

## New Records and New Combinations of Ladybird Beetles from India (Coleoptera: Coccinellidae)

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### Abstract

On examination of a collection of specimens from the Indian states of Arunachal Pradesh, Bihar, Gujarat, Jharkhand, Odisha and Telangana, we identified 10 species of ladybird beetles (Coleoptera: Coccinellidae). Of these, *Afissa langpingensis* (Zeng & Yang) and *Jauravia albidula* Motschulsky are new records for India. *Afissa langpingensis* (Zeng & Yang), *Illeis indica* Timberlake, *I. bistigmosa* (Mulsant), *Propylea dissecta* (Mulsant), *P. luteopustulata* (Mulsant), *Nephus tagiapatus* (Kamiya), *Micraspis univittata* (Hope), *Phrynocaria circumusta* (Mulsant) and *Jauravia albidula* Motschulsky comprise new distributional records to different states. While, *Epilachna langpingensis* Zeng & Yang, and *E. sureilica* (Kapur) are transferred to the genus *Afissa* Dieke, hence new combinations are proposed for *Afissa langpingensis* (Zeng & Yang), **comb. nov.** and *Afissa sureilica* Kapur **comb. nov.**

**Keywords:** Epilachnini, diversity, morphology, taxonomy.

### Introduction

Ladybird beetles (Coleoptera: Coccinellidae) are recognized as the biological control agents preying aphids, mites and other minute insects. A few others are phytophagous particularly in the tribe Epilachnini. Their body design and tangle mandibular shape make them successful natural predators. Over 6000 species are established worldwide and almost 550 species have been documented in India (Poorani, 2002, Jadwiszczak and Wegrzynowicz, 2003, Robertson *et al.*, 2015, Das *et al.* 2023). Apart from the widely spread species, the majority of the species in this family are known from their narrow distributional ranges and not much has been documented. While examining a collection of specimens from the Indian states of Arunachal Pradesh, Bihar, Gujarat, Jharkhand, Odisha and Telangana, housed at Zoological Survey of India, Kolkata, we identified 10 species of ladybird beetles (Coleoptera: Coccinellidae). Of these, *Afissa langpingensis* (Zeng & Yang) and *Jauravia albidula* Motschulsky are new records for India. *Epilachna langpingensis* Zeng & Yang, and *E. sureilica* (Kapur) are transferred to the genus *Afissa* Dieke, hence new

combinations are proposed for *Afissa langpingensis* (Zeng & Yang), **comb. nov.** and *Afissa sureilica* Kapur **comb. nov.** *Afissa langpingensis* (Zeng & Yang), *Illeis indica* Timberlake, *I. bistigmosa* (Mulsant), *Propylea dissecta* (Mulsant), *P. luteopustulata* (Mulsant), *Nephus tagiapatus* (Kamiya), *Micraspis univittata* (Hope), *Phrynocaria circumusta* (Mulsant) and *Jauravia albidula* Motschulsky comprise new distributional records to different states. The photographs for species are provided along with maps and taxonomic remarks.

### Material and Methods

Samples were collected during various surveys from unexplored areas including some protected areas. They are deposited at National Zoological Collection of Zoological Survey of India, Kolkata [NZSI]. These specimens were examined using Nikon SMZ25 stereo zoom-microscope and the photos were taken using DS-Ri2 camera attached with it and they were processed with NIS Elements BR 5.10.00 imaging software. Minor image corrections were conducted using Adobe Photoshop 7 software.

## Systematic Account

Family COCCINELLIDAE Latreille, 1807

Subfamily COCCINELLINAE Latreille, 1807

Tribe **Coccidulini** Mulsant, 1846

1. *Nephus tagiapatus* (Kamiya, 1965) (Figure I-A)

*Scymnus (Nephus) tagiapatus* Kamiya, 1965: 104.

*Nephus tagiapatus*: Sasaji, 1968: 122.

*Nephus roonwali* Kapur, 1966: 163.

**Material examined:** India: Gujarat, Bharuch, Asuria, (21°47.478 N 73°01.934 E), 14-xii-2020, 1 ex., leg. Kaushik Deuti & team [NZSI-29675/H4A].

**Distribution:** India: Andaman and Nicobar Islands, Gujarat (new record), and West Bengal. **Elsewhere:** China, Japan, Malaysia and Thailand.

Tribe **Coccinellini** Latreille, 1807

2. *Illeis bistigmosa* (Mulsant, 1850) (Figure I-B)

*Psyllobora bistigmosa* Mulsant, 1850: 168.

*Thea bistigmosa*: Crotch, 1874: 135.

*Illeis bistigmosa*: Bielawski, 1961a: 366.

*Illeis bielawskii* Ghorpade, 1976: 579.

*Psyllobora simplex* Mulsant, 1866: 128.

**Material examined:** India: Telangana, Umamaheshwaram, 21-ix-2019, 1 ex., leg. Deepa Jaiswal & team [NZSI-29433/H4A].

**Distribution:** India: Andaman and Nicobar Islands, Goa, Karnataka and Telangana (new record). **Elsewhere:** Celebes, Indonesia, Sri Lanka, Malaysia, Philippines, Nepal and Thailand.

3. *Illeis indica* Timberlake, 1943 (Figure I-C)

*Illeis indica* Timberlake, 1943: 61.

**Material examined:** India: Bihar, Gaya, Sone Khap, Sherghati, 23-xii-2021, 1 ex., leg. Devanshu Gupta & Team [NZSI-29140/H4A].

**Distribution:** India: Arunachal Pradesh, Assam, Bihar (new record), Himachal Pradesh, Jammu & Kashmir, Meghalaya, Odisha and Uttar Pradesh. **Elsewhere:** Pakistan and Thailand.

4. *Micraspis univittata* (Hope, 1831) (Figure I-D)

*Coccinella univittata* Hope, 1831: 3.

*Alesia univittata*: Mulsant, 1850: 357.

*Tytthaspis univittata*: Korschefsky, 1932: 384.

*Micraspis univittata*: Iablokoff-Khnzorian, 1982: 511.

**Material examined:** India: Telangana, Umamaheshwaram, 21-ix-2019, 1 ex., leg. Deepa Jaiswal & Party [NZSI-29434/H4A].

**Distribution:** India: Arunachal Pradesh, Andhra Pradesh, Bihar, Karnataka, Nagaland, Odisha, Tamil Nadu, Telangana (new record) Tripura and Uttarakhand.

**Elsewhere:** China and Nepal.

5. *Phrynocaria circumusta* (Mulsant, 1850) (Figure I-E)

*Artemis circumusta* Mulsant, 1850: 389.

*Coelophora circumusta*: Crotch, 1874: 150.

*Lemnia (Artemis) circumusta*: Iablokoff-Khnzorian, 1982.

*Coelophora westermanni* Mulsant, 1850: 391.

**Material examined:** India: Odisha, Ganjam, Bahadapalli, Katikata, 25-xi-2021, 1 ex., leg. Devanshu Gupta & team [NZSI-29786/H4A].

**Distribution:** India: Andhra Pradesh, Assam, Jammu and Kashmir, Kerala, Odisha, Telangana (new record) and Uttarakhand. **Elsewhere:** China, Nepal, Taiwan and Thailand.

6. *Propylea dissecta* (Mulsant, 1850) (Figure I-F)

*Lemnia (Vola) dissecta* Mulsant, 1850: 377.

*Lemnia dissecta*: Mulsant, 1866: 249.

*Propylea japonica* ab. *dissecta*: Korschefsky, 1932: 531.

*Propylea dissecta*: Crotch, 1874: 158.

*Lemnia mystacea* Mulsant, 1853: 50.

*Harmonia feliciae* Mulsant, 1866: 57.

*Propylaea fallax* Yablokov-Khnzoryan, 1977: 61

**Material examined:** India: Bihar, Gaya, Sone Khap, Sherghati, 23-xii-2021, 10 ex., leg. Devanshu Gupta & party [NZSI-29133/H4A]. India: Jharkhand, Palamau Tiger Reserve, Belta National Park, Koyal River, 2 exs., collector (no data) (NZSI-29244/H4A).

**Distribution:** India: Arunachal Pradesh, Assam, Bihar (new record), Jharkhand (new record), Karnataka, Tamil Nadu and Uttar Pradesh. **Elsewhere:** Bangladesh and Nepal.

7. *Propylea luteopustulata* (Mulsant, 1850) (Figure I-G)  
synonyms refer to (Das *et al.* 2023)

**Material examined:** India: Telangana, Ambagiri, 19-ix-

2019, 1 ex., leg. Deepa Jaiswal & party (NZSI-29442/H4A)].

**Distribution:** India: Andaman and Nicobar Islands, Assam, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Telangana (new record), Uttar Pradesh and West Bengal). **Elsewhere:** Bhutan, China, Myanmar, Nepal, Sri Lanka, Thailand, Tibet and Vietnam.

Tribe **Epilachnini** Mulsant, 1846

8. *Afissa langpingensis* (Zeng & Yang, 1996) **comb. nov.** (Figure II-A-B)

*Epilachna langpingensis* Zeng & Yang, 1996: 195, Figure 3A-G (type locality: Tianlin Langping, Guangxi, 1300 m); Jadwyszczak and Węgrzynowicz, 2003: 82.

**Material examined:** India: Arunachal Pradesh, Anjaw, Manchila, 22-xi-2022, 1 ex., leg. Gurumayam & team [NZSI-29843/H4A].

**Distribution:** India: Arunachal Pradesh (new record).

**Elsewhere:** China.

**Remarks:** *Epilachna langpingensis* was described by Zeng & Yang (1996) from Guangxi, China, subsequently recorded by Jadwyszczak and Węgrzynowicz (2003) and Ren *et al.* (2009). The world revision of the Epilachnini genera, based on phylogenetic analysis revealed that the genus *Epilachna* is not distributed in the old world (Tomaszewska and Szawaryn, 2016). Based on the diagnostic characters proposed by Tomaszewska and Szawaryn (2016), *Epilachna langpingensis* is transferred to the genus *Afissa* Dieke, 1947; hence new combination is proposed for *Afissa langpingensis* (Zeng & Yang, 1996) **comb. nov.** Further the species is recorded for the first time from India.

9. *Afissa sureilica* Kapur, 1961 **comb. nov.** (Figure I-H)

*Afissa sureilica* Kapur, 1961: 136, Figure 3. a-c (type locality: Sureil, “Mangpu” [Mongphu], Darjeeling district, northern West Bengal).

*Afissa sureilica* var. *marginotata* Kapur, 1961: 138.

*Epilachna sureilica*: Jadwyszczak and Węgrzynowicz, 2003: 120.

**Material examined:** India: West Bengal, Buxa Tiger Reserve, Jayanti, 23-iii-2018, 3 exs., leg. A. Ramesh Kumar, [NZSI-29552/H4A].

**Distribution:** India: West Bengal. **Elsewhere:** Myanmar.

**Remarks:** *Afissa sureilica* was described by Kapur (1961) from Sureil, West Bengal, India, which was later shifted

to genus *Epilachna* by Jadwyszczak and Węgrzynowicz (2003). The world revision of the Epilachnini genera based on phylogenetic analysis revealed that the genus *Epilachna* is not distributed in old world (Tomaszewska and Szawaryn, 2016). Based on the diagnostic characters proposed by Tomaszewska and Szawaryn (2016), *Epilachna sureilica* is again transferred to the genus *Afissa*; hence new combination is proposed for *Afissa sureilica* Kapur, 1961 **comb. nov.**

Tribe **Sticholotidini** Weise, 1901

10. *Jauravia albidula* Motschulsky, 1866 (Figure III-A-B)

*Clanis pubescens* Weise, 1892: 25

**Material examined:** Female: India: Telangana: Nagarkurnool: Mallela, 29-xii-2021, 1 ex., leg. D. Jaiswal & Party, [NZSI-29331/H4A].

**Distribution:** India: Telangana (new record).

**Elsewhere:** Sri Lanka.

**Remarks:** Motschulsky (1866) described this species from Ceylon, currently Sri Lanka. Kapur (1946) studied this species from Sri Lanka as well. After 75 years this species was collected from Telangana and identified as a new record from India.

## Results and Discussion

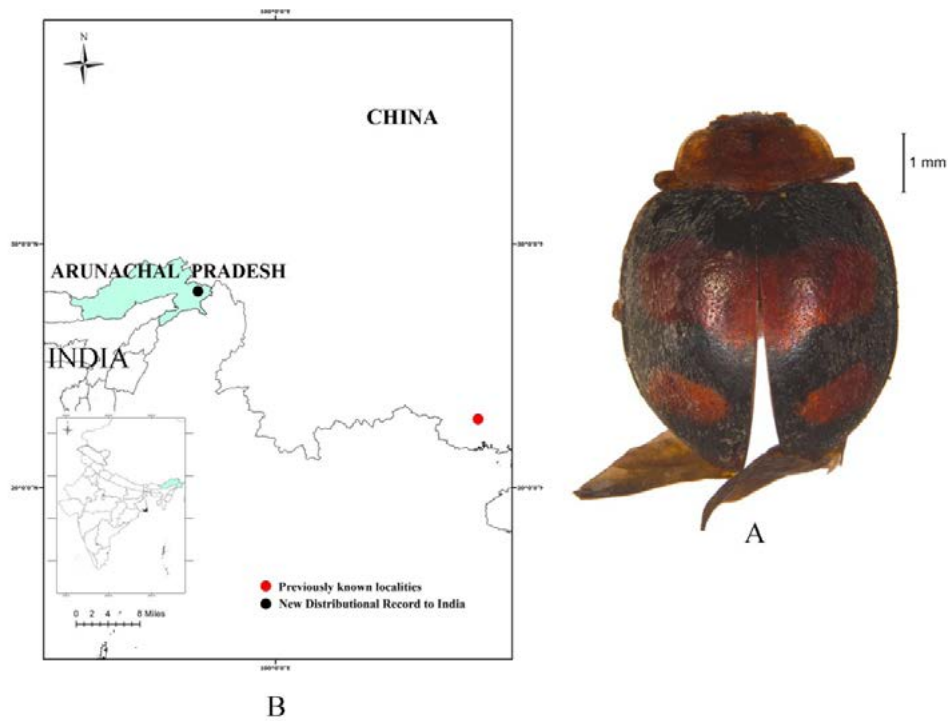
A total of 26 specimens of ladybird beetles were studied, which resulted in the identification of 10 species. Of them, *Afissa langpingensis* (Zeng & Yang, 1996) and *Jauravia albidula* Motschulsky, 1866 have been recorded for the first time from India. Rest of the seven species are reported first time from different states of India viz; *Illeis indica* Timberlake (from Bihar), *I. bistigmata* (Mulsant) (from Telangana), *Propylea dissecta* (Mulsant) (from Bihar and Jharkhand), *P. luteopustulata* (Mulsant) (from Telangana), *Nephus tagiapatus* (Kamiya) (from Gujarat), *Micraspis univittata* (Hope) (from Telangana) and *Phrynocaria circumusta* (Mulsant) (from Odisha).

Taxonomical changes were also observed in two species belonging to tribe Epilachnini; *Epilachna langpingensis* Zeng & Yang, 1996 and *E. sureilica* (Kapur, 1961) are transferred to the genus *Afissa* Dieke, 1947 followed by generic changes consulting phylogenetic review of world genera of Epilachnini by Tomaszewska and Szawaryn (2016). Subsequently, two new combinations are formed *Afissa langpingensis* (Zeng & Yang, 1996), **comb. n.** and *Afissa sureilica* Kapur, 1961 **comb. n.**

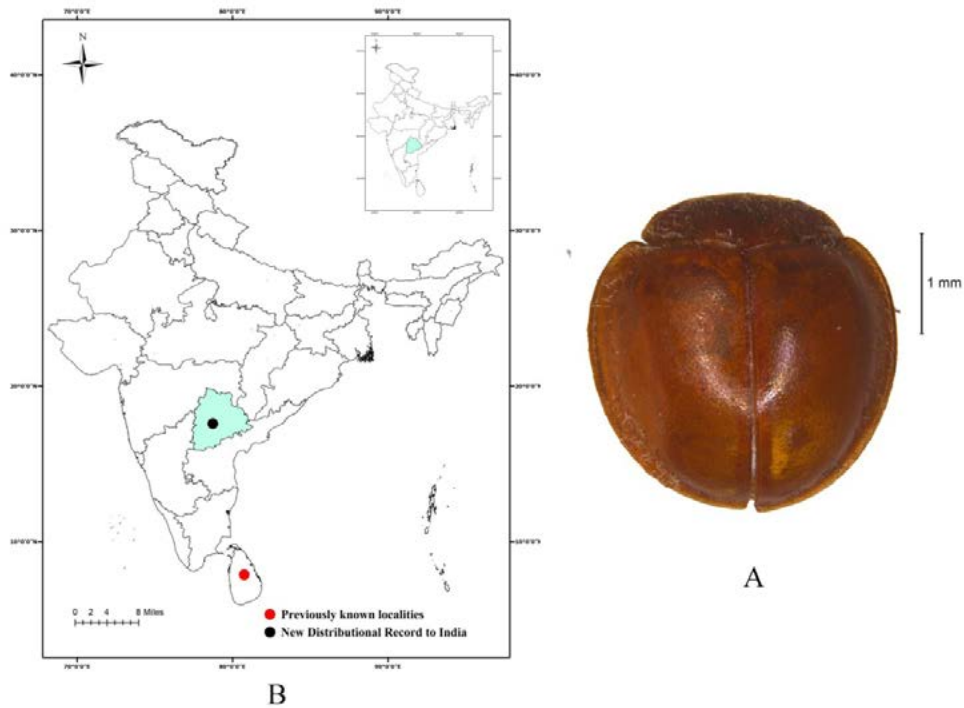


**Figure I.** Hattus of **A.** *Nephus tagiapatus* (Kamiya, 1965); **B.** *Illeis bistigmosa* (Mulsant, 1850); **C.** *Illeis indica* Timberlake, 1943; **D.** *Micraspis univittata* (Hope, 1831); **E.** *Phrynocaria circumusta* (Mulsant, 1850); **F.** *Propylea dissecta* (Mulsant, 1850); **G.** *Propylea luteopustulata* (Mulsant, 1850); **H.** *Afissa sureilica* Kapur, 1961 **comb. n.**





**Figure II.** A. Haitus of *Afissa langpingensis* (Zeng et Yang, 1996) **comb. n.**; B. map showing new distribution record.



**Figure III.** A. Haitus of *Jauravia albidula* Motschulsky, 1866; B. map showing new distribution record.

## Acknowledgements

The authors are highly grateful to the Director Zoological Survey of India for providing necessary facilities.

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