

AN INTRODUCTION TO SPHECID WASPS OF HORAND FORESTS-IRAN (HYMENOPTERA)

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ABSTRACT: A survey was carried out on Sphecid fauna of Horand forests, in East Azarbaijan province during 2008-2009. Twelve species belonged to two family and ten genera were identified which totally are as new records for studied area.

KEY WORDS: Fauna, Horand forests, Sphecidae, Hymenoptera, Iran.

Horand forests are located in northern west of Arasbaran forests, a registered biosphere in world heritages by UNESCO since 1976 in East Azarbaijan province, Iran. This biosphere reserve situated in the northern Horand city with UTM (Universal Transfer Mercator) coordinate system, X from 690477.57 to 709176.87 E; Y from 4304419.14 to 4317039.59 N and varying latitude from 1354 m to 1478 m. This area has rich grasslands with various species of Astraceae and Juncaceae, rangelands, forests particularly with oak and hazelnut and also rivers and springs.

Species in this family, Sphecidae, are solitary hunting wasps. Female wasp construct nest in soil or build mud cells for her young. The vast majority practice mass provisioning, providing all the prey items prior to laying the egg. She paralyzes host arthropod, usually caterpillars or spiders, by her sting. The sting is a modified ovipositor which injects venom paralyzes but not kill the host. She keeps the hosts in the nest and lay egg on hosts' body. Larva hatches and feeds externally on prey. Larvae are usually legless and grub-like.

The traditional classification of Sphecid wasps changed with the advent of cladistics. Both conservative definition of the Sphecidae where all the sphecid wasps are treated in a single large family and the more refined one, where the sphecid subfamilies were each elevated to family rank have recently been shown to be paraphyletic (Brothers, 1999; Melo, 1999). Prentice, Brothers, and Melo independently subdivided the extant Apoidea into five monophyletic families: Heterogynaidae, Ampulicidae, Sphecidae, Apidae, and Crabronidae (Pulawski, 2009).

Sphechids can be distinguished by the posterior margin of the pronotum which is a straight line and terminates laterally into a rounded lobe that does not reach the tegula. They differ from the bees in that the body hairs are unbranched and a cleaning brush on the inner side of hind basitarsus is absent (Bohart & Menke, 1976).

MATERIAL AND METHODS

Studied specimens were collected twice a month, during 2008- 2009. Wasps were caught using common handy entomological net and malaise trap in twenty two localities (Fig. 1). The collected specimens were placed in ordinary paper envelopes after killing them in cyanid bottle in order to bring them in laboratory. The collection thus brought was placed in a desiccator (having water at its

bottom) for about 24 h in order to soak and soften them. Thereafter, they were pinned using 0, 1 and 2 mounted pins and their wings and legs set on appropriate setting boards to facilitate morphological studies. For identification, the materials were examined under a Nikon (SMZ 1000) binocular microscope manufactured by Japan.

RESULTS

Present study has richly yielded 12 species belonged to two family and seven genera that all of them are as new records for studied region. A brief key for verified genera prepared as follow:

Identification key for the genera

1. Gaster with cylindrical petiol composed of sternum only and jugal lobe of hind wing large containing an anal vein.....**2**
-. Gaster variable, jugal lobe of hind wing very small.....**4**
2. Tarsi with plantulae¹ (Fig. 2).....*Sceliphron*
-. Tarsi without plantulae.....**3**
3. Apex of sternum I (petiol) meeting and often overlapping base of II (Fig. 3).....
.....*Ammophila*
-. Apex of sternum I not reaching base of II (Fig. 4).....*Podalonia*
4. Midtibia with two apical spurs.....**5**
-. Midtibia with one apical spur.....**6**
5. Hind jugal lobe much more than half length of anal area.....*Astata*
-. Hind jugal lobe less than half length of anal area.....*Harpactus*
6. Hind ocelli deformed or greatly reduced.....*Bembix*
-. Hind ocelli normal**7**
7. Forewing with one submarginal cell (Fig. 5).....**8**
-. Forewing with three submarginal cells.....**9**
8. Orbital foveae absent.....*Ectemnius*
-. Orbital foveae distinct (Fig. 6).....*Lestica*
9. Apex of hind femur simple.....*Philanthus*
-. Apex of hind femur truncate, flattened and kidney shaped (Fig. 7).....*Cerceris*

Family sphecidae

Sceliphron destillatorium (Illiger, 1807)

Material examined: (2♀♀)

This wasp is native to southern and central Europe. It builds a mud nest on walls, rocks or trees, which it fills with paralysed spiders as food for its larvae. The adults feed at flowers. Yellow scape, tegula and petiol and black propodeum distinguish it from related species.

¹ - Small oval pads on underside of tarsomers

***Ammophila sabulosa* (Linnaeus, 1758)**

Material examined: (1♀, 1♂)

Four last segments of the abdomen metallic blue, face and parts of thorax with silver pubescent, legs black. According to Bohart & Menke, this wasp is distributed in Europe and Asia.

***Podalonia hirsuta* (Scopoli, 1763)**

Material examined: (2♀♀)

The color of the body varies according to the region. The base of the abdomen of a typical female is red whereas the abdomen of the other form is entirely black that gives a subspecies value to it. This form belongs to subspecies *Podalonia hirsuta mervensis* Rad (De Beumont, 1967).

Family Crabronidae***Lestica clypeata* Schreber, 1759**

Material examined: (1♀, 3♂♂)

The female is black with yellow bands on the abdomen. pygidial area is gutter like and clypeus is deeply emarginated on each side. The male differs from all similar wasps by its peculiar shaped head that is tapered back against its neck, and through greatly enlarged basitarsus (Fig. 8).

Europe and Middle East are distributional region of this species (Bohart & Menke, 1976).

***Ectemnius lapidarius* (Panzer, 1799)**

Material examined: (2♀♀)

Mesonotum with long erect hairs, clypeus with golden hairs, third antennal segment at least three times as long as broad, ocelli form an obtuse triangle, gasteral sternites black.

***Astata kashmirensis* Nurse, 1909**

Material examined: (1♀, 4♂♂)

Abdomen black except second abdominal segment which is red. Males with Holoptic eyes.

***Philanthus triangulum* (Fabricius, 1775)**

Material examined: (2♀♀, 4♂♂)

Male 11-13mm, female 15mm. Found mainly in sandy localities. Female digs nest in sand and stocks it with Honey Bees which it catches.

***Cerceris arenaria* (Linnaeus, 1758)**

Material examined: (2♂♂)

Each abdominal segment with a yellow band (Fig. 9), anterior margin of clypeus with a protruded plate.

***Cerceris rybyensis* (Linnaeus, 1771)**

Material examined: (2♂♂)

First abdominal segment black, second segment with a yellow band at base, third segment yellow with a triangular black spot at base, fourth segment black with two separate yellow spots on each side. It is distributed in Palearctic Region.

***Cerceris quadricincta* (Panzer, 1799)**

Material examined: (3♀♀)

It is distributed in Palearctic Region.

***Harpactus laevis* (Latreille, 1792)**

Material examined: (2♀♀)

Thorax partially red, abdomen black with creamy bands on some tergites.

***Bembix bicolor* Radoszkowski, 1877**

Material examined: (2♂♂)

Iran, Middle East to Afghanistan and Mongolia are distributional region of this species (Bohart and Menke 1976).

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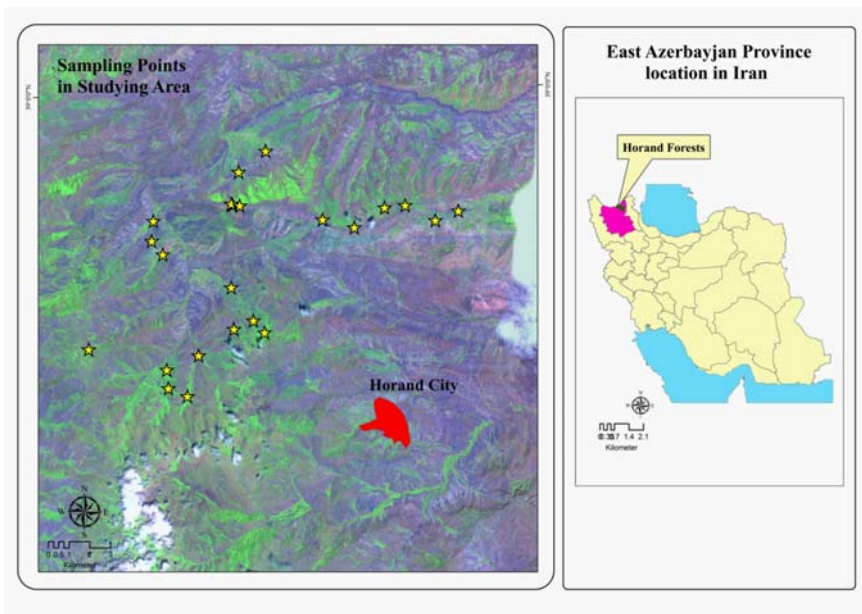


Figure 1. Location of sampling points on satellite image (SPOT) of Horand forests.

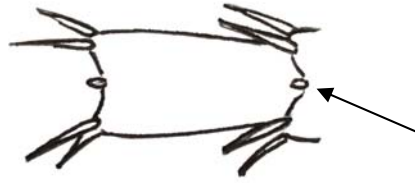


Figure 2. The plantulae position in *Sceliphron tarsi*.

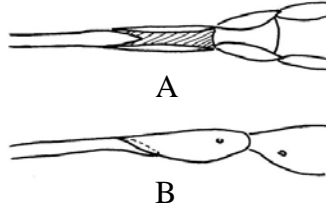


Figure 3. Petiol in *Ammophila*: A, Ventral view; B, Lateral view.

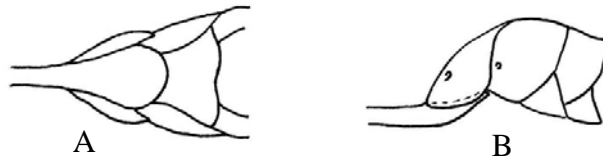


Figure 4. Petiol in *Podalonia*: A, Ventral view; B, Lateral view.

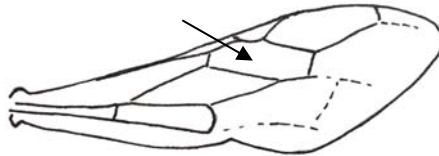


Figure 5. Submarginal cell in *Lestica*.

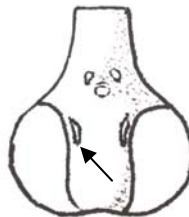


Figure 6. Orbital foveae in *Lestica*.

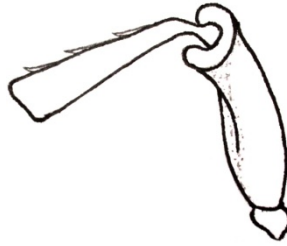


Figure 7. Apex of hind femur in *Cerceris*.



Figure 8. Basitarsus in *Lestica*.

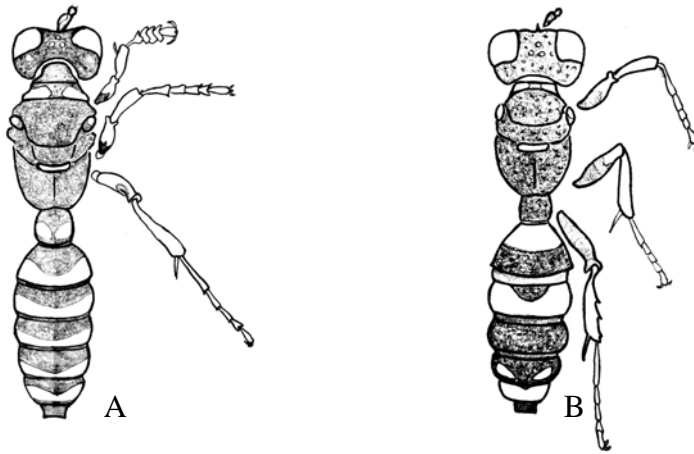


Figure 9. Body pattern at dorsal view in: A, *Cerceris areolaria*; B, *C. rybyensis*.