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Research Article

FOUR NEW RECORDS OF XYLOCOPA (HYMENOPTERA: APIDAE: XYLOCOPINAE) FROM DUMNA NATURE PARK JABALPUR, MADHYA PRADESH, INDIA

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ABSTRACT

Four new records of family Xylocopinae viz. Xylocopa fenestrata, X. amethystine, X. dissimilis and X. verticalis were recorded from Dumna Nature Park, Jabalpur. All the four species are new records to the Madhya Pradesh.

INTRODUCTION

The bee species belonging to genus *Xylocopa* (Order: Hymenoptera; Family: Apidae; Subfamily: Xylocopinae) are known as carpenter bees as they nest in the woods (Hurd and Moure, 1963; Lucia *et al*., 2015). They are robust and hairy bee species found almost throughout the year (Raju and Rao, 2006). Species of *Xylocopa* play vital role in the pollination of many native plants and agricultural crops (Gerling *et al.,* 1989; Keasar, 2010). The characteristic feature of family Xylocopinae is having three sub-marginal cells with second sub-triangularly elongated, ocelli in a triangle and labrum only slightly exerted, not prominent, 6-jointed maxillary palpi, posterior tibiae densely pubescent (Bingham 1897). About 450 species under genus *Xylocopa* has been reported globally (Michener 2007), among which 29 species are from India (Ascher and Pickering, 2016).

Dumna Nature Park (DNP) is a forest area and an ecotourism site located in the Jabalpur district of Madhya Pradesh. No work on insect fauna except few species of Hemiptera and Hymenoptera has been reported from the Park (Sheikh *et al*., 2016abcd; Sheikh *et al*., 2017). In this paper, we are reporting four species of subfamily Xylocopinae from DNP; all are new records to the Madhya Pradesh.

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METHODOLOGY

Study area

The state of Madhya Pradesh is located in the center of India and lies between 210 to 250 N and longitudes 740 to 840 E. The DNP covers an area of 1058 ha and is located (23^0 10′, 80^0 1′) on the way to Dumna Airport Road. It is an Eco-tourism centre and mainly embraces two major ecosystems viz. a forest ecosystem (Bamboo forest) and a fresh water ecosystem (Khandhari water reservoir).

Sampling

Two sampling methods viz. Sweep Net and Light Trap were used to collect the species belonging to genus *Xylocopa* from March 2014 to March 2016. However, all the species were collected through Sweep Net and no species could be sampled by Light Trap. The collection was carried on weekly basis. The identification of collected specimens was carried in collaboration with ZSI Kozhicode.

RESULTS

Four species of subfamily Xylocopinae were recorded. The species were *Xylocopa fenestrata, X. amethystine, X. dissimilis and X. verticalis.*

Systematic list

Order	Hymenoptera
Superfamily	Apoidea
Family	Apidae
Subfamily	Xylocopinae
Tribe	Xylocopini
Genus	*Xylocopa*

Systematic account

Genus: ***Xylocopa*** Latrielle, 1802

Diagnostic characters

Head transverse; ocelli in a triangle just below the vertex; eyes larger in the male; antennae geniculate, the scape sometimes dilated or incrassate; the flagellum cylindrical, apical joint obliquely truncate; mandibles short, stout, grooved exteriorly, the apex with two, sometimes three teeth; labial palpi 4-jointed, basal joint nearly 5x the length of the second joint, thorax short; forewing with the radial cell elongate, acute at apex; three cubital cells, the third longest, second subtriangular; posterior tibiae and tarsi always densely pubescent, the former with two simple spines at apex; legs of male generally elongate, the posterior femora sometimes curved and subdentate below.

Xylocopa fenestrata, Fabricius, 1798
1798. Apis fenestrata Fabricius, *Ent. Syst. Suppl* : 273.
1897. Xylocopa fenestrata, Bingham, *Fauna British India, Hymenoptera,* 1 : 539.
1963 .. Xylocopa (Ctenoxylocopa) fenestrala, Hurd and Moure, *Univ. Calif. Pub. Enl.,* 29: 175.

Diagnostic characters

Head finely and closely and thorax sparsely punctured; slightly covex clypeus, emarginate anteriorly; front not carinate; mesonotum with three, longitudinally impressed lines; body black and shinning; wings fuscous, with coppery effulgence, and with impressions of hyaline lines between the nervures at base; the pubescence black, ferruginous anal abdominal segment; third abdominal segment with spiracular lateral impression near its base covered with short yellow pubescence; male narrower, wings little paler and hyaline lines more visible and remarked than female. Length: 23 mm (Fig. A and B).

Materia lexamined: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 8. xi. 2015, Coll. Altaf Hussain Sheikh.

Distribution

India: Throughout India, most plentiful in the North-West Provinces; Elsewhere: Burma and Sri Lanka (Sharma *et al.,* 2016).

Xylocopa amethystine Fabricius, 1874

1874. *Xylocopa amethystine* Fabr. *Ent. Syst*., 2: 325.

Diagnostic characters

Head and thorax anteriorly, and sides of the mesonotum finely and closely sparsely punctured; clypeus medially carinate; acute and prominent tubercle between the antennae; wings fuscous with purple lusture. Male is smaller with apex of the labrum yellowish white, wings more paler than female and hyaline at base; abdomen sparsely punctured. Length: 16 mm (Fig. C and D).

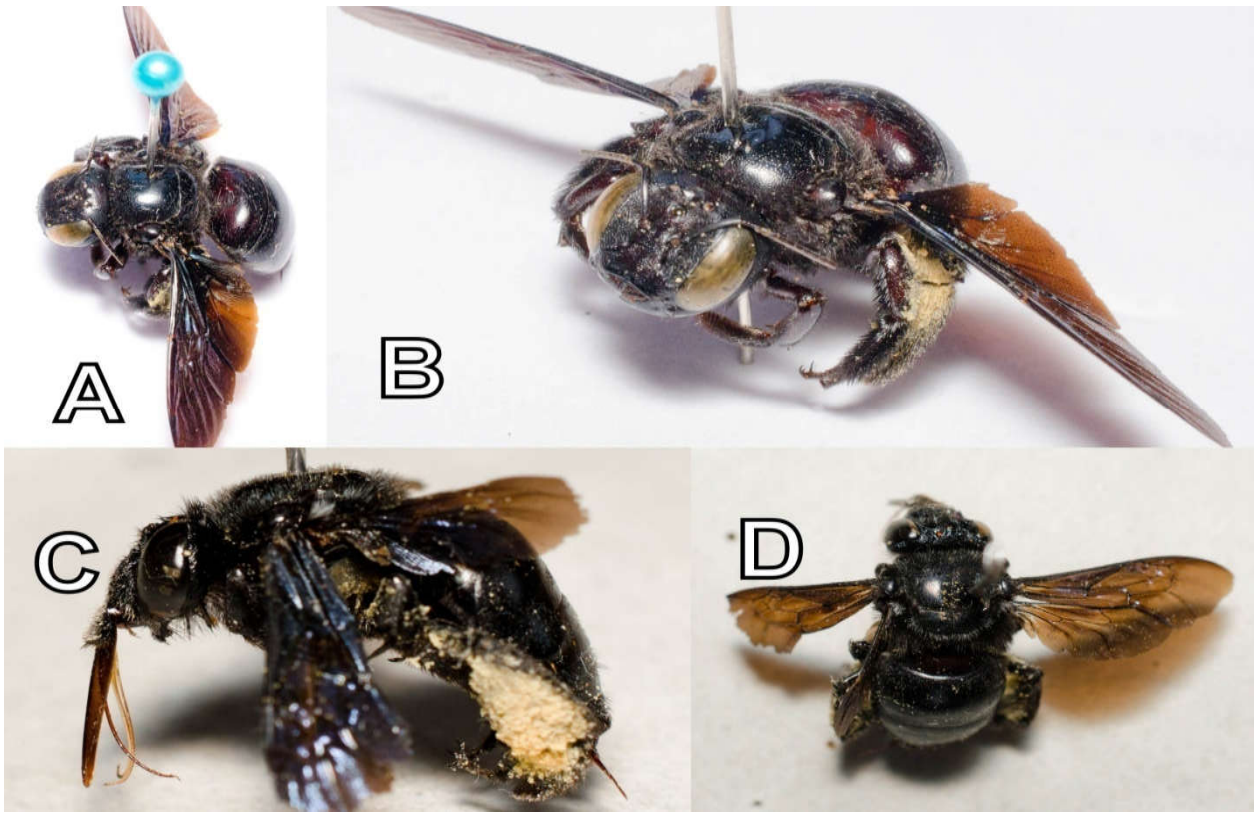

Fig. A Dorsal view of *X. fenestrata.* B. Frontal view of *X. fenestrata.* C. Lateral view of *X. amethystine* D. Dorsal view of *X. amethystine*

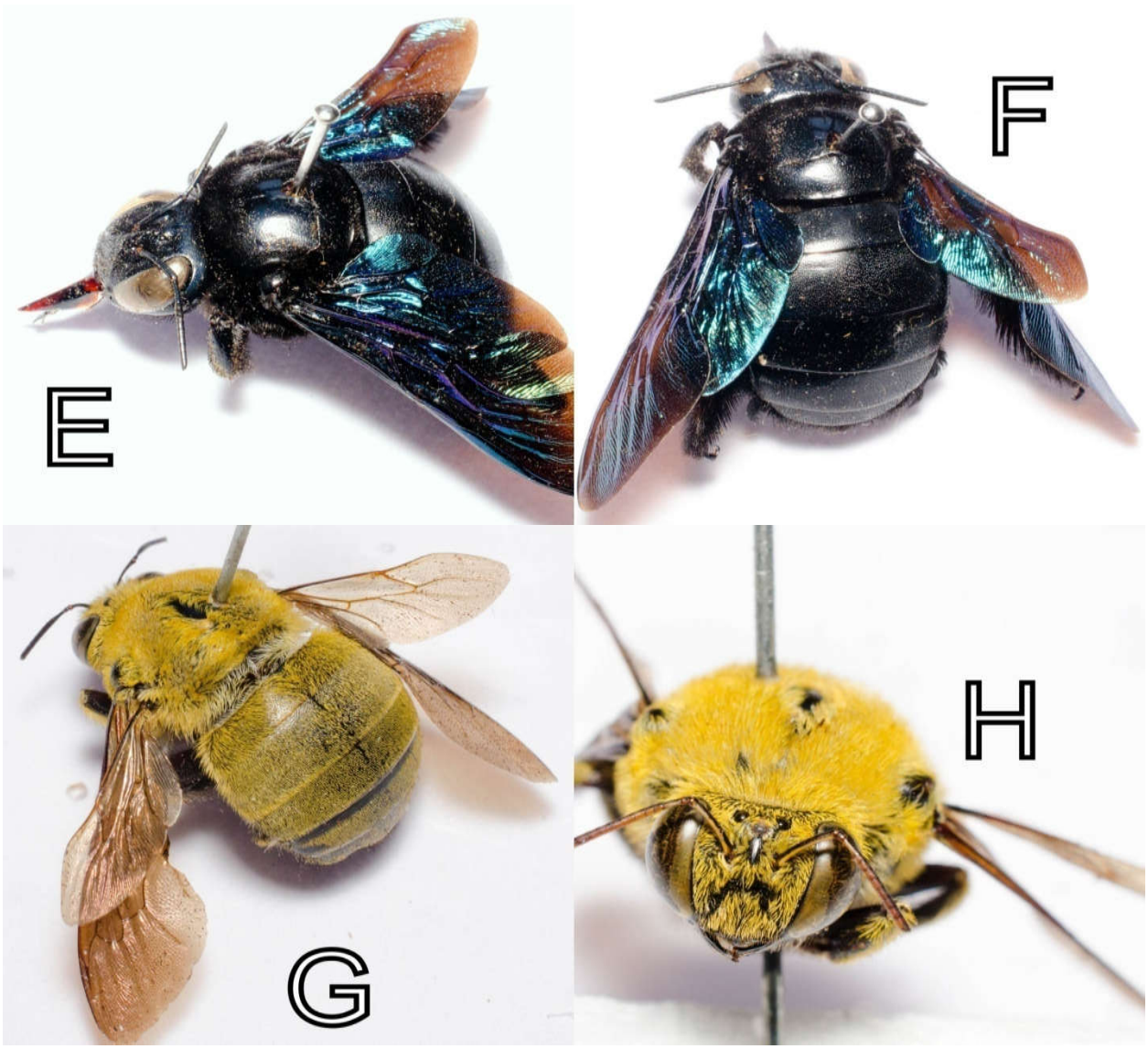

Fig E Frontal view of *X. dissimilis.* F. Dorsal view of *X. dissimilis.* G. Dorsal view of *X. verticalis.* H. Frontal view of *X. verticalis*

Material examined: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 3. xi. 2015, Coll. Altaf Hussain Sheikh.

Distribution

India: Kerala, Punjab, North-West Provinces and Maharashtra; Elsewhere: Sri Lanka (Sharma *et al.,* 2016).

Xylocopa dissimilis Westwood, 1838

1838. *Xylocopa dissimilis* Westwood, *Hym.,* 2:180.

Diagnostic characters

Head and thorax punctured; obscure impunctate mark and less prominent frontal carina; very dense black pubescence on mesonotum, beneath the wings and sides of throrax; purple wings but apical margins metallic green. In case of Male, posterior femora incrassate, legs longer, lamellate projection beneath the apex of posterior tibiae; yellowish white lunular mark on the sides of anterior ocellus, clypeus at base; whitish brown pubescence anteriorly on thorax; abdomen punctured. Length: 27 mm (Fig. E and F). *Material examined*: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 8. xi. 2015, Coll. Altaf Hussain Sheikh.

Distribution

India: Sikkim and West Bengal; Elsewhere: Burma and Sri Lanka (Bingham, 1897; 1903).

Xylocopa verticalis Lepel., 1841

1841. *Xylocopa verticalis* Lepel, *hymen*. 2: 195.

Diagnostic characters

Head finely punctured; thorax globular; the sides of thorax, thorax above, occiput, cheeks and basal abdominal segments covered with velvety yellow pubescence; fuscous wings with purple effulgence; wings fuscous, sub-hyaline, with a purplish effulgence. In case of male, legs covered with redish- yellow pubescence. The rest characters resembles more or less with *X. aestuans.* Length: 21 mm (Fig. G and H).

Material examined: India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 3. xi. 2015, Coll. Altaf Hussain Sheikh.

Distribution

India: Karnatka and kerala; Elsewhere: Sri Lanka and Pakistan (Bingham, 1897; 1903).

DISCUSSION AND CONCLUSION

There are more than 450 species of family Xylocopinae reported worldwide. Among which 29 belong to India. A total of four species (*Xylocopa fenestrata, X. amethystine, X. dissimilis and X. verticalis*) belonging to genus *Xylocopa* were recorded from Dumna Nature Park, Jabalpur. All the four species are new records to the state of Madhya Pradesh. *Xylocopa* plays a vital role in the pollination as most species are pollen generalists, hence visit many flowers.

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