



# Assessment of Pentatomoidea in Dalma Wildlife Sanctuary, Jharkhand, India: Faunal Composition, Abundance and Distribution

Swetapadma Dash, Amartya Pal and P.C. Saha

Zoological Survey of India, New Alipore, Kolkata-700 053, India  
E-mail: [oasisnainital@yahoo.co.in](mailto:oasisnainital@yahoo.co.in)

**Abstract:** This study documents new distributional record of Pentatomoidea species along with their relative abundance in Dalma Wildlife Sanctuary, Jharkhand. The Pentatomoidea, a remarkably diverse group encompassing over 8000 species across 1400 genera globally, is the focus of our research. The 22 species from 18 genera and 3 families (Cydnidae, Pentatomidae, and Scutelleridae) of Pentatomoidea in Dalma Wildlife Sanctuary were recorded which were undocumented. Among these, 16 species representing 13 genera and 3 families constitute the first record for state of Jharkhand.

**Keywords:** Hemiptera, New record, Pentatomoidea, Relative abundance, Wildlife sanctuary

Pentatomoidea is a superfamily belonging to the insect order Hemiptera, suborder Heteroptera, and the infraorder Pentatomomorpha. They greatly vary in size with the smallest species not much larger than a pin head (*Megarix* Stål in family Megarididae and *Sepontia* Stål in the family Pentatomidae) to the largest and most robust species in the Heteroptera (some members of family Tessaratomidae) (Rider 2018). Most of the species belong to this superfamily are phytophagous, causing economic damage to various crops and a few groups are suspected to be fungivores (Canopidae, Megarididae, some Plataspidae) (Rider 2018). Among the members of this superfamily only subfamily Asopinae under the family Pentatomidae exhibit predatory feeding habits and known as predatory stink bugs. These predatory bugs mainly predate on larvae of lepidopteran, dipteran, and coleopteran insects, both in the juvenile and adult stages (De Clercq 2000).

The superfamily Pentatomoidea comprises with 18 families worldwide of which only 9 families viz., Acanthosomatidae, Cydnidae, Dinidoridae, Parastrachiidae, Pentatomidae, Plataspidae, Scutelleridae, Tessaratomidae, Urostylididae were reported from India (Distant 1902, Lis 2006, Rider 2006, Scheiding 2006, Vilimova 2006). Over 768 species of the superfamily Pentatomoidea have been reported in India, out of about 8042 species known worldwide (Biswas et al., 2014, Rider 2018, Praveen et al., 2024). During the survey conducted at the Chota Nagpur Plateau in Jharkhand state, 22 species belonging to 18 genera and 3 families (Cydnidae, Pentatomidae, and Scutelleridae) within the superfamily Pentatomoidea were documented from the Dalma Wildlife Sanctuary. This study aims to understand the diversity, abundance, and distribution of species belonging to

superfamily Pentatomloidea within the Dalma Wildlife Sanctuary in Jharkhand, India. This information is crucial for assessing the ecological health of the sanctuary, as these insects play vital roles in the ecosystem as both predators and herbivores.

## MATERIAL AND METHODS

Dalma wildlife sanctuary is located in the East Singhbhum and Sariakele-Kharsawan districts of Jharkhand on the ranges of Dalma Hills and spread out over an area of 193.22 Km<sup>2</sup> covering 86 villages. Dalma Hills are located at a height of 3000 ft above sea level with dense forests and Subarnarekha River (Ranjan et al., 2016). The forests Dalma are classified as northern dry mixed deciduous forest and dry peninsular sal. The majority of woods in this forest loses their leaves in the summer and reach their peak bloom at the start of the monsoon season.

Specimens were collected during 2020-2021 from four sampling sites of Dalma Wildlife Sanctuary (Fig. 5) (spatially located in the East Singhbhum and Sariakele-Kharsawan districts of Jharkhand and spread out over an area of 193.22 Km<sup>2</sup> covering 86 villages), labeled as Site A (Makulakocha Guest House, 22.547°N, 86.082°E), Site B (Rugri village, 22.856°N, 86.1621°E), Site C (Makulakocha village, 22.9119°N, 86.1491° E) and Site D (Pindraberia Guest House, 22.89363°N, 86.19637°E) using the sweep net and light trap methods (Fig. 1).

The sampling site of Pindraberia is situated at higher elevation (200 meters) compared to those at Makulakocha and Rugri (129 meters). During the sampling period, the vegetation at Pindraberia was predominantly composed of trees such as Indian butter tree (*Madhuca longifolia* (L.) J. F. Macbr.), lac tree

(*Schleichera oleosa* (Lour.) Oken), Neem (*Azadirachta indica* Adr. Juss.), yellow teak tree (*Adina cordifolia* (Roxb.) Brandis), Golden Rumph's fig (*Ficus rumphii* Bl.), Indian frankincense tree (*Boswellia serrata* Roxb.), Sal (*Shorea robusta* Gaertn.), Mango (*Mangifera indica* L.), Indian blackberry (*Syzygium cumini* (L.) Skeels). In contrast, the sampling sites at Makulakocha and Rugri exhibited a mixed vegetation cover, characterized by a diverse assemblage of shrubs and herbs (Fig. 2). Collected specimens were brought to the laboratory and then the genitalia of male specimens were dissected (Ahmad 1986), for proper identification with the help of suitable literature. The photographs were taken under a Leica M205A stereomicroscope using a Leica DMC-4500 camera. The photographs were processed in LAS V4.12 software. Photographs were edited using Adobe Photoshop CS (Version 8.0).

**Relative abundance calculation:** The relative abundance ( $p_i$ ) is the proportional representation of a species in a community or sample of a community. The relative abundance ( $p_i$ ) of each species is expressed as

$$P_i = \frac{n_i}{N} \times 100$$

Where,  $n_i$  is the number of individuals of the same species and  $N$  is the total number of individuals for all species.

## RESULTS AND DISCUSSION

A total of 22 species and 18 genera belonging to 3 families, viz., Cydnidae (1 species), Pentatomidae (19 species) and Scutelleridae (2 species) from superfamily Pentatomoidea were collected and identified using morpho-taxonomic approach. The taxonomic hierarchy of the identified species from the study area is as follows:

- Order Hemiptera
- Suborder Heteroptera
- Infraorder Pentatomorpha
- Superfamily Pentatomoidea
- Family Pentatomidae
- Subfamily Pentatominae
- Tribe: Agonoscelidini

***Agonoscelis nubilis*** (Fabricius 1775) (Fig. 1a)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Rugri village, 22.856°N, 86.1621° E, 10.07.2021, 1 ♂, Chitra. J and Party.

**Distribution in India:** Bihar, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Nagaland, Meghalaya, Orissa, Puducherry, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal (Atkinson 1888, Azim 2011, Chakraborty et al., 1994, Chatterjee 1934, Distant 1902, Fletcher 1920, Salini and Viraktamath 2015), Jharkhand (New record).

**Distribution outside India:** China, Japan Malayan Peninsula, Myanmar, Pakistan, Sri Lanka (Distant 1902).

**Remarks:** This species has been recorded for the first time from Jharkhand.

### Tribe-Antestiini

***Plautia crossota*** (Dallas 1851) (Fig. 1b)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Rugri village, 22.856°N, 86.1621° E, 10.07.2021, 1 ♂, Chitra. J and Party.

**Distribution in India:** Andaman and Nicobar Is, Assam, Bihar, Karnataka, Kerala, Maharashtra, Meghalaya, Nagaland, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal. (Atkinson 1887, Azim 2011, Chakraborty et al., 1994, Chatterjee 1934, Distant 1902, Ferrari 2009, Hegde 1995, Mathew 1986, Salini 2006), Jharkhand (new record).

**Distribution outside India:** Afghanistan, China, Japan, Gambia to Sudan, Madagascar, Yemen (Rider 2006).

**Remarks:** This species has been recorded for the first time from Jharkhand.

### Tribe Carpocorini

***Aeliomorpha lineaticollis*** (Westwood 1837) (Fig. 1c)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha village, 22.9119°N, 86.1491° E, 10.07.2021, 1 ♂, Chitra. J and Party.

**Distribution in India:** Andhra Pradesh, Bihar, Karnataka, Maharashtra, Tamil Nadu, South India, West Bengal (Atkinson 1887, Chatterjee 1934, Distant 1902, Distant 1918, Salini 2006, Salini 2015), Jharkhand (New record).

**Distribution outside India:** Afghanistan, China, Syria, tropical Africa (Rider 2006).

**Remarks:** This species has been recorded for the first time from Jharkhand.

### Tribe-Eysarcorini

***Carbula insocia*** Walker 1868 (Fig. 1d)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha village, 22.9119°N, 86.1491° E, 10.07.2021, 1 ♂, Chitra. J and Party.

**Distribution in India:** Chhattisgarh, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Tamil Nadu, North West Himalaya (Distant 1902, Hassan et al., 2019, Hegde 1986, Kaur et al., 2013, Mathew 1986, Usman and Puttarudriah 1955), Jharkhand (New record).

**Distribution outside India:** Pakistan (Kaur et al., 2012).

**Remarks:** This species has been recorded for the first time from Jharkhand.

### Tribe-Menidini

***Menida formosa*** (Westwood 1837) (Fig. 1e)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha village, 22.9119°N,

86.1491° E, 10.07.2021, 1 ♀, Chitra. J and Party.

**Distribution in India:** Assam, Karnataka, Kerala, Maharashtra, Sikkim, Tamil Nadu, Uttarakhand, West Bengal (Atkinson 1887, Chatterjee 1934, Distant 1902, Salini 2006, Salini and Viraktamath 2015, Usman and Puttarudriah, 1955), Jharkhand (New record).

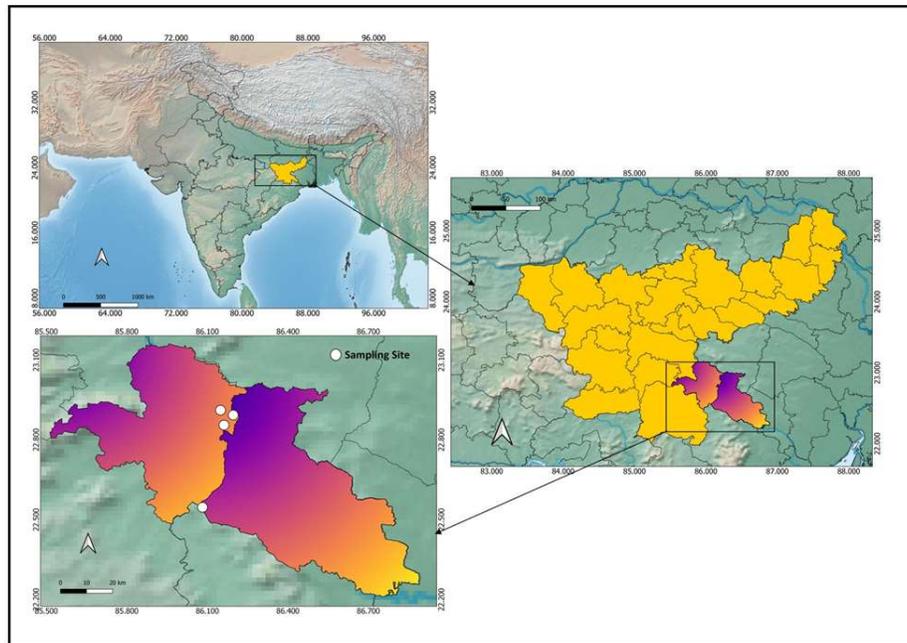
**Distribution outside India:** China, Malayan Peninsula,

Myanmar, Taiwan (Distant 1902, Rider 2006).

**Remarks:** This species has been recorded for the first time from Jharkhand.

***Eysarcoris aenescens*** (Walker 1867) (Fig. 1f)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Rugri village, 22.856°N, 86.1621° E, 10.07.2021, 1 ♂, Chitra. J and Party.



**Fig. 1.** Sampling sites within Dalma WLS belonging to Saraikela Kharsawan and East Singhum district of Jharkhand (Bottom)



Sampling site at Pindrabera



Sampling site at Makulakocho



Sampling site at Rugri

**Fig. 2.** Vegetation type at different sampling sites

**Distribution in India:** Karnataka, Kerala (Salini 2015)

**Distribution outside India:** China, Indonesia (Rider 2006).

**Remarks:** This species has been recorded for the first time from Jharkhand.

***Eysarcoris guttiger*** (Thunberg 1783) (Fig. 1g)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Rugri village, 22.856°N, 86.1621° E, 10.07.2021, 1 ♂, Chitra. J and Party.

**Distribution in India:** Assam, Bihar, Gujarat, Karnataka, Maharashtra, Nagaland, Orissa, Punjab, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal (Atkinson 1887, Azim and Shafee 1984, Chakraborty et al., 1994, Chatterjee 1934, Distant 1902, Distant 1918, Fletcher 1920, Kaur et al., 2012, Salini 2006), Jharkhand (New record).

**Distribution outside India:** China, Japan Korea, Myanmar, Sri Lanka; Taiwan (Distant 1902, Rider 2006).

**Remarks:** This species has been recorded for the first time from Jharkhand.

***Eysarcoris montivagus*** Distant 1902 (Fig. 1h)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Rugri village, 22.856°N, 86.1621° E, 10.07.2021, 1 ♂, Chitra. J and Party.

**Distribution in India:** Andhra Pradesh, Assam, Gujarat, Kerala, Meghalaya, Nagaland, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal (Distant 1902, Kaur et al., 2012, Mathew 1986, Salini 2006, Salini 2015), Jharkhand (New record).

**Distribution outside India:** China, Japan Korea, Myanmar, Sri Lanka; Taiwan (Distant 1902, Rider 2006).

**Remarks:** This species has been recorded for the first time from Jharkhand.

***Eysarcoris rosaceus*** Distant 1901 (Fig. 1i)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Rugri village, 22.856°N, 86.1621° E, 10.07.2021, 2 ♂, Chitra. J and Party.

**Distribution in India:** Himachal Pradesh, Punjab, Uttarakhand (Kaur et al., 2012), Jharkhand (New record).

**Distribution outside India:** China, Myanmar; Pakistan (Rider 2006, Kaur et al., 2012)

**Remarks:** This species has been recorded for the first time from Jharkhand.

***Eysarcoris ventralis*** (Walker 1837) (Fig. 1j)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Pindrabera Guest House, 22.89363°N, 86.19637° E, 12.07.2021, 1 ♂, Chitra. J & Party; India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha village, 22.9119°N, 86.1491° E, 10.vii.2021, 3 ♀, Chitra. J and Party.

**Distribution in India:** Arunachal Pradesh, Bihar, Jharkhand, Karnataka, Kerala, Maharashtra, Meghalaya, Odisha,

Punjab, Tamil Nadu, Uttar Pradesh, West Bengal (Chakraborty et al., 1994, Distant 1902, Fletcher 1920, Salini 2015).

**Distribution outside India:** Malayan Peninsula, Myanmar, Whole Palaearctic region, *Ethiopian* (Tropical Africa, Cape Verde Islands), *Nearctic* (Hawaii) (Distant 1902, Rider 2006).

**Tribe - Halyini**

***Halys serrigera*** Westwood 1837 (Fig. 1k)

**Material examined:** India: Jharkhand, West Saraikela Kharsawan Dalma WLS, Pindrabera Guest House, 22.89363°N, 86.19637° E, 12.07.2021, 1 ♀, Chitra. J and Party.

**Distribution in India:** Jharkhand, Kerala, Maharashtra, Meghalaya, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal (Chakraborty et al., 1994, Keshari and Mahto 2017).

**Distribution outside India:** Afghanistan, China, Japan, Myanmar, Sri Lanka (Rider 2006).

***Erthesina fullo*** (Thunberg 1783) (Fig. 1l)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 1 ♂, Chitra. J and Party.

**Distribution in India:** Andaman Islands, Andhra Pradesh, Assam, Kerala, West Bengal (Atkinson 1887, Chakraborty et al., 1994), Jharkhand (New record).

**Distribution outside India:** Afghanistan, China, Japan, Tiwan (Rider 2006).

**Remarks:** This species has been recorded for the first time from Jharkhand.

**Tribe Nezarini**

***Acrosternum graminea*** (Fabricius 1787) (Fig. 2a)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 2 ♂, Chitra. J and Party.

**Distribution in India:** Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal (Atkinson 1887, Azim 2011, Chatterjee 1934, Distant 1918, Hegde 1995, Salini 2006, Salini 2015), Jharkhand (New record).

**Distribution outside India:** Iraq, Maldives Is., Pakistan, Sri Lanka (Rider 2006).

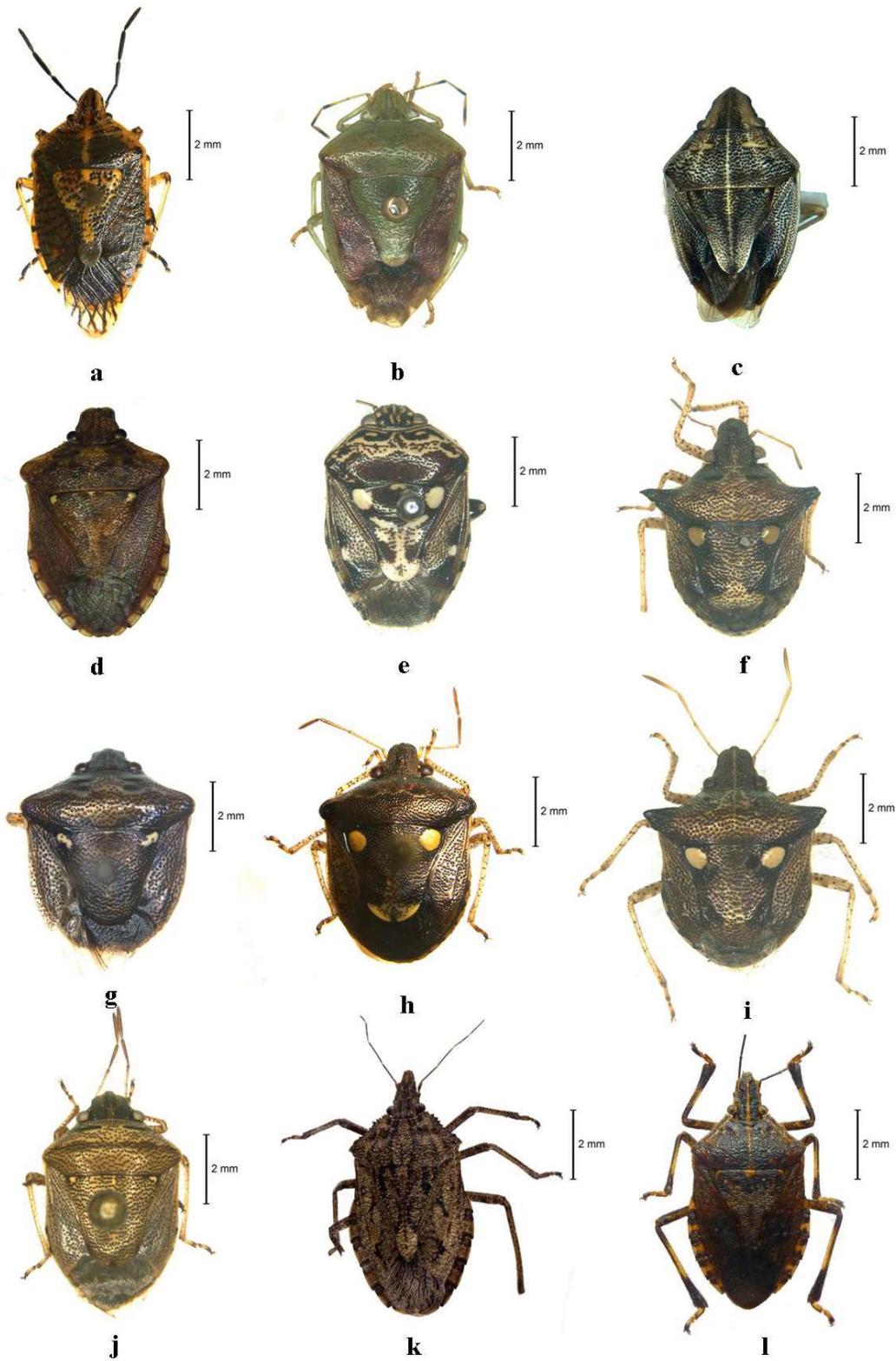
**Remarks:** This species has been recorded for the first time from Jharkhand.

***Nezara viridula*** (Linnaeus 1758) (Fig. 2b)

**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 2 ♂, Chitra. J and Party.

**Distribution in India:** Jharkhand, Maharashtra, Southern Peninsula, West Bengal (Chakraborty et al., 1994, Keshari and Mahto 2017, Chattopadhyay 2021).

**Distribution outside India:** Asia, Europe, North America (Cosmopolitan) (Rider 2006).

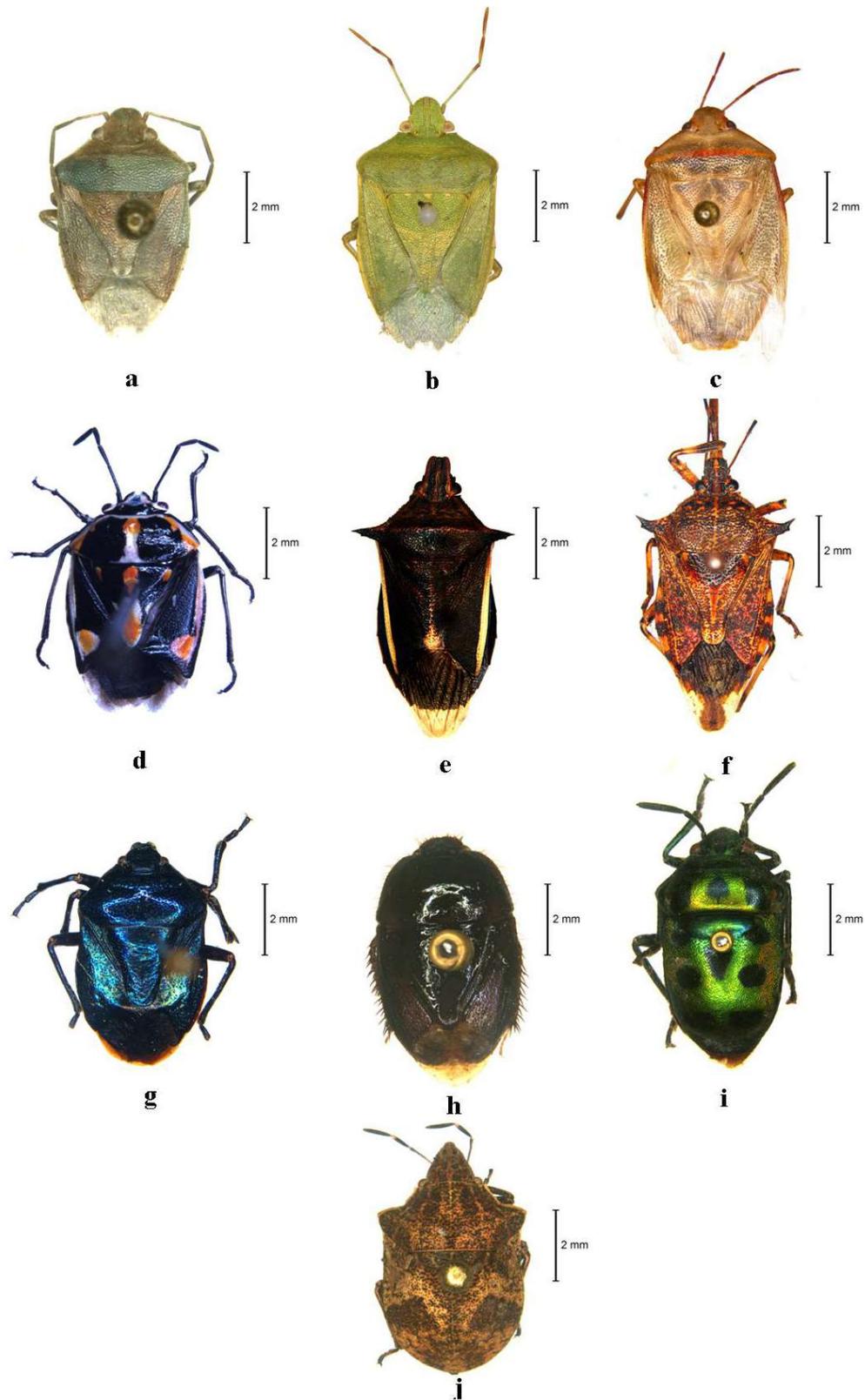


**Fig. 3.** Habitus. a. *Agonoscelis nubilis* (Fabricius 1775), b. *Plautia crossota* (Dallas 1851), c. *Aeliomorpha lineaticollis* (Westwood 1837), d. *Carbula insocia* Walker 1868, e. *Menida formosa* (Westwood 1837), f. *Eysarcoris aenescens* (Walker 1867), g. *Eysarcoris guttiger* (Thunberg 1783), h. *Eysarcoris montivagus* Distant, 1902, i. *Eysarcoris rosaceus* Distant, 1901, j. *Eysarcoris ventralis* (Walker 1837), k. *Halys serrigera* Westwood 1837, l. *Erthesina fullo* (Thunberg 1783)

**Tribe Piezodorini*****Piezodorus hybneri*** Gmelin 1790 (Fig. 2c)**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 2 ♂, Chitra. J and Party.**Distribution in India:** Assam, Maharashtra, Orissa, West Bengal (Chakraborty et al., 1994), Jharkhand (New record).**Distribution outside India:** Africa, China, Indonesia, Japan, Tiwan, Yemen (Rider 2006).**Remarks:** This species has been recorded for the first time from Jharkhand.**Tribe Strachiini*****Bagrada hilaris*** Burmeister 1835 (Fig. 2d)**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 1 ♂, 1 ♀, Chitra. J and Party.**Distribution in India:** Andhra Pradesh, Bihar, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Punjab, Rajasthan, Tamil Nadu; Uttar Pradesh; Uttarakhand, West Bengal (Atkinson 1887, Chatterjee 1934, Fletcher 1920, Keshari and Mahto 2017, Salini 2006, Salini 2015, Usman and Puttarudriah 1955, Kaur et al., 2012).**Distribution outside India:** Afghanistan, Algeria, Cape Verde Islands, China, Egypt, Italy (Pantellaria), Iraq, Israel, Libya, Macedonia, Malta, Morocco, Saudi Arabia, Syria, tropical Africa, Yemen (Rider 2006).**Subfamily Asopinae*****Andrallus spinidens*** (Fabricius 1787) (Fig. 2e)**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 1 ♀, Chitra. J and Party.**Distribution in India:** Assam, Karnataka, Maharashtra, Odisha, Tamil Nadu, Uttar Pradesh, West Bengal (Atkinson 1888, Azim 2011, Azim and Shafee 1982, Chatterjee 1934, Distant 1902, Salini 2006), Jharkhand (New record).**Distribution outside India:** Australia, Azerbaijan, Central and South America, China, Greece, Iran, Italy, Japan, southern United States, Tiwan, tropical Africa, Turkey Asian part, Turkmenistan (Rider 2006; Pal et al., 2023)**Remarks:** This species has been recorded for the first time from Jharkhand.***Eocanthecona furcellata*** (Wolff 1811) (Fig. 2f)**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 1 ♂, Chitra. J and Party.**Distribution in India:** Assam, Bihar, Jammu and Kashmir, Jharkhand, Karnataka, Maharashtra, Nagaland, Odisha, Punjab, Tamil Nad, Uttarakhand, West Bengal (Atkinson 1888, Azim 2011, Azim and Bhat 2010, Chatterjee 1934,

Datta et al., 1985, Distant 1902, Hegde 1995, Kaur et al., 2012, Salini 2006, Salini and Viraktamath 2015, Usman and Puttarudriah 1955).

**Distribution outside India:** Bangladesh, China, Japan, Myanmar, Sri Lanka, Taiwan and Thailand (Pal et al., 2023).***Zicrona caerulea*** (Linnaeus 1758) (Fig. 2g)**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 1 ♀, Chitra. J and Party.**Distribution in India:** Jammu & Kashmir, Nagaland and West Bengal (Chakraborty et al., 1994, Pal et al., 2023), Jharkhand (New record).**Distribution outside India:** Afghanistan, Algeria, Austria, Azerbaijan, Belgium, Burma, China, Czechoslovakia, Egypt, England, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Java, Korea, Malaysia, Mongolia, Morocco, Netherlands, Pakistan, Portugal, Russia, Spain, Sumatra, Sweden, Switzerland, Syria, Taiwan, Turkey, Vietnam (Thomas 1994, Pal et al., 2023).**Remarks:** This species has been recorded for the first time from Jharkhand.**Family Cydnidae*****Aethus indicus*** (Westwood 1837) (Fig. 2h)**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.07.2021, 1 ♀, Chitra. J and Party.**Distribution in India:** Madhya Pradesh, Maharashtra, Odisha, South India, West Bengal (Lis 1993, Chandra et al., 2015), Jharkhand (New record).**Distribution outside India:** Burma, Indonesia, Sri Lanka, Thailand (Lis 1993).**Remarks:** This species has been recorded for the first time from Jharkhand.**Family Scutelleridae*****Chrysocoris stollii*** (Wolff 1801) (Fig. 2i)**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House, 22.547°N, 86.082° E, 08.vii.2021, 2 ♀, Chitra. J and Party.**Distribution in India:** Andaman & Nicobar Islands, Assam, Bihar, Chhattisgarh, Delhi, Jharkhand, Kerala, Maharashtra, Madhya Pradesh, Meghalaya, Nagaland, Odisha, Sikkim, Telangana, Uttarakhand, Uttar Pradesh and West Bengal (Husain and Dubey 2021).**Distribution outside India:** Bangladesh, Cambodia, China, Indonesia, Malaysia, Myanmar, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand and Vietnam (Husain and Dubey 2021).***Hotea curculionoides*** (Herr-Sch1835) (Fig. 2j)**Material examined:** India: Jharkhand, Saraikela Kharsawan, Dalma WLS, Makulakocha Guest House,



**Fig. 4.** Habitus. a. *Acrosternum graminea* (Fabricius 1787), b. *Nezara viridula* (Linnaeus 1758), c. *Piezodorus hybneri* Gmelin, 1790, d. *Bagrada hilaris* Burmeister, 1835, e. *Andrallus spinidens* (Fabricius 1787), f. *Eocanthecona furcellata* (Wolff 1811), g. *Zicrona caerulea* (Linnaeus 1758), h. *Aethus indicus* (Westwood 1837), i. *Chrysocoris stollii* (Wolff 1801), j. *Hotea curculionoides* (Herr-Sch1835).

**Table 1.** Relative abundance of Pentatomoidea fauna from Dalma WLS

Family	Species	Site A		Site B		Site C		Site D		Total	RA
		$n_i$	RA	$n_i$	RA	$n_i$	RA	$n_i$	RA		
Pentatomidae	<i>Agonoscelis nubilis</i> (Fabricius 1775)	0	0	1	14.28	0	0	0	0	1	3.22
	<i>Plautia crossota</i> (Dallas 1851)	0	0	1	14.28	0	0	0	0	1	3.22
	<i>Aeliomorpha lineaticollis</i> (Westwood 1837)	0	0	0	0	1	16.66	0	0	1	3.22
	<i>Carbula insocia</i> Walker 1868	0	0	0	0	1	16.66	0	0	1	3.22
	<i>Menida formosa</i> (Westwood 1837)	0	0	0	0	1	16.66	0	0	1	3.22
	<i>Eysarcoris aenescens</i> (Walker 1867)	0	0	1	14.28	0	0	0	0	1	3.22
	<i>Eysarcoris guttiger</i> (Thunberg 1783)	0	0	1	14.28	0	0	0	0	1	3.22
	<i>Eysarcoris montivagus</i> Distant 1902	0	0	1	14.28	0	0	0	0	1	3.22
	<i>Eysarcoris rosaceus</i> Distant (1901)	0	0	2	28.57	0	0	0	0	2	6.45
	<i>Eysarcoris ventralis</i> (Walker 1837)	0	0	0	0	3	50	1	50	4	12.90
	<i>Halys serrigera</i> Westwood 1837	0	0	0	0	0	0	1	50	1	3.22
	<i>Erthesina fullo</i> (Thunberg 1783)	1	6.25	0	0	0	0	0	0	1	3.22
	<i>Acrosternum graminea</i> (Fabricius 1787)	2	12.5	0	0	0	0	0	0	2	6.45
	<i>Nezara viridula</i> (Linnaeus 1758)	2	12.5	0	0	0	0	0	0	2	6.45
	<i>Piezodorus hybneri</i> Gmelin 1790	2	12.5	0	0	0	0	0	0	2	6.45
	<i>Bagrada hilaris</i> Burmeister 1835	2	12.5	0	0	0	0	0	0	2	6.45
	<i>Andrallus spinidens</i> (Fabricius 1787)	1	6.25	0	0	0	0	0	0	1	3.22
	<i>Eocanthecona furcellata</i> (Wolff 1811)	1	6.25	0	0	0	0	0	0	1	3.22
	<i>Zicrona caerulea</i> (Linnaeus 1758)	1	6.25	0	0	0	0	0	0	1	3.22
Cydnidae	<i>Aethus indicus</i> (Westwood 1837)	1	6.25	0	0	0	0	0	0	1	3.22
Scutelleridae	<i>Chrysocoris stollii</i> (Wolff 1801)	2	12.5	0	0	0	0	0	0	2	6.45
	<i>Hotea curculionoides</i> (Herr-Sch 1835)	1	6.25	0	0	0	0	0	0	1	3.22
Total		16	100	07	100	06	100	02	100	31	100

22.547°N, 86.082° E, 08.07.2021, 1 ♀, Chitra. J and Party.

**Distribution in India:** Bihar, Delhi, Meghalaya, Nagaland, Uttar Pradesh, West Bengal (Dhali 2021), Jharkhand (New record).

**Distribution outside India:** China, Hong Kong, Indonesia, Myanmar, Pakistan, Sri Lanka, Vietnam (Dhali 2021).

**Remarks:** This species has been recorded for the first time from Jharkhand.

This study documents the faunal composition of Pentatomoidea for the first time from Dalma wildlife sanctuary, Jharkhand, India. A total of 31 individuals of superfamily Pentatomoidea were collected from the four sampling sites of Dalma WLS, Jharkhand of which 25.80 % of individuals were collected by using light trap method and 74.19 % of individuals were collected by using sweep net method (Table 1). The 3 families of superfamily Pentatomoidea were represented by 22 species collected. The present study reveals that Pentatomidae is the most abundant family with a relative abundance (RA) of 87.09 %, followed by Scutellaridae and Cydnidae has least abundant family (3.22 %) (Table 1). Numerically the most abundant species is *Eysarcoris ventralis*

(Walker, 1837) with a relative abundance of 12.90 %, followed by *Eysarcoris rosaceus*, Distant (1901), *Acrosternum graminea* (Fabricius, 1787), *Nezara viridula* (Linnaeus, 1758), *Piezodorus hybneri* Gmelin, 1790, *Bagrada hilaris* Burmeister, 1835, *Chrysocoris stollii* (Wolff, 1801) with a relative abundance (of 6.45%. There are 15 species with the least relative abundance (RA) value of 3.22% (Table 1).

## CONCLUSIONS

This study on Pentatomoidea from Dalma Wildlife Sanctuary in Jharkhand, India, has yielded valuable insights into the diversity and distribution of these species in the area. A total of 22 species across 18 genera and 3 families (Cydnidae, Pentatomidae, and Scutelleridae) were identified, with 16 species from 13 genera and 3 families representing the first recorded occurrence in the entire state of Jharkhand. This research underscores the urgent need for conservation efforts to ensure the survival of these species. The findings have created a comprehensive database of Pentatomoidea that will support future initiatives aimed at conserving and enhancing the local biodiversity of these insects.

## AUTHORS CONTRIBUTION

S. Dash: Identification of specimens, and writing of the manuscript, A. Pal: Identification of specimens, and writing of the manuscript, P.C. Saha: Identification of specimens

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