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Non-Apis bees of family Apidae (Hymenoptera) from Potohar region of Pakistan

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Abstract

To explore non-apis bees fauna of Potohar region, consecutive surveys for three years (2011 to 2013) were conducted in various localities of five Potohar districts. Out of 1578 collected non-apis bees, 15 species were found. Ten (10) species under two subfamilies Apinae and Xylocopinae are new records to the fauna of Potohar, Pakistan, namely *Anthophora (Zonamegilla) niveocincta*, *Anthophora (Melea) pulcherima*, *Anthophora (Glossamegilla) insularis*, *Anthophora (Zonamegilla) zonata*, *Bombus (Megabombus) trifasciatus* and *Ancylloscelis* sp. represented subfamily Apinae, while *Ceratina (Pithitis) sexmaculata*, *Ceratina (Pithitis) binghami*, *Xylocopa (Biluna) irridipenis* and *Xylocopa (Zonohirsuta) Collaris* represented subfamily Xylocopinae. However, two species of genus *Thyreus* namely *himalayensis* and *ramosus* under subfamily Apinae have been reported earlier from Potohar. Out of above 10 reported species *Anthophora (Glossamegilla) insularis* while *Ancylloscelis* sp. and its genus *Ancylini* are new to Pakistan.

Keywords: Apidae, Non-Apis, Bees, Potohar, Pakistan

Introduction

Bees are tangled into most aspects of human civilization, tradition, agriculture, economy and general ecology [17]. They are main service provider along with greater pollinator diversity [33]. They belong to the major groups of aculeate hymenopterans under seven major families of superfamily Apoidea, namely Andrenidae, Apidae, Colletidae, Halictidae, Megachilidae, Melittidae and Stenotritidae [37]. Except, bees of genus *Apis*, all bees are known as non-apis bees, wild bees or pollen bees.

Family Apidae is the largest family of bees comprising of 5700 species [17]. With latest classification, family Apidae comprises all the genera previously located in families Anthophoridae and Ctenoplectridae within its three subfamilies Apinae, Nomadinae and Xylocopinae [38]. These subfamilies included some of the most common species of bees such as honey bees, stingless bees, bumble bees, orchid bees under subfamily Apinae. However, carpenter bees and cuckoo bees belong to subfamilies Xylocopinae and Nomadinae [18]. The most common species of family Apidae are social yet, majority are solitary, including cleptoparasitic species [39].

Bee fauna of Pakistan is basically Palearctic but also well-known from Oriental biogeography however, to some extent species of Afrotropical biogeography also occur. Yet, they have been under explored in Pakistan. The major work conducted in Pakistan includes [25, 2, 21, 33, 40, 19, 42, 39, 45, 27, 35, 29, 4, 44]. Potohar region of Pakistan is situated at 32.50 to 34.00 ° N and about 72.00 to 74.00 ° E in Rawalpindi division and Federal Capital area of Islamabad, it comprises of five districts i.e Attock, Rawalpindi, Islamabad, Chakwal and Jhelum. Here common nectar flora is present under families Acanthaceae, Asteraceae, Bignoniaceae, Cactaceae, Fabaceae, Lamiaceae, Rhamnaceae, Sapindaceae, Verbenaceae, Brassicaceae, Resedaceae and Rutaceae [1, 15, 24, 3, 13]. Potohar region thus is an attractive and preferred land for non- apis bees activities. In this view present study was designed to explore non-apis bee fauna of family Apidae to come up with important records for scientific community.

Materials and Methods

A total of 36 surveys were conducted during three consecutive years from January, 2011 to December, 2013, for the collection of non-apis bees from 35 localities of five districts of Potohar namely Attock, Chakwal, Islamabad, Jhelum and Rawalpindi. Bees were collected using pan traps and net sweeping.

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Pan traps: Bowls of white, florescent blue and florescent yellow were used as bee traps [20]. The bowl with 6 oz. size or capacity of 177.4 ml. were placed in transect in vegetable fields. Twenty four (24) pans of ultra violet blue, ultra violet yellow and white (8 each) were placed at 5 meters apart on the ground. Bowls were placed in line with alternate colors in open and visible places. Each pan trap was filled with detergent to minimize surface tension of the water. At the end liquid in pan traps was passed through a net/strainer to extract collected bees. Collected specimens were transferred to sealable plastic bags. Traps were fixed during morning and removed in after noon.

Net Sweeping: Bees were also collected through net sweeping in crops, weeds, flowering plants and vicinities of various localities of five districts. Sweepings were done in the morning and in afternoon. Speed of sweeps and direction kept uniform in each case. After collection bees were killed in a bottle having Potassium Cyanide. After setting identification of bees were made upto lowest possible taxa using identification keys such as [9, 10, 11, 14, 22, 31, 36, 38]. In addition help was also taken from already identified collection of bees housed at National Insect Museum, National Agricultural Research Center (NARC) Islamabad and recent published faunistic work on bees of Pakistan [6, 30].

All the identification work was done under the stereoscope (Labomed CZM4-4X). Furthermore identified bee species were photographed with the help of Labomet Camera (CE 920, iCAM 3000) and Canon 5IS digital camera. Identified collection have been deposited at National Insect Museum (NARC).

Results and Discussion

Out of 1578 collected non-apis bees of family Apidae 15 species were identified under subfamilies Apinae and Xylocopinae. Species identified under subfamily Apinae belong to three tribes Anthophorini, Bombini and Ancylini. In tribe Anthophorini six (06) species of genus *Anthophora* namely *Anthophora (Zonamegilla) cingulata*, *Anthophora (Zonamegilla) zonata*, *Anthophora (Zonamegilla) confusa*, *Anthophora (Zonamegilla) niveocincta*, *Anthophora (Melea) pulcherima* and *Anthophora (Glossamegilla) insularis* were identified. *Bombus trifaciatus* represented tribe Bombini under subgenus *Megabomus*, while one unidentified species represented tribe Ancylini under genus *Ancyloscelis*. However, five species *Xylocopa (Biluna) irridipennis*, *Xylocopa (Ctenoxylocopa) fenestrata*, *Xylocopa (Koptortosoma) aestuans*, *Xylocopa (Koptortosoma) pubescens* and *Xylocopa (Zonohirsuta) collaris* were identified under genus *Xylocopa* of tribe Xylocopini while in tribe Ceratinini of subfamily Xylocopinae two species of *Ceratina (Pithitis) sexmaculata* and *Ceratina (Pithitis) binghami* were identified under subgenus *Pithitis* of genus *Ceratina*. Detail is given in table 1.

Family Apidae

Subfamily Apinae Latreille, 1802

Tribe Anthophorini

Genus *Amegilla* (Friese, 1897)

Subgenus *Zonamegilla* Popov, 1950

1. *Amegilla (Zonamegilla) cingulata* (Fabricius, 1775)

Material Examined: Attock: (33° 76' N, 72° 36' E), 13-v-2013, 16♂ 36♀; Islamabad: (33° 73' N, 73° 09' E), 19-viii-2012, 5♂ 10♀; Rawalpindi: (33° 58' N, 73° 04' E), 10-v-

2011, 8♂ 7♀; Jhelum: (32° 91' N, 73° 70' E), 29-viii-2012, 2♂ 13♀; Chakwal: (32° 93' N, 72° 85' E), 21-viii-2013, 4♂ 20♀.

Description: Length of body ranges from 9-13 mm. Head and thorax gives bluish grey pubescence with mixture of black hairs. Median segment covered with white pubescent, legs with bluish white pubescence above and black beneath. Hair bands of second and third tergites broad, the anterior half greenish; hair of fourth and fifth tergites greenish, with a beautiful golden luster. Hair of thorax above bright orange-fulvous, with black intermixed; abdominal bands bright blue cingulata Fabricius. Smaller; abdominal bands greenish or ochreous or pallid (plate.1)

Remarks: Earlier reported from Potohar district of Islamabad, Chakwal and Jhelum [13].

Distribution: Myanmar Sri Lanka [9, 10, 47, 23], Philippine [7], Africa, Mediterranean basin, Canary Islands, southern Europe to Japan, Korea and northeast China, south to Yemen, Indonesia, New Guinea, and Australia, Solomon Islands [36, 38] and Pakistan [13].

2. *Amegilla (Zonamegilla) zonata* (Linnaeus, 1758)

Material Examined: Attock: (33° 76' N, 72° 36' E), 17-vii-2013, 7♂ 10♀; Jhelum: (32° 91' N, 73° 70' E), 25-viii-2012, 6♂ 8♀; Chakwal: (32° 93' N, 72° 85' E), 5-vii-2012, 11♂ 21♀.

Description: Length of body ranges from 9-13 mm. Long tongue bees. Wings are transparent with brownish yellow. Body is thinly pubescent clypeus has a small triangular spot scape of antennae are pale yellow white and this is the main character which distinguish *zonata* from *cingulata* other wise *Anthophora cingulata* and *zonata* are quite similar to each other. Thorax show rough dull rufofulvous pubescence mixed with black hairs legs with grey tinged with blackish pubescence cheeks with white pubescence. The bands on the abdomen not shining metallic blue but dull and grayish (plate.1).

Remarks: New record for Potohar region. Earlier reported from Sindh [40, 19].

Distribution: India, Myanmar, Sri Lanka, Malayan peninsula to Australia [11, 23], Philippine [7] and Pakistan [30, 40, 19].

3. *Amegilla (Zonamegilla) niveocincta* Smith 1854

Material Examined: Attock: (33° 76' N, 72° 36' E), 9-ix-2012, 1♂ 3♀; Islamabad: (33° 73' N, 73° 09' E), 11-v-2013, 1♂ 4♀; Rawalpindi: (33° 58' N, 73° 04' E), 15-x-2013, 2♂ 2♀; Chakwal: (32° 93' N, 72° 85' E), 23-v-2012, 8♂ 5♀; Jhelum: (32° 91' N, 73° 70' E), 12-iv-2011, 1♂ 2♀.

Description: Length of body ranges from 10-10.9 mm, having white pubescence on face and cheeks. Upper surface of thorax is yellowish brown. Meta thorax shows white pubescence abdomen with bands of white pubescens, the apex of band is mixture of black and red. Abdomen beneath is rusty brown. Clypeus having triangular spot shows yellow color on its anterior margin it is black (plate.1).

Remarks: New record for Potohar. Earlier reported from Karachi [16, 6, 30] and Sakardu [26].

Distribution: Bangla Desh, India and Pakistan ^[16] and Sri Lanka ^[32].

4. *Amegilla (Zonamegilla) confusa* Smith 1854

Material Examined: Attock: (33^o.76' N, 72^o.36' E), 13-x-2011, 10♂ 6♀; Islamabad: (33^o.73' N, 73^o.09' E), 8-iii-2013, 3♂ 6♀; Rawalpindi: (33^o.58' N, 73^o.04' E), 6-ix-2013, 2♂ 11♀; Jhelum: (32^o.91' N, 73^o.70' E), 9-vii-2011, 1♂ 6♀; Chakwal: (32^o.93' N, 72^o.85' E), 28-v-2012, 4♂ 7♀.

Description: Length of body ranges from 9-11 mm. Head and thorax covered with thick short hairs. Pubescence on head and thorax blackish grey and some time brownish yellow. Legs give black appearance of short hairs but tibiae show snowy white appearance from above. Wings transparent with reddish brown appearance. Abdomen punctured. Mandibles and labrum black, spots on lateral angle are yellow (plate.1).

Remarks: Recently reported from Potohar districts Rawalpindi, Chakwal and Attock ^[13]. Earlier reported from Abbottabad, Murree and Tandojam ^[30].

Distribution: Myanmar, India, Ladak ^[9, 23, 32], South-east Asia, Africa ^[38] and Pakistan ^[30, 13].

Subgenus *Glossamegilla* Smith, 1879

5. *Amegilla (Glossamegilla) insularis* Smith, 1857

Material Examined: Chakwal: (32^o.93'N, 72^o.85' E), 19-ix-2013, 2♂ 10♀.

Description: Length of body ranges from 8-10 mm. Scape on antennae pale yellow. The clypeus having broader triangular spot and a T shape mark is also present on it with black labrum. Pubescence on head and thorax rusty red brown and mixture of grey black color while on cheeks and thorax are white in color. Wings clear and yellow becomes brown towards apical margin. Body is overall densely pubescent (plate.1).

Remarks: New record for Pakistan.

Distribution: Sri Lanka, Burma, Brunei (Borneo), Malaysian (Sarawak, Johore, Kuala Lumpur), Indonesia (Sumatra); Singapore ^[9, 34] and Pakistan.

Tribe Melectini

Genus *Thyreus* Panzer, 1806

6. *Thyreus himalayensis* (Radoszkowski, 1893)

Remarks: During study this species was not found however, recently this species is reported from Rawalpindi district of Potohar region ^[13].

Distribution: India, Sri Lanka, Myanmar, South Africa, China, Malay Archipelago ^[9, 10], Philippines ^[7], south east Asia ^[28] and Pakistan ^[13].

7. *Thyreus ramosus* (Lepeletier, 1841)

Remarks: During this study this species was not found however, recently this species was reported from Rawalpindi, Jhelum and Chakwal districts of Potohar region ^[13]. However, also reported from various localities of Pakistan except Potohar region ^[6, 30].

Distribution: India, Sri Lanka, Myanmar ^[9], Europe, Egypt, Arabia, South Africa ^[38] and Pakistan ^[6, 30].

Genus *Anthophora* (Latreille, 1803)

Subgenus *Melea* Sandhouse.

8. *Anthophora (Melea) pulcherrima* Bingham, 1897

Material Examined: Attock: (33^o.76' N, 72^o.36' E), 22-v-2013, 2♂ 3♀; Islamabad: (33^o.73' N, 73^o.09' E), 8-iv-2012, 4♂ 4♀; Rawalpindi: (33^o.58' N, 73^o.04' E), 12-v-2012, 2♂ 4♀; Jhelum: (32^o.91' N, 73^o.70' E), 14-iv-2013, 3♂ 3♀; Chakwal: (32^o.93' N, 72^o.85' E), 19-ix-2013, 7♂ 6♀.

Description: Body length ranges from 9mm-12mm. and punctured. Abdomen pale golden yellow and also with flame red pubescence. The pubescence on abdomen and thorax long as compare to other body, legs gives yellowish brown appearance. Abdomen mostly flatter than other species. Wings transparent (plate.1).

Remarks: New record for Potohar.

Distribution: India and Pakistan ^[9].

Tribe Bombini

Genus *Bombus* Smith, 1852

Subgenus *Megabombus* Dalla Torre, 1880

9. *Bombus (Megabombus) trifasciatus* Smith, 1852

Material Examined: Attock: (33^o.76' N, 72^o.36' E), 2-iii-2012, 2♂ 4♀; Islamabad: (33^o.73' N, 73^o.09' E), 1-iv-2013, 21♂ 23♀; Rawalpindi: (33^o.58' N, 73^o.04' E), 21-vi-2011, 5♂ 10♀; Jhelum: (32^o.91' N, 73^o.70' E), 22-v-2013, 4♂ 7♀.

Description: Length ranges between 50-53 mm. Head and face not particularly elongate, cheeks covered with dense short pile on the front tufts of long pubescence, thorax covered with broad transverse band. Legs and third abdominal segment covered with black pubescence, Thorax anteriorly and posteriorly and median segments with pale, and basal two abdominal segments with brighter yellow pubescence. The fine dense pile on the face and cheeks pale ochraceous. Apical three abdominal segment with rich fulvous red pubescence the apex of tibiae and tarsai with furruginous pile. Wings fusco hyaline (plate.1).

Remarks: New record for Potohar region. Previously reported from Murree, Ghora Gali and Pir Panjal ^[49, 6, 43, 30]. Also reported from Gilgit-Baltistan ^[45]. While recently reported from Kaghan, Naran and Lalazar ^[44].

Distribution: Himalaya, Malaysia, Thailand, Vietnam, Taiwan, Pakistan, Nepal, Tibet ^[48] and China ^[5].

Tribe Ancylini

Genus *Ancyloscelis*

10. *Ancyloscelis* sp.

Material Examined: Islamabad: (33^o.73' N, 73^o.09' E), 1-iii-2011, 1♂.

Description: Genus *Ancyloscelis* is quite different from the tribe Emphorini and is placed in a subtribe Ancyloscelina, separate from sub tribe Emphorini. Para ocular carina present along most of inner eye margin; Vein cu-v of hind wing less than half as long as second abscissa of vein M+Cu second abscissa of vein M+Cu of hind wing at lest three fourths as long as vein m; maxillary palpus with sparse short hairs; T7 of male rounded apically; hind leg of male modified, femur

dilated, at least twice as thick as middle femur S7 of male with broad disc and two or four small apical lobes, shorter than disc (plate.1).

Remarks: New genus with unidentified species for Pakistan.

World Distribution: The Western Hemisphere [38] and Pakistan.

Family Apidae

Sub family Xylocopinae

Tribe Xylocopini

Genus Xylocopa Latreille, 1802

Subgenus Biluna Maa, 1938

11. Xylocopa (Biluna) irridipennis Lepeletier, 1841

Material Examined: Attock: (33^o.76' N, 72^o.36' E), 20-vii-2011, 57♂ 63♀; Islamabad: (33^o.73' N, 73^o.09' E), 1-v-2011, 51♂ 39♀; Rawalpindi: (33^o.58' N, 73^o.04' E), 17-ix-2013, 46♂ 3♀; Chakwal: (32^o.93' N, 72^o.85' E), 19-v-2012, 40♂ 17♀.

Description: Length of body ranges from 10-13 mm. Body has punctures on head, thorax and abdomen. Males are of black color, from front with longer and dense pubescens on the sides of abdomen. Wings deep metallic blue at base turning to greenish and deep rosy coppery red at the end of coastal area of fore wing. Pronotum above tubercles light brown (plate.1)

Remarks: This is the first record of this species from Potohar region. During present study this species was collected from all districts of Potohar region. Earlier this species was reported from Murree, Ghora gali, Peshawar and Karachi [9, 25, 43, 30].

Distribution: Myanmar, China, India, Indonesia and Pakistan [9, 26, 31].

Subgenus Ctenoxylocopa (Michener, 1942)

12. Xylocopa (Ctenoxylocopa) fenestrata Fabricius, 1798

Material Examined: Attock: (33^o.76' N, 72^o.36' E), 7-ix-2011, 59♂ 25♀; Islamabad: (33^o.73' N, 73^o.09' E), 1-viii-2011, 41♂ 40♀; Rawalpindi: (33^o.58' N, 73^o.04' E), 1-iii-2012, 44♂ 20♀; Jhelum: (32^o.91' N, 73^o.70' E), 11-vi-2013, 30♂ 45♀; Chakwal: (32^o.93' N, 72^o.85' E), 19-ix-2013, 17♂ 26♀.

Description: Length of body ranges from 18 to 22 mm. Head, thorax and abdomen punctured having black shiny pubescence. Anal abdominal segments rusty yellow brown. Sparse except on the intermediate and posterior legs, where it is long and sooty black, on third abdominal segments a tubular chamber forming exterior part of spiracles gives yellow pubescens. Wings give the appearance of mixture of redish black with purple and coppery effulgence (plate.1).

Remarks: Earlier this species was reported from Karachi, Makran, Naushki, Pasni, Peshawar, Rawalpindi, Gujrat, Sahiwal, Sargodha and Tandojam [25, 2, 8, 40, 19, 42, 46, 30, 12] reported this species form Potohar region. During present study this species was collected from all districts of Potohar.

Distribution: Myanmar, India, Iran, Nepal, Pakistan and Sri Lanka [9, 25, 30].

Subgenus Koptortosom (Gribodo, 1894)

13. Xylocopa (Koptortosoma) aestuans Gribodo, 1884.

Material Examined: Chakwal: (32^o.93' N, 72^o.85' E), 19-ix-2013, 17♂ 55♀.

Description: Length of body ranges from 19-22 mm. head, abdomen and thorax punctured and densely pubescent. Clypeus flat. Head, face and abdomen black thorax above bright yellow and black beneath, wings with purple effulgence. Females of *Xylocopa aestuans* black covered all over with dense olive yellow color darker or somewhat paler. Wings are hyaline (plate.1).

Remarks: Earlier reported from Choa, Dadu, Faisalabad, Karachi, Karore range, Khewra, Lahore, Makran coast, Pasni, Peshawar, Rawalpindi, Shahapur, Tandojam, Tank and Wazirabad [41, 25, 8, 46, 19, 42, 6].

Distribution: Africa, India, Malaysia, Nepal, Sri Lanka, Indonesia and Pakistan [9, 25, 30].

14. Xylocopa (Koptortosoma) pubescens Spinola, 1838

Remarks: Previously reported [9] while this species is recently reported from Potohar region [12].

Distribution: Africa, Australia, Dalmatia, Egypt, India, Indonesia, Israel, Japan, New Guinea, Philippines, Pakistan and Taiwan [39].

Subgenus Zonohirsuta Maa, 1938

15. Xylocopa (zonohirsuta) collaris Lepeletier, 1841.

Material Examined: Attock: (33^o.76' N, 72^o.36' E), 11-viii-2011, 8♂ 21♀; Islamabad: (33^o.73' N, 73^o.09' E), 25-ix-2012, 18♂ 31♀; Rawalpindi: (33^o.58' N, 73^o.04' E), 10-viii-2012, 16♂ 39♀; Jhelum: (32^o.91' N, 73^o.70' E), 11-x-2013, 11♂ 40♀; Chakwal: (32^o.93' N, 72^o.85' E), 19-ix-2013, 20♂ 23♀.

Description: Length of body ranges from 18-20 mm. Head, abdomen and thorax punctured. Antennae, ocellus and thorax black. Pronotum and mesonotum with dull white pubescence, but in case of male, clypeus, ocellus and antennae pale yellow. Wings fuscous with purple and slight tinge of brown (plate.1).

Remarks: This is the first record of this species from Potohar region. Previously this species was reported from Karachi, Naushki, Peshawar, Skardu and Tandojam [40, 19, 8]. Also reported from Gilgit Baltistan [35, 29].

Distribution: Myanmar, Malaysia, Sri Lanka [9] and Pakistan [6, 25, 30].

16. Xylocopa (Koptortosoma) pubescens Spinola, 1838

Remarks: Recently reported from Potohar districts Chakwal, Rawalpindi, Jhelum; and Attock [12]. However, also reported from Choa, Dadu, Faisalabad, Karachi, Karore Range Khewra, Lahore, Mekran coast, Pasni, Peshawar, Rawalpindi, Sakrand, Shahpurm Tando Jam, Tank, Wazirabad [41, 26, 8, 46].

Distribution: Earlier reported from India [9], Sub-Saharan Africa including Madagascar as well as the Mediterranean countries of Africa (Morocco to Egypt), Dalmatia, southwestern Asia, and southern Asia east to the Philippines,

Taiwan, and Japan, and south through Indonesia, New Guinea, and the Bismarck Archipelago to southernmost Australia [39] and Pakistan [25].

Tribe Ceratinini

Genus *Ceratina* Fabricius, 1787

Subgenus *Pithitis* Klug, 1966

17. *Ceratina (Pithitis) sexmaculata* Fabricius, 1787

Material Examined: Islamabad: (33^o.73' N, 73^o.09' E), 15-vi-2012, 5♂ 8♀.

Description: The length of body ranges from 10-12mm, colour bright green with yellow clypeus, legs and antennae brown and last variegated with yellow abdominal segments 4-6 with square velvety black spots on each side wings hyaline with faint yellow tint nervures and tegulae testaceous head thorax and abdomen closely punctured with granular appearance clypeus impunctate faintly vertically carinate median segment very short not more than 2mm in length, vertically truncate posteriorly the edge of truncation above margined (plate.1).

Remarks: This is the first record of this species from Potohar region.

Distribution: Myanmar, Hong Kong, Pakistan and

Tenasserim (mountain range among, Thailand and Malaysia. [9, 6, 30].

Subgenus *Pithitis* (Klug, 1966)

18. *Ceratina (Pithitis) binghami* Cockerell, 1908

Material Examined: Attock: (33^o.76' N, 72^o.36' E), 17-vi-2011, 9♂ 21♀; Islamabad: (33^o.73' N, 73^o.09' E), 5-vii-2012, 19♂ 15♀; Rawalpindi: (33^o.58' N, 73^o.04' E), 10-viii-2013, 1♂ 2♀; Jhelum: (32^o.91' N, 73^o.70' E), 21-ix-2013, 30♂ 10♀; Chakwal: (32^o.93' N, 72^o.85' E), 19-ix-2013, 2♂ 2♀.

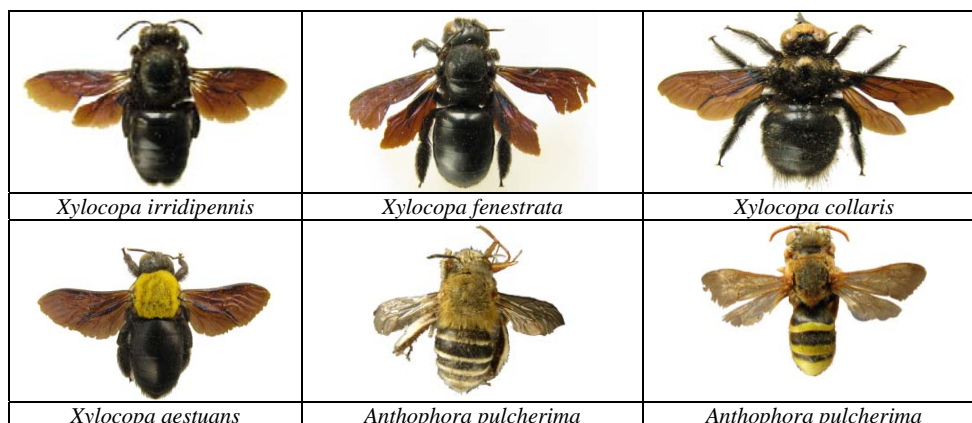
Description: Length ranges between 15-18 mm. Head, thorax, abdomen finely and closely punctured; clypeus elongate triangular, 1-5 marked with short obscure impressed line on each side of abdomen, abdomen slightly narrowed at base. Color of abdomen is shiny green; mandibles, labrum, antennae, legs, and impressed lines on thorax and abdomen black, legs sometimes with greenish or bluish tint some time covered with white pubescence. Thorax ovate, the radial cells on forewings are rounded at apex and wings hyaline (plate.1).

Remarks: New record for Potohar.

Distribution: Myanmar, China, Sri Lanka, India and Pakistan [6, 43, 30, 48,].

Table 1: Classification of non-apis bee species reported from Potohar Region

Family	Subfamily	Tribe	Genus	Subgenus	Species	Reference	
Apidae	Apinae	Anthophorini	<i>Amegilla</i>	<i>Zonamegilla</i>	<i>cingulata</i>	[13]	
					<i>zonata</i>	New record for Potohar	
					<i>confusa</i>	[13]	
				<i>niveocincta</i>	New record for Potohar		
				<i>Melea</i>	<i>pulcherima</i>	New record for Potohar	
			<i>Glossamegilla</i>	<i>insularis</i>	New record for Pakistan		
			Bombini	<i>Bombus</i>	<i>trifasciatus</i>	New record for Potohar	
			Ancylini	<i>Ancyluscelis</i>	<i>Ancyluscelis</i>	New genus with unidentified species from Pakistan.	
			Melectini	<i>Thyreus</i>	<i>sp.</i>	[13]	
		<i>himaayensis</i>			[13]		
		Xylocopinae	Xylocopini	<i>Xylocopa</i>	<i>Biluna</i>	<i>irridipennis</i>	New record for Potohar
					<i>Ctenoxylocopa</i>	<i>fenestrata</i>	[12, 30]
					<i>Koptortosoma</i>	<i>aestuans</i>	[6]
						<i>pubescens</i>	[12]
					<i>Zonohirsuta</i>	<i>collaris</i>	New record for Potohar
	Ceratinini	<i>Ceratina</i>	<i>Pithitis</i>	<i>sexmaculata</i>	New record for Potohar		
				<i>binghami</i>	New record for Potohar		



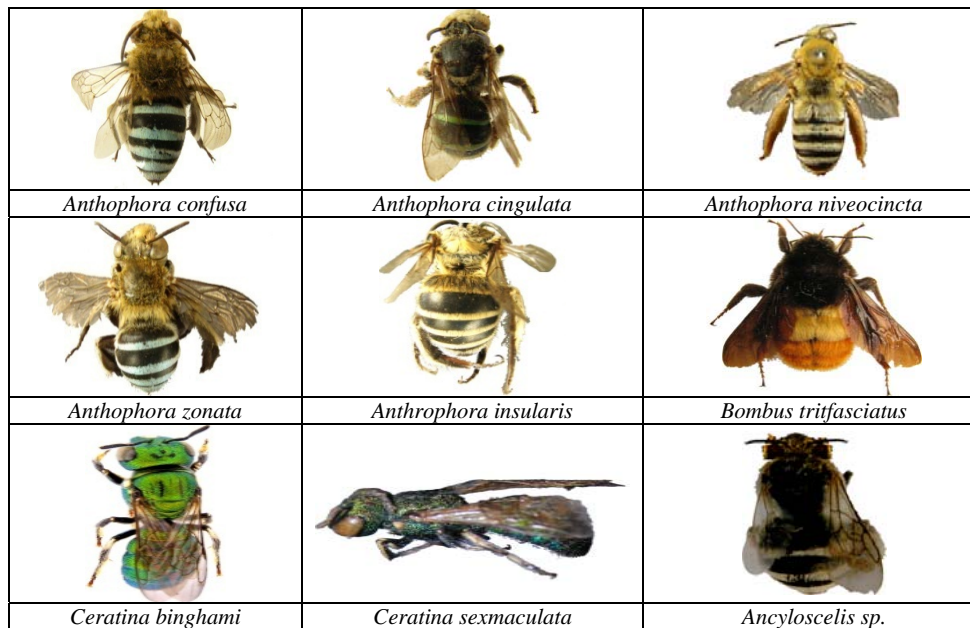


Plate 1

References

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