



## FAUNISTICS AND DIAGNOSTICS OF PREDACEOUS COCCINELLIDS IN TERAI REGION OF WEST BENGAL

PONNUSAMY, N., BIWASH GURUNG AND SUPRAKASH PAL\*

Department of Agricultural Entomology

\*Directorate of Research (RRS-TZ), Uttar Banga Krishi Viswavidyalaya  
Pundibari, Cooch Behar 736165

\*Email: palsento@gmail.com (corresponding author)

### ABSTRACT

Coccinellids are of great economic importance as these are used in biological control of soft bodied sucking pests. The present study undertaken at the Department of Agril. Entomology, Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar during 2016-18 explored some predaceous coccinellids from various crops. Fifteen species belonging to ten genera and three tribes under the subfamily Coccinellinae were identified. These include *Jauravia pallidula* (Motschulsky), *Cryptogonus bimaculatus* Kapur, *Cryptogonus quadriguttatus* (Weise), *Brumoides suturalis* (F.), *Coccinella septempunctata* L., *Coccinella transversalis* F., *Anisolemnia dilatata* (F.), *Harmonia octomaculata* (F.), *Harmonia dimidiata* (F.), *Micraspis discolor* (F.), *Micraspis yasumatsui* Sasaji, *Cheilomenes sexmaculata* (F.), *Propylea dissecta* (Mulsant), *Propylea japonica* (Thunberg) and *Illeis indica* Timberlake.

**Key words:** Terai region, West Bengal, coccinellids, predators, diagnostics, genera, species, agricultural crops

Lady bird beetles are well known because of their bright colour and beneficial roles. About 6000 species under 360 genera are known of these under two subfamilies and 30 tribes (Slipinski, 2007). The division of Coccinellidae into two major clades is well supported by molecular data (Giorgi et al., 2009). Around 400 species under 79 genera and 22 tribes and five subfamilies are known from the Indian subregion (Poorani, 2002). An updated version of these is available online (Poorani, 2018). Most of its species are carnivores and important as predators in agroecosystem and used in biological control (Agarwala and Senchowdhuri, 1988). Both adults and grubs primarily feed on small soft bodied insects or their developing stages such as aphids, mealy bugs, scale insects, whiteflies, thrips, leafhoppers, and mites (Omkar and Pervez, 2000). Coccinellid predators usually aggregate in patches of high prey abundance (Majumder et al., 2013). Sub Himalayan terai region is one of the biodiversity hotspots of India. Many species of the Coccinellidae particularly the smaller ones are poorly known. Knowledge of biodiversity of these is required, and taxonomical studies are necessary. The present study is an attempt with a checklist for the coccinellids of this region.

### MATERIALS AND METHODS

The study was undertaken at the Department of

Agricultural Entomology, Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Cooch Behar, West Bengal. Field collections were done at agricultural and horticultural farms of Uttar Banga Krishi Vishwavidyalaya. The field surveys covered agricultural and horticultural crops, collected beetles were killed with ethyl acetate in killing jar, and dried at 45-50°C, and stored in glass vials with labels before card mounting. Taxonomic studies were done in a Dewinter stereozoom microscope. Male and female genitalia were prepared following standard procedures and photographed with microscopic camera attachment. The checklist prepared follows the one available online (Poorani, 2018) with updated classification (Slipinski, 2007).

### RESULTS AND DISCUSSION

Coccinellids collected from the sub-Himalayan Terai region of West Bengal belonged to 15 species under 10 genera and three tribes, of the subfamily Coccinellinae: Tribe Sticholotidini (=Pharini) -*Jauravia pallidula* Motschulsky; Tribe Scymnini- *Cryptogonus bimaculatus* (Kapur); *Cryptogonus quadriguttatus* (Weise); Tribe Chilochorini- *Brumoides suturalis* (F.);

Table 1. Coccinellids collected and their details

Species	Head	Pronotum	Scutellum	Elytra	Ventral side of body	Total number spots on elytra	Colour of spots	Dorsal line on elytra	Length (mm)	Width (mm)	Hairs on body	Body shape
<i>J. pallidula</i>	Light brown	Light brown	Light brown	Light brown without any spots	Dark brown	Without spots	-	Without any line or spot on dorsal line	2.51	2.03	Pubescent	Rounded
<i>C. bimaculatus</i>	Black	Black	Black	Yellowish brown with one spot on each elytron	Black	2, 1 on each elytron	Black	A narrow longitudinal mid dorsal line at the junction of elytra	3.54	2.53	Pubescent	Slightly rounded
<i>C. quadriguttatus</i>	Black	Black	Black	Black with two yellow spots on each elytron	Black	4, 2 on each elytron	Yellow	Without any line or spot on dorsal line	3.20	2.56	Pubescent	Slightly rounded
<i>B. suturalis</i>	Brownish laterally and creamy in the center	Brownish antero	Brownish	Yellowish white	Brownish	4 stripes, 2 on each elytron	Black	A narrow black longitudinal line near the junction	4.04	3.58	Glabrous	Rounded
<i>A. dilatata</i>	Orange	Orange with two black spots	Black	Orange with five spots on each elytron	Light orange	10, 5 on each elytron	Black	Without any line or spot on dorsal line	13.24	12.37	Glabrous	Slightly elongated
<i>C. septempunctata</i>	Black	Black, antero laterally orange yellow	Black	Yellowish brown to reddish brown	Black	7, 3 on each elytron	Black	One spot on mid dorsal line of the junction of elytra	8.26	6.09	Glabrous	Slightly elongated
<i>C. transversalis</i>	Black	Black, antero laterally orange	Black	Dull orange to yellowish brown	Black	6 stripes, 3 on each elytron	Black	Two spots on mid dorsal line. A broad longitudinal black band along the line of the junction of elytra	6.35	4.57	Glabrous	Slightly elongated
<i>C. sexmaculata</i>	Yellowish brown	Yellowish brown with transverse black band in the middle near the posterior margin	Black	Generally brownish yellow	Brownish black	6 stripes, 3 on each elytron	Black	One spot on mid dorsal line. A broad longitudinal black band along the line of the junction of elytra	5.91	4.08	Glabrous	Slightly elongated

<i>H. octomaculata</i>	Black	Black	Black	Yellowish brown with one stripe on each elytron	Black	2 stripes, 1 on each elytron	One spot on mid dorsal line. A broad longitudinal black band along the line of the junction of the elytra	6.12	4.25	Glabrous	Slightly elongated
<i>H. dimidiata</i>	Yellow	Brownish black	Black	Pale yellow, anterior portion brownish yellow, the remaining elytra black	Brownish yellow	12, 6 on each elytron	Without any line or spot on dorsal line	5.18	3.53	Glabrous	Slightly elongated
<i>M. discolor</i>	Black	Black, antero laterally orange yellow	Black	Pale yellowish to bright orange	Brownish	Without spots or stripes	Mid dorsal line of the elytra black	4.34	3.75	Glabrous	Slightly elongated
<i>M. yasumatsui</i>	Light brown	Light brown	Light brown	Dark red without any spots	Dark brown	Without spots or stripes	No deviation in mid dorsal line of the elytra	4.52	3.54	Glabrous	Slightly elongated
<i>P. dissecta</i>	Brown	Black and half pale yellow	Black	brownish with 4 black spots	Black	4 spots, 2 on each elytron	One spot on mid dorsal line. A broad longitudinal black band along the line of the junction of the elytra	5.61	3.53	Glabrous	Slightly elongated
<i>P. japonica</i>	Brown	Black and half pale yellow	Black	Pale yellow with two black stripes on each elytra	Black	4 spots, 2 on each elytron	Two spots on mid dorsal line. A broad longitudinal black band along the line of the junction of the elytra	4.43	3.61	Glabrous	Slightly elongated
<i>I. indica</i>	White	Pale yellow with two black spots	Black	Creamy yellow	Pale yellow	Without spots or stripes	No deviation in mid dorsal line of the elytra	5.30	3.47	Glabrous	Slightly elongated

Tribe Coccinellini- *Coccinella septempunctata* L.; *Coccinella transversalis* F.; *Anisolemnia dilatata* (F.); *Harmonia octomaculata* (F.); *Harmonia dimidiata* (F.); *Micraspis discolor* (F.);

*Micraspis yasumatsui* Sasaji; *Cheilomenes sexmaculata* (F.); *Propylea dissecta* (Mulsant); *Propylea japonica* (Thunberg); and *Illeis indica* Timberlake (Table 1).

Seven species viz., *B. suturalis*, *C. septempunctata*, *C. transversalis*, *H. octomaculata*, *Micraspis discolor* (F.), *C. sexmaculata* and *P. japonica* were collected earlier (Chanmala et al., 2009). *Brumoides suturalis* (F.) was reported by Puttrarudriah and Channabasavanna (1953) under the genus *Brumus*. This species is yellowish brown, black stripe on outer side of each elytron starting from the humeral angle and ending before reaching the reddish area at the tip of the elytron. Siphon strongly curved with T-shaped basal part. These characters were analysed in the present study. Ten genera had been collected from Indo-Bangladesh border- and these include: *B. suturalis*, *Chilocorus nigrata* (F.), *C. septempunctata*, *C. transversalis*, *H. octomaculata*, *Illeis cincta* (F.), *Micraspis crocea* (F.), *Propylea sp. nr. japonica*, *Cryptolaemus montrouzieri* Mulsant and *Scymnus (Scymnus) nubilus* Mulsant (Chowdhury et al. 2015).

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