

## On an account of Sphecidae (Hymenoptera: insecta) from Dumna Nature Park, Jabalpur, India

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### Abstract

Present paper reports four species of family Sphecidae viz. *Ammophila clavus*, *Ammophila laevigata*, *Sceliphron madraspatanum* and *Sphex argentatus* from Dumna Nature Park, Jabalpur. All the four species are reported first time from the Park.

**Keywords:** *ammophila clavus*, *ammophila laevigata*, *sceliphron madraspatanum* and *sphex argentatus*

### 1. Introduction

Hymenoptera includes over 153 000 species worldwide, grouped in 132 families 8423 extant genera (Aguilar *et al.*, 2013) [1]. Sphecidae family is diverse group of solitary wasps which are very diverse in shape, size and colour. They are cosmopolitan in distribution with 9716 species described throughout the world (Pulawski, 2009). They are effective bio-control agents against insect pests (Borror, 1988; Gayubo, 2009) [4, 5]. Sphecids construct nests in soil, wood, crevices and holes in walls. They feed on variety of food stuffs ranging from nectar to insects belonging to several orders (Ashmeed, 1894; Bohart and Menke, 1976) [3].

The state of Madhya Pradesh is located in the center of India and lies between 21° to 25° N and longitudes 74° to 84° E. Jabalpur district lies in the Eastern half of Madhya Pradesh. Geographically it lies between 23° 10' North latitude and 79° 59' East longitude with a total geographic area of 5211 sq. km. Dumna Nature Park (DNP) is located (23° 10' North latitude and 80° 1' East longitude) on Dumna Airport Road in district Jabalpur. The Park has an area of 1058 ha is a mixed forest under Jabalpur Municipal Corporation managed by the Department of Forestry, government of Madhya Pradesh. DNP is almost unexplored area, only few species of Hymenoptera and Hemiptera have been reported so far (Sheikh *et al.*, 2016abcd; Sheikh *et al.*, 2017abc) [10, 13]. In the present paper, we report sphecidae fauna collected from the Park.

### 2. Methodology

Two sampling methods viz. Sweep Net and Light Trap were used to collect the species belonging to Sphecidae family during 2015. However, all the species were collected through Sweep Net and no species could be collected by Light Trap. The collection was carried on weekly basis.

### 3. Results

Four species of Sphecidae reported from DNP are *Ammophila*

*clavus*, *Ammophila laevigata*, *Sceliphron madraspatanum* and *Sphex argentatus*. All the four species are first records of Sphecidae wasps from the Park. The systematic list and systematic account is as under.

#### 3.1 Systematic list

##### Family Sphecidae

##### Subfamily Ammophilinae

##### Genus *Ammophila* Kirby

1. *Ammophila clavus* Fabricius, 1775
2. *Ammophila laevigata* Smith, 1856

##### Subfamily Sceliphrinae

##### Tribe Sceliphriini

##### Genus *Sceliphron* Klug

3. *Sceliphron madraspatanum* (Fabricius, 1781)

##### Subfamily Sphecinae

##### Tribe Sphecini

##### Genus *Sphex* Linnaeus

4. *Sphex argentatus* Fabricius, 1787

#### 3.2 Systematic account

##### 1. *Ammophila clavus* Fabricius, 1775

1775. *Sphex clavus* Fabricius, 348, sex not indicated (as *clauus*). Holotype or syntypes ♀, Nova Hollandia, now Australia.

1856. *Ammophila clavus*; Smith, 214.

##### Diagnostic characters

Gastral apex black with blue metallic shine; supra-antennal lamellate projection absent; pronotal collar and scutum distinctly transversely ridged; scutellum and metanotum coarsely longitudinally ridged; propodeal enclosure irregularly coarsely rugose along midline, laterally coarsely transversely rugose and glabrous; mesopleuron, metapleuron and

propodeum laterally coarsely transversely punctato-rugose; mesothoracic venter anteriorly not prominent; claws without basal tooth. Body length: ♀, 19-30 mm; ♂, 13-27 mm (Fig. A).

Colour: ♀. Black with following variably red: scape, pedicel, basal half of flagellomere I, legs (except coxa and trochanter; last tarsomeres darkened), petiole, tergum I (basal third darkened). Erect setae black; wings yellowish brown.

Colour: ♂. Black, except tergum I laterally red; gastral apex black with metallic shine. Propodeum posterolaterally covered with appressed silvery setae; erect setae whitish.

*Material examined:* India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 03.ix.2015, Coll. Altaf Hussain Sheikh.

*Distribution:* India: Assam, Kerala, Maharashtra, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal. *Elsewhere:* Australia, Indonesia, China, Japan, Laos, Nepal.

## 2. *Ammophila laevigata* Smith, 1856

1856. *Ammophila laevigata* Smith, 215, ♀. Syntypes, Tamil Nadu: Madras; Gujarat.

### Diagnostic characters

Mesothoracic venter anteriorly not prominent; episternal sulcus extending to anteroventral margin of pleuron; arolia well developed; gastral apex black, pruinose, without metallic shine; supra-antennal lamellate projection absent; claws without basal tooth. Body length: ♀, 17-21 mm; ♂, 17-18 mm (Fig. B).

Colour: ♀. Black, with following red: legs (except coxa and trochanter; hind tibia black; reddish colour of legs variable), petiole (except dorsally black), tergum I (except dorsally black), base of gastral segments II and III. Wings slightly yellowish brown.

Colour: ♂. Black, with following red: fore and mid legs (except femora and tibia partly darkened; hind tibia entirely black), hind femur ventrally, petiole, tergum I, base of gastral segment II (except all dorsally black). Wings slightly yellowish brown.

*Material examined:* India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 03.x.2015, Coll. Altaf Hussain Sheikh.

*Distribution:* India: Gujarat, Kerala, Tamil Nadu, Uttarakhand. *Elsewhere:* Sri Lanka, Nepal, Thailand.

## 3. *Sceliphron madraspatanum* Madraspatanum (Fabricius, 1781)

1781. *Sphex madraspatanus* Fabricius, 445, sex not indicated (as *madraspatana*, incorrect original termination). Lectotype ♂, India: Malabar (BMNH), designated by van der Vecht, 1961: 43. 1892. *Sceliphron madraspatanum*; Mocsáry, 127.

### Diagnostic characters

Pronotum and metanotum with yellow markings; inner side of mandibles with more or less distinct tooth; hind coxae normal, rounded on outer side; terminal gastral sternite slightly convex, not keeled; lower half of inner eye margins distinctly converging towards clypeus. Body length: 17-19 mm (Fig. C).

Colour: Black with following yellow markings: two spots on pronotum; spot at apical half of tegulae; spot on mesopleuron

(sometimes absent); petiole; hind trochanter; apical half of fore and mid femora; basal half of hind femur; fore and mid tibia entirely; basal half of hind tibia; hind basitarsus except at base black.

*Material examined:* India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 03.ix.2015, Coll. Altaf Hussain Sheikh.

*Distribution:* India: Andhra Pradesh, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Pondicherry, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal. *Elsewhere:* Myanmar; Nepal; Sri Lanka; Thailand; Laos; Vietnam; Cambodia; Indonesia.

## 4. *Sphex argentatus* Fabricius, 1787

1787. *Sphex argentatus* Fabricius, 274, sex not indicated (as *argentata*, incorrect original termination). Lectotype ♀, India: Coromandel (= southeastern coast): designated by van der Vecht 1961: 28.

### Diagnostic characters

Tubercles on metanotum distinct; free clypeal margin truncate, slightly concave toward center, with short median lobe; distance between hind ocelli 1.4× their shortest distance to compound eyes; metasomal sternum VII with large fringe of dark setae laterally, sterna anterior of it each with lesser amount of setae; metasomal sternum VIII entire, its lateral margin straight; scutellum convex, with shallow medial impression; length of petiole 1.65× length of flagellomere II; tomentum moderately dense on metasomal tergum I and II; metasomal tergum V with only few and tergum VI with considerable number of black setae. Body length: ♂, 25 mm (Fig. D).

Colour: ♂. Body black. Base of fore and hind wing membrane darkened, forewing with fuscous spot beyond marginal cell. Propodeal enclosure with thin, erect silvery setae, leaving sculpture well visible. Wing veins brown to black. Appressed pubescence and erect setae on clypeus and frons silvery-white, no medial glabrous stripe on clypeus. Pubescence on collar and scutum silvery.

*Material examined:* India: Madhya Pradesh, Jabalpur district, Dumna Nature Park, 22.ix.2015, Coll. Altaf Hussain Sheikh.

*Distribution:* India: Assam, Kerala, Tamil Nadu, West Bengal. *Elsewhere:* Most parts of the world.

## 4. Conclusion

Four species of family Sphecidae viz. *A. clavus*, *A. laevigata*, *S. madraspatanum* *madraspatanum* and *S. argentatus* were recorded from DNP and all the four are recorded first time from the Park. Since, they feed on insects belonging to other orders; they can be used effective bio-control agents against a wide variety of insect pests.

## 5. Acknowledgement

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Fig 1: A. *Ammophila clavus*. Fig. B. *Ammophila laevigata*. Fig. C. *Sceliphron madraspatanum madraspatanum*. Fig. D. *Sphecx argentatus*.

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