andhra Pradesh, Assam, Jammu & Kashmir, Meghalaya, Nagaland, West Bengal.

Elsewhere: Myanmar, Sri Lanka, Bhutan.

Genus: *Euscopus* (Stal,1870)

Key to the species of the genus *Euscopus*

- 1 Greyish black or black in colour. A small yellowish spot near the apical margin of corium..... *indicorus* (Walk,1872)
- A large dark brown irregular shaped spot extending from apical margin of corium to the outer margin that joins with another spot that extend upto the apical angle of corium.....*albatus* (Dist,1909)

10. *Euscopus indicorus* (Walk,1872) (Fig.10)

1872. *Pyrrhocoris indecorus* Walker , *Cat . Heter.*, **5** : 172 .

1902. *Euscopus indecorus* Distant, *Ann . Mag .Nat .Hist.*, **9** : 37 .

1909. *Euscopus indecorus*: Lefroy, *Rec .Indian Mus.*, **3** : 326 .

Material Examined: 1ex, Forest Guest House,Dalma WLS, East Singhbhum District, Jharkhand , 22.912579N, 86.143106E,8.vii.2021, Coll: Chitra J. & Party.

Distribution: India: Maharashtra, Assam, Meghalaya, Uttarakhand.

Elsewhere: Myanmar, Sri Lanka, Thailand.

11. *Euscopus albatus*(Dist,1909) (Fig.11)

1909. *Euscopus albatus* Distant, *Ann . Mag . Nat . Hist.*, (8) : 496 .

1910. *Euscopus albatus* Distant, *Fauna. Brit .India .Rhynchota.*, **5** : 94 .

Material Examined: 1 ex., Makula Kocha, Dalma Wls, Ranchi, Jharkhand,24.91187N, 86.13818E, 09.vii.2021, Coll: Chitra J. & Party

Distribution: India: Maharashtra, West Bengal, Madhya Pradesh.

Chattopadhyay (2024) reported only one species of Pyrrhocoridae from the state of Jharkhand, with no species documented from the Dalma Wildlife Sanctuary. This study marks the first effort to document the Pyrrhocoroidea diversity within the Dalma WLS. A total of 4 species of Largidae belonging to 3 genera and 7 species of Pyrrhocoridae belonging to 3 genera have been recorded from this sanctuary. Since the survey was conducted in only one season, collecting specimens in different seasons may reveal additional species, further enriching the Pyrrhocoroidea diversity in this region.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest

ETHICS APPROVAL

Not applicable

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Stehlík, J. L, (2013), Review and reclassification of the Old World genus *Physopelta* (Hemiptera: Heteroptera: Largidae). *Acta Entomologica Musei Nationalis Pragae*,53(2), 505-584.

