



## Faunistic study of Non-Apis bees (Hymenoptera: Apoidea) from Potohar Plateau of Pakistan

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### Abstract

This study was conducted to explore the fauna of non-apis bees of Potohar region of Pakistan. To carry out this study (36) surveys were conducted during three consecutive years i.e. from January, 2011 to December 2013. This study of non-apis bees revealed (27) species in 13 genera and five families. The taxonomic accounts of Halictidae, Colletidae, Megachilidae, and Andrenidae were given. The family Halictidae from its subfamily Nomiinae comprises two (2) species and three species(3) from subfamily Halictinae, the Colletidae from its subfamily Colletinae one (1) species and subfamily Hylaeinae one (1) species, the family Megachilidae from its subfamily Megachilinae five (5) species and the family Andrenidae from its subfamily Andreninae one (1) species were recorded. The following species are new records to Pakistan, *Megachile bicollar*, *Megachile cephalotes*, *Megachile conjuncta*, *Megachile disjuncta*, *Coelioxys decipiens*, *Halictus splendidulus*, *Halictus albescens*, *Lassioglossum albescens*, *Colletes inaequalis*, *Hylaeus scutellaris*, *Andrena flavipes* and *Nomia westwoodi*.

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## Introduction

Bees fit in seven major families of superfamily Apoidea namely Andrenidae, Apidae, Colletidae, Halictidae, Megachilidae, Melittidae, Stenotridae of (Michener, 2000). All the bees belonging to the above mentioned families are known as non apis bees, wild bees, or pollen bees except the bees of genus *Apis* of family apidae.

The bee fauna of Pakistan is basically Palaearctic while many bee species from bee fauna of Pakistan are known from Central Asia, which have been studied by the Russian taxonomists (Engel, 2008). However, the bee fauna of Pakistan is also shared with India, but still, quite a few species have been described from India, which have been reported from Pakistan. In Pakistan majority of the researchers focused their studies on the role of bees in crop pollination rather than taxonomic or faunistic approaches such as (Ahmad, 1976) reported non-*Apis* bee's species while studying alfalfa pollinators. (Fiaz, 1977) studied non-*Apis* bees on citrus. Potohar region thus is an attractive and preferred land for non- apis bees activities. Keeping in view the economic importance of pollination in crops this study was designed to explore non-apis bee fauna in Potohar region to come up with important records for the scientific community.

## Materials and methods

### *Exploration of the non-apis bee fauna in Potohar region*

The study was carried out through surveys and collection of non-*apis* bee from selected localities of Potohar such as Chakwal, Jhelum, Rawalpindi, Islamabad, and Attock. Proper sampling was conducted. Non-*Apis* bees were collected by using pan traps and net sweeping methods.

### *Selection of localities and collection*

The study was carried out through surveys and collections from selected localities of Potohar districts Jhelum, Rawalpindi, Chakwal, Attock and Islamabad. From each district 10 (ten) localities were selected at least 10-15 kilometers apart from each other and the

maximum possible area of each locality was covered during sampling. Variable habitats were visited such as natural vegetation, cropped and urban areas. Each locality was visited fortnightly starting from January till the end of December. Specimens were collected from 8.00 am to 3.00 pm from December to April and from 7 am to 2 pm from May to November. Ten selected localities from five districts are mentioned below.

District Attock: Attock city, Jund, Fateh Jhang city, Stadium road (Fateh Jhang), Shahpur Dam, Kund village, Ghorghushti, Mithial, Pindi Ghabe, Kamra Cantt.

District Islamabad: Margala town, F-9 Park (Islamabad), Shahdra, Bani Galla, QAU, Shahzad town farmhouses, Golhra sharif, Margalla Hills, Loi bhair, Taramri Farms.

District Rawalpindi: Paswal sharif, Kashmir Road, Rawat, Ayub National Park, Dharnial, Adiala, Bahria Town, Nawaz Sharif Park, Dhok Gangan.

District Jhelum: Saraialamgir, Mahi khurd, Tahlianwala, Chak Daulat, Mangla Dam, Mirpur, Sarai alamgir road, Domeli city Site1, Kharian city, Chitti Rajgan, Domeli Road Site 2.

District Chakwal: BARI, Pind Daddan khan, Kalar Kahar, Kot sarang, Chakwal, Choa Saidan Shah, Daultala, Talagang, Dhudial, Khewra.

### *Pan traps*

Bee bowls traps of white, fluorescent blue and fluorescent yellow were used for the collection of the pollinators (Droege, 2010). The bowl with 6 oz size or capacity of 177.4 ml. Pan Traps used were placed in transect in vegetable fields. Twenty four pans of UV-blue, UV-yellow and white (8 each) were placed at 5 meters apart on the ground. Bowls were placed in line with alternate colors in an open and visible place. Each pan trap was filled with water and a few grains of detergent in it just to minimize the surface tension of the water. At the end of the sample period, the

liquid in pan traps was run through a net strainer to extract the insects. The collected insects were transferred to the sealable plastic bags.

#### Net sweeping

Sweeping was done around the vegetable fields as well as vicinities from different places. The standard net was used with one meter long handle and about 0.3-0.4 meter rim in diameter. The speed of sweeps and direction were uniform in each case. Sweeping was done in the morning and second in the afternoon. Collected insects were killed in jars having cotton soaked in ethyl acetate with complete field data i.e. date, collection time, collector's name, locality, altitude, latitude, longitude and remarks if any.

Collected insect specimens by pan trap and net sweeping were pinned properly on setting boards. As soon as the specimens will dry, they were properly labeled and were shifted in the collection boxes. Naphthalene balls were kept in the boxes to prevent the collection from the attack of ants and other insects.

#### Identification of the collected specimens

The identification of the collected specimens was made to possible level by using identification keys by available literature.

Description: Differential characters from the published descriptions were given for the species. A

detailed description was provided for the species which are new to Pakistan and study area.

## Results and discussion

### Taxonomic account of family megachilidae

Family Megachilidae

Subfamily Megachilinae

Tribe Megachilini

Genus *Megachile* Fabricius, 1781

Subgenus *Amegachile* Smith, 1853

*Megachile (Amegachile) bicollar* Fabricius, 1781

Material examined: Islamabad: (330 .73' N, 730 .09' E), 10-vii-2011, 1♂ 3♀; Jhelum: (320 .91' N, 730 .70' E), 8-viii-2012, 3♀; Chakwal: (320 .93' N, 720 .85' E), 5-viii-2013, 1♂1♀. Rawalpindi: (330 .58' N, 730 .04' E), 13 viii 2013, 3♀.

Description: The length of the body ranges from 12-24 mm. Female species of megachile having Head, thorax and abdomen finely punctured; clypeus is sub triangular convex, Anteriorly transverse, with a broad medial shallow deep groove base.

The sides of the face are black in color clypeus is covered with white pubescence, the median segment of the abdomen with rich brownish yellow, Pollen brush are white, Wings are transparent brown. Male species of megachile are smaller with a larger head, the intermediate and posterior tarsi with golden yellow pubescence, wings also lighter in color.

**Table 1.** Latitude, Longitude and Altitude of Jhelum district.

District Jhelum	Localities	Latitude	Longitude	Altitude
Jhelum 1	Sarai Alamgir	32° 53' 60.00" N	73° 45' 0.00" E	231.42m
Jhelum 2	Mahikhurd	33° 1' 42.00" N	73° 36' 4.00" E	276.38m
Jhelum 3	Tahlian wala	32° 56' 7.52" N	73° 43' 23.32" E	231.32m
Jhelum 4	Chak Daulat	33° 8' 26.29" N	73° 38' 33.30" E	331.96m
Jhelum 5	Mangla Dam	32° 54' 46.26" N	73° 47' 23.46" E	238.28m
Jhelum 6	Mirpur Sarai Alamgir road	33° 0' 48.26" N	73° 21' 16.77" E	332.3m
Jhelum 7	Domeli City	32° 49' 37.14" N	73° 50' 45.55" E	304.51m
Jhelum 8	Kharian	32° 56' 19.86" N	73° 44' 28.20" E	230m
Jhelum 9	Chitti RSajgan	33° 0' 42.29" N	73° 21' 25.32" E	230m
Jhelum 10	Domeli Road	32° 49' 37.14" N	73° 50' 45.55" E	304.51m

*Distribution:* China, Burma, India and Pakistan.

*Remarks:* This species is reported for the first time from Pakistan (Jhelum, Chakwal, Rawalpindi and Islamabad).

*Subgenus Callomegachile Smith, 1853*

*Megachile (Callomegachile) conjuncta Smith, 1853*

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 17-vii-2011, 5♂, 11♀; Jhelum: (320 .91' N, 730 .70' E), 7-vi-2012, 7♂, 21♀; Chakwal: (320 .93' N, 720 .85' E), 15-v-2013, 2♂, 2♀. Rawalpindi: (330 .58' N, 730 .04' E), 13 viii 2013, 9♂, 17♀; Attock: (330 .76' N, 720 .36' E), 5-ix-2013, 1♂, 3♀.

*Description:* The length of the body ranges to 27 mm. Females having head, thorax and abdomen minutely punctured while clypeus sparsely punctured. The abdominal segment are divided into five segments

with apical margin narrowly depressed, the anal segment large the pygidium convex with a median longitudinally-impressed line. Clypeus apical surface of abdomen is covered with black pubescence. The depressed and margin of segments 2-5 with a transverse narrow band of same the sides of pro legs brown, thorax the median segments and the basal segments of abdomen clothed with white and yellow pubescence. Pollen brush white fulvous, wings are hyaline light fuscous towards its apex. Legs brown covered with shiny pale hairs. Male are similar with white pubescence on front and clypeus.

*Distribution:* Burma, Bengal, Sikhim, Ceylon and Pakistan.

*Remarks:* This species is first time reported from Pakistan, not reported before. Legs are brown in color covered with shiny hairs, tarsai are intermediate and posterior legs with ferruginous pubescence.

**Table 2.** Latitude, Longitude and Altitude of Rawalpindi district.

District Rawalpindi	Localities	Latitude	Longitude	Altitude
Rawalpindi 1	Paswal sharif	33° 31' 3.00" N	72° 52' 16.00" E	508m
Rawalpindi 2	Kashmir Road	33° 35' 7.92" N	73° 2' 41.91" E	504.62m
Rawalpindi 3	Rawat	33° 57' 35.00" N	73° 27' 35.00" E	1788m
Rawalpindi 4	Ayub National Park	33° 50' 14.76" N	73° 26' 43.30" E	570.96m
Rawalpindi 5	Dhamial Rawalpindi	33° 32' 60.00" N	73° 17' 00.00" E	492m
Rawalpindi 6	Adiala	33° 25' 58.00" N	73° 2' 59.00" E	508m
Rawalpindi 7	Bahria Town	33° 33' 50.00" N	73° 5' 30" E	508m
Rawalpindi 8	Nawaz Sharif Park	33° 53' 14.76" N	73° 31' 37.27" E	520.33m
Rawalpindi 9	Dhok Gangal	33° 48' 25.22" N	73° 21' 43.39" E	1765.91m
Rawalpindi 10	PAF Base Chaklala	33° 53' 14.77" N	72° 41' 20.49" E	1433.35m

*Subgenus Callomegachile Michener, 2007*

*Megachile (Callomegachile) disjuncta Fabricius, 1781*

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 4-vii-2011, 7♂, 7♀; Jhelum: (320 .91' N, 730 .70' E), 9-vii-2012, 6♂, 8♀; Chakwal: (320 .93' N, 720 .85' E), 16-ix-2013, 2♂, 1♀. Rawalpindi: (330 .58' N, 730 .04' E), 3 viii 2013, 8♂, 9♀; Attock: (330 .76' N, 720 .36' E), 11-vi-2013, 7♂, 2♀.

*Description:* Female length ranges 15- 30 mm while a male ranges from 11- 20 mm. The body is punctured with 1-5 abdominal segments. Clypeus is

subtriangular with a transverse apical margin. The face is black legs on the outside is black while inside of tibiae and tarsai fuscous. The median and basal segment of the abdomen covered with thick long white to rusty yellow pubescence. Wings are hyaline fuscous., for their apical three fourths with the brilliant purple effulgence. The pollen brush is jetblack.

*Distribution:* India, Berma, Tenasserim, France and Pakistan.

*Remarks:* This species is new to Pakistan. Females

use mud or leaves in nest construction. Mostly these bees nest in holes.

*Subgenus Callomegachile Smith, 1853*

*Megachile (Callomegachile) cephalotes Smith, 1853*

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 2-ix-2011, 3♂, 2♀; Jhelum: (320 .91' N, 730 .70' E), 19-viii-2012, 5♂, 1♀; Chakwal: (320 .93' N, 720 .85' E), 5-ix-2013, 3♂, 1♀. Rawalpindi: (330 .58' N, 730 .04' E), 3 viii 2013, 8♂, 9♀; Attock: (330 .76' N, 720 .36' E), 1-ix-2013, 5♂, 3♀.

*Description:* Female Length ranges from 10-14 mm and male length ranges to 20 mm. Head and thorax coarsely punctured. The base of the abdominal segments 1-5 smooth, the margins depressed, the

depression arched anteriorly in the middle and closely punctured. Head subquadrate broader than thorax with short and subtriangular clypeus. Mandibles long narrow and curved abdomen black with mettalic tint. A fringe along the apical margin of clypeus and the face, the sides of thorax and median segments, the legs have a square patch on each side at base of first abdominal segments. The pollen brush is white.

*Distribution:* India and Pakistan.

*Remarks:* This species is new to Potohar region, previously reported by [1], [2] This is very active in September and October. Mandibles long narrow and curved abdomen black with mettalic tint. A fringe along the apical margin of clypeus.

**Table 3.** Latitude Longitude and Altitude of Chakwal district.

District Chakwal	Localities	Latitude	Longitude	Altitude
Chakwal 1	BARI	30°20'N	73°00'E	575m
Chakwal 2	Pind Dadan Khan	32° 34' 60.00" N	73° 2' 60.00" E	199.31m
Chakwal 3	Kalar Kahar	32° 53' 19.99" N	72° 47' 57.69" E	542.10m
Chakwal 4	Kot Sarang	33° 0' 0.00" N	73° 0' 0.00" E	290.76m
Chakwal 5	Chakwal City	32° 55' 51.96" N	72° 51' 18.31" E	524.95m
Chakwal 6	Choa Saidan Shah	32° 43' 0.00" N	72° 58' 60.00" E	657.65m
Chakwal 7	Daultala	33°11'33N	73°8'29 E	548m
Chakwal 8	Talagang	33° 0' 0.00" N	73° 0' 0.00" E	290.76m
Chakwal 9	Dhudial	33° 0' 0.00" N	73° 0' 0.00" E	493.93m
Chakwal10	Khewra Mine	32° 38' 41.29" N	73° 0' 30.78" E	285.61m

*Subgenus Liothyrapis Friese, 1922*

*Coelioxys (Liothyrapis) decipiens Spinola, 1838*

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 1-v-2011, 5♀; Jhelum: (320 .91' N, 730 .70' E), 5-v-2012, 5♂, 5♀; Chakwal: (320 .93' N, 720 .85' E), 4-viii-2012, 4♂, 1♀. Rawalpindi: (330 .58' N, 730 .04' E), 17 viii 2013, 3♂, 7♀; Attock: (330 .76' N, 720 .36' E), 17-ix-2013, 7♂, 2♀.

*Description:* The length of *Coelioxys decipiens* ranges from 20-24 mm. Head and thorax are finely punctured. Abdomen with a base of second following segment slightly depressed, the dorsal plate of apical

segments slightly constricted towards apex and sharply carinate down the middle, the ventral plate broad spoon-shaped and rounded at apex which projects well beyond the apex of the dorsal plate. Black; the clypeus the face to the little above the base of antennae, the cheeks and occiput, the sides of the thorax, and apical margin of the abdominal segments 1-5 narrowly covered with snow white pubescence. Wings are hyaline.

*Distribution:* Egypt, India, Burma, Tennasserim and Pakistan.

*Remarks:* This species is new to Pakistan not

reported before, this species is parasitic to megachile nests. Nests are mostly made by this species in soil, in holes, in wood, in plant stems, in shells of dead snails. The distinguishing characters of this species is already given above.

*Taxonomic account of family halictidae*

Family Halictidae

Subfamily Halictinae

Tribe Halictini

Genus *Halictus* Smith, 1853

Subgenus *Lasioglossum* Michener, 1965

*Halictus (Lasioglossum) albescens* Smith, 1853

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 7-iv-2011, 11♂,1♀; Jhelum: (320 .91' N, 730 .70' E), 11-ix-2012, 11♂,10♀; Chakwal: (320 .93' N, 720 .85' E), 14-v-2012, 3♂, 1♀. Rawalpindi: (330 .58' N, 730 .04' E), 3- viii- 2013, 22 ♂, 16 ♀;Attock: (330 .76' N, 720 .36' E), 17-1-iv-2011, 8♂,13♀.

*Description:* The length of the body ranges upto15- 18 mm. This species has black abdomen with metallic steel blue in color but show white pubescence from the side of thorax, face and median segment, a broadly interrupted band at the base of Its abdominal segment, and entire regular transverse bands at the base of segments 2-5 covered with snow-white pubescence, the legs give the pale golden pubescence, tarsi with fulvous, wings hyaline and ferruginous, this specie is more elongate than other halictus species.

Head, thorax and abdomen are punctured, the thorax is more punctured compared to the head. Eyes are convergent below. 1<sup>st</sup> and second abdominal segments with a distinct transverse groove across the middle.

*Distribution:* India and Pakistan.

*Remarks:* This species is new to Pakistan this species is most frequently found from April to September.

**Table 4.** Latitude Longitude and altitude of District Attock.

District Attock	Localities	Latitude	Longitude	Altitude
Attock 1	Attock city	33° 55' 16.00" N	72° 32' 31.00" E	329.97m
Attock 2	Pindi gheb	33° 47' 10.24" N	33° 47' 10.24" N	382.58m
Attock 3	Jund	33° 25' 44.00" N	72° 1' 12.00" E	341.43m
Attock 4	Fateh Jang city	33° 53' 48.14" N	72° 14' 6.57" E	266.18m
Attock 5	Stadium Road Fateh Jhang	33° 34' 2.20" N	72° 38' 26.60" E	513.15m
Attock6	Shah Pur Dam	33° 34' 2.21" N	72° 38' 26.61" E	513.21m
Attock 7	Kund	33° 47' 37.57" N	72° 21' 34.64" E	385.66m
Attock 8	Ghor Ghushthi	33° 46' 7.44" N	72° 21' 43.73" E	266.18m
Attock 9	Mithial	33°31'29N	72°14'30.00"E	381m
Attock10	Kamra Cant	33° 25' 44.00" N	72° 1' 12.00" E	352.59m

*Subgenus Ctenonomia* Cameron, 1903

*Halictus (Ctenonomia) splendidulus* Vachal, 1894

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 29-x-2012, 8♂,12♀; Jhelum: (320 .91' N, 730 .70' E), 11-ix-2012, 11♂,10♀; Chakwal: (320 .93' N, 720 .85' E), 14-v-2012, 3♂, 1♀. Rawalpindi: (330 .58' N, 730 .04' E), 12- vii- 2013, 12 ♂, 13 ♀; Attock: (330 .76' N, 720 .36' E), 17-2-v-2012, 4♂, 12♀.

*Description:* The length of this species is 10 mm.

Head in closely punctured, opaque and slightly pubescent; thorax and abdomen smooth, brilliantly polished and shining; the mesonotum with fine regular, not very close punctures; postscutellum covered with short pubescence, median segment narrowed, the apex transversely truncate and margined above, the space at the base outwardly radiating fine striae Abdomen with base of second segment slightly constricted. Dark castaneous brown, nearly black, the legs with glistening with pale golden pubescence, Wings hyaline and iridescent, nervures



and tegulae pale testaceous.

*Distribution:* Burma and Pakistan.

*Remarks:* This species is new to Pakistan. This species belongs to the clepto parasitic group. This species has very prominent and strong veins. This species was common in the Potohar region.

*Subgenus Ctenonomia Cameron, 1903*

*Lasioglossum (Ctenonomia) albescens Smith, 1853*

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 7-vii-2013, 2♂, 7♀; Jhelum: (320 .91' N, 730 .70' E), 29-vi-2013, 11♂, 6♀; Rawalpindi: (330 .58' N, 730 .04' E), 12-vii-2013, 5 ♀; Attock: (330 .76' N, 720 .36' E), 3-v-2012, 7♂, 7♀.

Pakistan: Punjab: Potohar Region: Dist: Attock: Attock city, 03-v-2011, 2♂, 2♀, coll. Sumera, det. Sumera (housed at NIM); Jund, 03-v-2011, 1♂, 1♀, coll. Sumera, det. Sumera (housed at NIM); Fateh Jhang city, 04-vi-2011, 1♂, 1♀, coll. Sumera, det. Sumera (housed at NIM); Shahpur Dam, 05-vii-2012,

1♂, 1♀, coll. Sumera, det. Sumera (housed at NIM); Kund village, 05-v-2012, 1♂, coll. Sumera, det. Sumera (housed at NIM); Ghorghushti, 06-v-2012, 1♂, coll. Sumera, det. Sumera (housed at NIM); Mithial, 06-vi-2013, 1♀, coll. Sumera, det. Sumera (housed at NIM); Pindi Ghabe, 07-vii-2013, 1♂, coll. Sumera, det. Sumera (housed at NIM); Kamra Cantt, 27-vii-2013, 1♀, coll. Sumera, det. Sumera (housed at NIM).

*Description:* The length of the body ranges from 15-16 mm. Head and Thorax largely dull greenish, Head is moderately broad in frontal view. Second submarginal cells usually two-third as long as first.

Apex on marginal cells pointed on costa or separated from costa by only one-two veins width, Second transverse cubital and second recurrent veins weaker than other veins, basal vein strongly arcuate near the base. Axilla rounded lateroposteriorly with no projection, usually continuing contour of scutellar margin. The body is not coarsely sculptured.

**Table 5.** Latitude longitude Altitude of Islamabad.

District Islamabad	Localities	Latitude	Longitude	Altitude
Islamabad 1	Margalla Town	33° 40' 9.58" N	73° 6' 22.29" E	507.61m
Islamabad 2	Taramri	33° 38' 14.40" N	73° 9' 21.11" E	497.33m
Islamabad 3	Loi Bhair	33° 43' 45.80" N	73° 5' 35.33" E	571.75m
Islamabad 4	Golah Shareef	33° 41' 38.40" N	72° 58' 39.00" E	567.52m
Islamabad 5	Margalla Hills	33° 44' 29.35" N	72° 55' 34.42" E	764.27m
Islamabad 6	Shehzad Town Farm houses	33° 40' 33.88" N 33° 44' 52.37" N	73° 8' 32.49" E	516.59m
Islamabad 7	QAU	33° 42' 46.96" N	73° 9' 4.65" E	595.96m
Islamabad 8	Bani Gala	33° 44' 44.07" N	73° 9' 41.45" E	548.17m
Islamabad 9	Shahdra	33° 42' 6.20" N	73° 8' 22.77" E	605.05m
Islamabad 10	F-9 Park	33° 40' 9.58" N	73° 1' 22.14" E	549.80m

*Distribution:* America and Pakistan.

*Remarks:* This species is first time reported from the Potohar region. Previously this species was reported by [2]. *Lasioglossum albescens* has darker stigma and weakened veins as compared to genus *Halictus* which have lighter stigma and strong veins.

Family Halictidae

Subfamily Nomiinae

Tribe Halictini

Genus *Nomia* Latreille, 1804

Subgenus *Hoplonomia* Ashmead, 1904

*Nomia (Hoplonomia) westwoodi* Gribodo, 1894

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 29-viii-2013, 1♂, 6♀.

*Description:* The length of the body ranges from 7-14 mm. *Nomia westwoodi* gives the pale color beneath the abdomen and posterior part of legs. The posterior femora and tibia are not swollen and thick and the

inner angle of the apex of the later is produced and rounded not forming a flat sharply truncate process. Head transverse, clypeus not produced, Antennae filiform geniculated mandibles grooved above, the apex with two teeth, the inner very much shorter than the outer; labial palpi four jointed, maxillary palpi six jointed. Legs are stout femur with focus of long hairs and tibia densely pubescent in the male the posterior femora and tibia are more or less thickened. Wings are short and broad the radial cells in forewings are rounded at apex with three cubital cells third one longest, the second generally square, the third cubital cells strongly constricted towards marginal cells.

*Distribution:* Bengal and Pakistan.

*Remarks:* This species is new record to Potohar region. The type locality of this species is Indian region but it was reported by [3] as new species and then reported by [5], [2] and during present study it is reported from Potohar region of district Islamabad.

*Subgenus Nomia Latreille, 1804*

*Nomia (Nomia)curvipes Fabricius, 1793*

*Material examined:* Rawalpindi: (330 .58' N, 730 .04' E), 1- viii- 2013, 5♀.

*Description:* The length of *Nomia curvipes* ranges from 11-12; exp. 22 mm. Head and abdomen lightly but closely punctured; clypeus slightly convex, transverse anteriorly; median segment somewhat coarsely punctured, rounded at the sides. The antennae are black and the legs are testaceous brown, the scape of the former are pale the front and legs covered with pale glittering pubescence. The apical marginal of the abdominal segment has 1-4 bright greenish-yellow. Wings are fulvo –hyaline.

*Distribution:* Burma, Bengal and Pakistan.

*Remarks:* Previously this species was reported by [3], [9], [2][4] from Potohar region. Presently this species was collected from Attock, Rawalpindi, Jhelum, Chakwal and Islamabad.

*Taxonomic account of family andrenidae*

Family Andrenidae

Subfamily Andreninae

Tribe Andrenini

Genus *Andrena* Fabricius, 1775

Subgenus *Zonandrena* Hedicke, 1933

*Andrena Zonandrena flavipes* Panzer, 1799

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 12-vi-2012, 5♂, 2♀; Rawalpindi: (330 .58' N, 730 .04' E), 10- iv- 2013, 1♂, 2 ♀.

*Description:* The length of the body ranges 19-22 mm. Head and abdomen lightly but closely punctured; clypeus slightly convex, transverse anteriorly; median segment somewhat coarsely punctured, rounded at the sides.

The antennae are black and the legs are testaceous brown, the scape of the former are pale the front and legs covered with pale glittering pubescence. The apical marginal of the abdominal segment has 1-4 bright greenish-yellow. Wings are fulvo hyaline.

*Distribution:* Pakondon, Central, southern Europe, Asia, India, Africa and Pakistan.

*Remarks:* This species is first time reported from Potohar region. Previously these species were reported by [6, 7] from Faisalabad. These are yellow legged mining bees, these are also called spring flies solitary bees.

*Taxonomic account of family colletidae*

Family Colletidae

Subfamily Hylaeinae

Tribe Paracolletini

Genus *Hylaeus* Fabricius, 1793

Subgenus *Hylaeus* Fabricius, 1793

*Hylaeus (Hylaeus) scutellaris* Morawitz, 1873

*Material examined:* Islamabad: (330 .73' N, 730 .09' E), 1-viii-2012, 1♂, 1♀; . Rawalpindi: (330 .58' N, 730 .04' E), 4-viii- 2012, 1♂, 2♀.

*Description:* The length of the body ranges 8-9 mm. This is worldwide genus of small bees with limited pale markings on head and thorax the glossa is short and weakly bilobed, and lack seriate hairs but has fine hairs on the posterior surface. The apex of hind tibia



lacks spines. Supraclypeal area between antennae abruptly and strongly elevated above antennal bases both proboscoidal fossa and prementum no longer than clypeus; scope absent; face usually with yellow at least on paraocular areas. Hylaeus are predominantly black, short-tongued, hairless bees variously marked with yellow on the legs and face; males of most species have the face completely yellow while the females have two yellow spots.

The generic term “yellow-faced bees” has been applied to them. There is no specialized pollen-collecting apparatus.

*Distribution:* America and Pakistan.

*Remarks:* This species is first time reported from Pakistan. This species was reported by [2]. Only one species *Hylaeus scutellaris* Morawitz is reported but its locality is not mentioned.

Family Colletidae

Subfamily Colletinae

Tribe Paracolletini

Genus *Colletes* Latreille, 1802

*Colletes inaequalis* Say, 1837

Material examined: Islamabad: (330 .73' N, 730 .09' E), 27-viii-2013, 2♀.

*Description:* The length of the body ranges from 9-9.5 mm. They much resemble *certain*, *Andrena*, but are distinguished primarily by the short, bilobed tongue, absence of facial foveae, a single subantennal suture to each antennal socket and differences in wing venation, Posterior portion of second recurrent vein distinctly arcuate distal eyes usually strongly convergent.

Jugal lobe of hind wings present; corbicula on hind tibia absent arolia variable but some time present too.

*Distribution:* Nova Scotia, Minnesota, South Georgia and Pakistan.

*Remarks:* This species is much resemble with *Ceretina* and *andrena*.

## Conclusion

This is first faunistic study of non- apis bees from Potohar region of Pakistan. This study shows the following new records to Pakistan, *Megachile bicollar*, *Megachile cephalotes*, *Megachile conjuncta*, *Megachile disjuncta*, *Coelioxys decipiens*, *Halictus splendidulus*, *Halictus albescens*, *Lassioglossum albescens*, *Colletes inaequalis*, *Hylaeus scutellaris*, *Andrena flavipes* and *Nomia westwoodi*. These species play great role in pollination. The results of present study could serve as baseline study for Potohar region.

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