

On a new species of the genus *Xanthopimpla Saussure* (Hymenoptera : Ichneumonidae) from India

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ABSTRACT

A new species, *Xanthopimpla paddae* sp. nov. (Hymenoptera: Ichneumonidae) have been described from India. The above species is parasitic on lepidopterous larva *Chilo* sp. (Lepidoptera : Pyralidae). According to the key of Morley (1913) *Xanthopimpla paddae* sp. nov. runs close to *Xanthopimpla indubia* Cameron by metanotal areola and external areae. However, it differs from the above species by Ist tergite twice the length of II tergite, black spots on segments I, II, III, IV, V and VIIth abdominal segments, hind tarsi, ovipositor, ovipositor sheath and flagellar formula respectively.

Key words : *Xanthopimpla paddae*, new species, description, parasitoid, biocontrol agent.

INTRODUCTION

The genus *Xanthopimpla* was erected by Saussure in 1892. Genus *Xanthopimpla* belongs to the tribe Ephialtini of subfamily Ephialtinae. *Xanthopimpla* is one of the largest genus of family Ichneumonidae (Hymenoptera). Most of the species of this genus are found in old world tropics and majority of them in the Indo-Australian region. Indo-Australian species of *Xanthopimpla* are studied by Townes and Chiu (1970). They divided the genus into twenty species groups with key. Up to recent years, 165 species and 105 subspecies have been described under this genus. In past, Morely (1913), Cushman (1934), Momois (1961), Townes & Gupta (1961), Townes et. al. (1961), Oehlke (1967), Gupta & Tikar (1976), Constantineanu et. al. (1977), Gupta & Gupta (1983), Townes (1988), Sathe & Dawale (1997, 2002), Sathe & Nadaf (2008), Chougale & Sathe (2008, 2014), Chougale (2009), etc have been

worked on Indian Ichneumonids. The Ichneumonid flies are very good biocontrol agents of crop pests. The proper identification of species is essential for its utilization in pest control programmes. Very little work has been done from Western Maharashtra on Ichneumonid flies. Hence, the present work has been undertaken.

MATERIAL AND METHODS

The species considered in this paper was collected in the period (Sept. 2012 to Sept. 2015) from the Kolhapur and included description of new species *Xanthopimpla paddae* sp. nov. Cocoons were collected from paddy fields. The parasitized larvae of paddy stem borer *Chilo* sp. were also collected and reared in laboratory for the purpose of study. The wings, antennae, legs, propodeum, ovipositor etc mounted on slides in Canada balsam. All measurements were recorded in millimeters. The terminology adopted for description of the species was the same as that of Townes et. al. (1961). The key of Morley (1913) was consulted for species identification.

RESULTS AND DISCUSSION

***Xanthopimpla paddae* sp. Nov (Plate –I)**
Adult female (Fig. 1) : 8.00 mm long excluding ovipositor; fore wing 7.00 mm long, 3.10 mm broad;

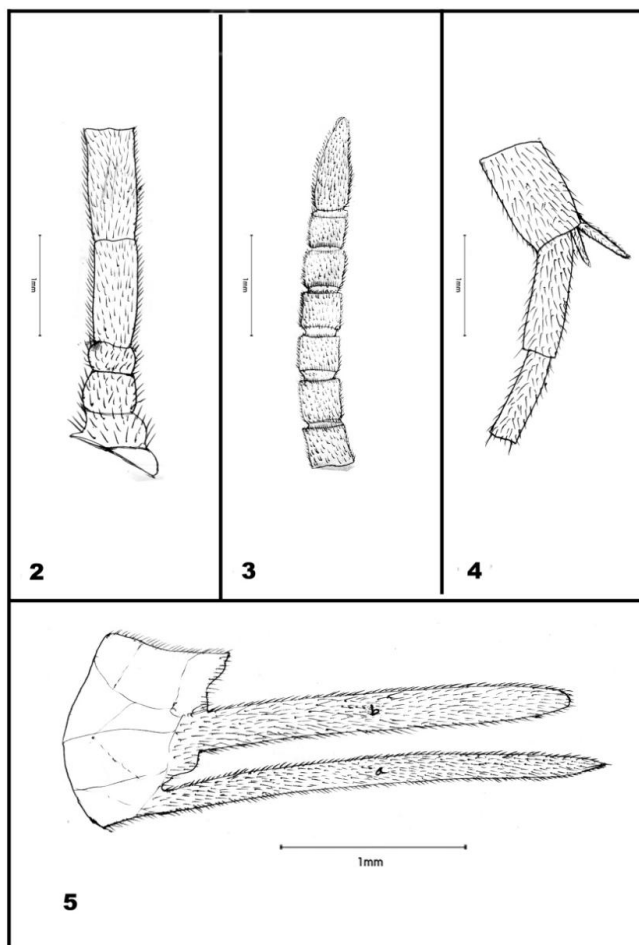
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Plate-I. Figures 1-5. *Xanthopimpla paddae* sp. Nov.

Figure-1. Adult female; Figure-2 Basala antennal segments; Figure-3. Antenna terminal segments; Figure-4. Hind tibial spurs; Figure-5a. Ovipositor; Figure-5b. Ovipositor sheath.



hind wing, 5.20 mm long, 1.76 mm broad; hind leg 5.88 mm long; ovipositor, 2.00 mm long, 0.11 mm wide.

Head :

1.30 mm long, 0.75 mm broad, flat front view, compressed from front side, rounded in shape; interocellar distance 0.58 mm, ocellar space 0.26 mm and ocellular distance is equal to front ocellar distance, 0.22 mm lateral ocelli yellowish brown; frons punctulated with hairs, medially concave, much hairy at the base of the socket; eyes dark black, shiny polished, convex, face, 0.32 mm wide, hairy; clypeus 0.74 mm broad; maxillary palpi faint yellow, 5 segmented, width of mandible equal to malar space.

Antenna (Fig. 2, 3) :

Antenna elongated 5.56 mm in length including scape, pedicel (Fig. 2) and flagellum, dark brown, not longer than body, hairy, broadly petiolate; scape 0.20 mm long, 0.11 mm wide; pedicel 0.13 mm long, 0.10 mm wide; flagellum hairy, 5.25 mm long, 0.11 mm wide, placodes arranged in 4 longitudinal rows, last antennal segment (Fig. 3) conical, elongated, 0.30 mm long, 0.11 mm broad, pennultimate segments short, similar in length and width.

Flagellar formula :

2 L/W = 2.69, 16 L/W = 1.00, 30 L/W = 1.12, L2/30 = 1.94, W2/30 = 0.72.

Thorax :

3.10 mm long and 1.36 mm broad, dark brown, hairy, absolutely punctulated; notauli distinct, pronotum punctuate; scutellum 0.28 mm long, 0.11 mm broad, convex, slightly oval, not distinctly bordered; mesoscutum convex, 0.48 mm long, between notauli, with a band composed of three black spots across its disc; mesonotum not centrally sulcate; metanotum depressed due to presence of wings, metanotal areola not quadrate, metanotal areola distinctly broader than long, areola not petiolate, external areae not clearly explanare; mesosternum large brown, convex posteriorly, hairy on ventral surface; prepedal apophysis distinct, triangularly located between the intermediate coxae; metathorax with very indistinct area; Propodeum 0.69 mm in long, 1.29 mm broad, carinate.

Fore Wing :

Forewing 7.00 mm long and 3.10 mm broad, brown, straight, hairy, transparent; metacarpus 2.46 mm long, smaller than width of wing; stigma 0.65 mm long 0.26 mm broad; metacarpus equal to the width of wing; medius 1.22 mm long; submedius little longer than medius; areolet present; 1st and 2nd brachialis broken at base of brachialis; 1st recurrent 0.14 mm; second recurrent vein 0.33 mm, broken anteriorly.

Hind Wing :

5.20 mm long and 1.76 mm broad, transparent, straight, venation dark brown, hairy; costella 0.90 mm long, posteriorly punctulated with very short setae; subcostella 0.97 mm, slightly broad; metacarpella equal to costella; axilus 0.21 mm, transparent; brachialia

short; discoidella 1.12 mm long; mediella longer than submediella; mediellan cell largest cell; venal lobe convex, fringed with minute setae.

Hind Leg (Fig. 4)

5.88 mm long, coxa 1.06 mm long, 0.70 mm broad, rugose, dark brown to yellow, hairy; trochanter-1st 0.21 mm long, brown, II trochanter 0.28 mm long, yellowish brown; femur 1.10 mm long, dorsally deeply punctuated, yellowish brown, femur with a pair of unequal tibial spurs; inner larger 0.26 mm long, outer smaller 0.19 mm long, brown and pointed; basitarsus 0.52 mm, second tarsal segment 0.31 mm long; third tarsal segment 0.23 mm long; fourth tarsal segment 0.17 mm long; fifth tarsal segment, 0.48 mm long, claw simple, much curved, dark black, tarsae light brown, setose with hairs.

Abdomen :

5.56 mm long, excluding ovipositor, yellowish brown dorsally, narrow basally, broad at middle, abdominal tip pointed; 1st tergite (T₁) longer than narrow, petiolate, punctulated, 0.98 mm long and 0.52 mm broad; with two dark black spots dorsolaterally; 2nd tergite (T₂) 0.72 mm broad and 0.44 mm long, spiracle close to sternum; 3rd tergite (T₃) broader than 2nd tergite but equal in length, shiny broad posteriorly, rugose; remaining tergites convex ventrally, broader towards apex, except last; ovipositor (Fig. 5a) 2.00 mm long, 0.11 mm wide, with ridge, blunt at tip, dark brown, densely hairy throughout the length, equal to ovipositor sheath (Fig. 5b). Abdomen flavous and distinctly shining, longitudinally and confluent punctate, dark black rectangular spots present on dorsolateral surface segments, I, II, III, IV, V and VIIth abdominal segments.

Colour :

Black : Eyes, last segment of abdomen;
Dark brown : Thorax, coxa, antenna, ovipositor, stigma;
Yellow brown : Abdominal basal segments, femur, tibia.

Host : Paddy stem borer, *Chilo* sp., lepidopterous larva.

Host plant : Paddy, *Oryza sativa*

Holotype:

Female, India, Maharashtra, Coll. 13-VIII-2012, Kolhapur, M. S., Chougale, T. M., antenna, wings, leg, tergites, ovipositor on slide, labeled as above.

Paratype:

Male 1, Females 2, sex ratio (M : F) 1 : 2.00, same data as above.

Etymology:

The species *Xanthopimpla paddae* sp. nov. reared on *Chilo* sp. (lepidopterous) larvae on paddy hence the name.

Distributional record:

Maharashtra: ♂ 1 ♀ 1, Atigre (Kolhapur), 5-VIII-2012; ♂ 1, ♀ 2, Shahuwadi (Kolhapur), 16-VII-2012.

REMARKS

According to the key of Morley (1913) *Xanthopimpla paddae* sp. nov. runs close to *Xanthopimpla indubia* Cameron. by following characters :

1. Metanotal areola distinctly broader than long,
 2. External areae not clearly explanare. However, it differs from the above species by having following characters :
 - a. 1st tergite twice the length of II tergite,
 - b. Black spots rectangular, on dorsolateral surface of segments I, II, III, IV, V and VIIth abdominal segments
 - c. Hind tarsi dark brown,
 - d. Ovipositor shorter than abdomen,
 - e. Ovipositor sheath equal to ovipositor sheath,
 - f. Flagellar formula :
- 2 L/W = 2.69, 16 L/W = 1.00,
30 L/W = 1.12, L2/30 = 1.94,

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Conflict of Interests

Authors declare that there is no conflict of interests regarding the publication of this paper.

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