



WASPS FAUNA OF (SUBFAMILIES: EUMENINAE, VESPINAE AND POLISTINAE) FROM DISTRICT MUZAFFARABAD, AZAD JAMMU AND KASHMIR, PAKISTAN

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M.Q design the study, IAK designed the project, MAR performed the experiment, MRK & MA compiled the data & MKS, GR & MS revised the draft and experiments.

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ABSTRACT

Vespid wasps were collected from different localities of district Muzaffarabad, Azad Jammu and Kashmir. Collected wasp specimen yielded 17 species under seven genera of subfamilies Eumeninae, Polistinae and Vespinae. The subfamily Eumeninae represented five species in four genera, while there are eight species of subfamily Polistinae in two genera and four species of the subfamily Vespinae under genus *Vespa*. Among these *Delta dimidiatipenne* (de Saussure), *Eumenes placens* Nurse, *Knemodynerus excellens* (Pérez), *Polistes dominula* (Christ), *Polistes indicus* Stolfa, *Polistes stigma tamula* (Fabricius), *Polistes olivaceus* (DeGeer), *Polistes rothneyi carletoni* van der Vecht, *Polistes wattii* Cameron, *Ropalidia brevita* Das & Gupta, *Ropalidia colorata colorata* van der Vecht, *Vespa basalis* Smith, *Vespa orientalis* Linnaeus, *Vespa tropica* (Linnaeus), *Vespa velutina* Lepeletier are recorded first time from district Muzaffarabad, Azad Jammu and Kashmir. Out of 17 species 11 species namely, *Eumenes placens* Nurse, *Knemodynerus excellens* (Pérez), *Polistes dominula* (Christ), *Polistes indicus* Stolfa, *Polistes olivaceus* (DeGeer), *Ropalidia brevita* Das & Gupta, *Ropalidia colorata colorata* van der Vecht, *Vespa basalis* Smith, *Vespa orientalis* Linnaeus, *Vespa tropica* (Linnaeus), *Vespa velutina* Lepeletier are new record for Azad Jammu and Kashmir.

1. INTRODUCTION

Taxa of family Vespidae are cosmopolitan in distribution comprising over 5,000 species [1] which are widely distributed in tropical Asia, Africa, Australia, South Africa, temperate Eurasia and North America to Central South America

[2], but mainly it is a tropical family, with particular species richness [3]. Among six families of Vespidae, namely Euparagiinae, Masarinae, Eumeninae, Stenogastrinae, Polistinae and Vespinae most are solitary, but a few are social too [1].

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Recent publications on wasp fauna of Pakistan [4] [5] covers 106 taxa (78 species and 28 subspecies) in the four subfamilies Eumeninae, Masarinae, Polistinae and Vespinae from Pakistan, with the addition of a new to science species [5]. However, the exact distribution of wasps species from Azad Jammu and Kashmir-Pakistan are still not completely documented, thus present research work focuses on the collection of wasps of subfamilies Eumeninae, Polistinae and Vespinae from district Muzaffarabad, Azad Jammu and Kashmir.

2. MATERIALS AND METHODS

Wasps were collected randomly from a variety of habitats such as agronomic crops, vegetables, forests, flowering plants, open fields, nurseries, and buildings of various localities of district Muzaffarabad, Azad Jammu and Kashmir. Collected wasps, after preservation was identified up to species level by using available literature and with the help of Labomet CZMA-4X microscope. Identified species were also reconfirmed with previously identified species housed at the National Insect Museum (NIM), National Agricultural Research Center, Islamabad. Previously reported wasp species from the study area are also included in this paper.

3. RESULTS AND DISCUSSION

Family: Vespidae Latreille, 1802

Collected wasp specimen yielded 17 species under seven genera of subfamilies Eumeninae, Polistinae and Vespinae. The subfamily Eumeninae represented five species in four genera, while there are eight species of subfamily Polistinae in two genera and four species of the subfamily Vespinae under genus *Vespa*.

Subfamily: Eumeninae

Genus: *Antodynerus* de Saussure, 1855

1. *Antodynerus limbatus* (de Saussure, 1852)

Remarks: This species already reported from **Azad Jammu and Kashmir:** Muzaffarabad Shahadra; **Punjab:** Taxila [4] [6].

Genus: *Delta* de Saussure, 1885

2. *Delta dimidiatipenne* (de Saussure, 1852)

Material Examined: Azad Jammu and Kashmir: Muzaffarabad: 23-v-2013, Leg. A. Rafi, 1♀; (Ex. NIM).

Remarks: Recorded first time from district Muzaffarabad. However, this species was earlier reported from **Azad Jammu and Kashmir:** District Poonch: Rawalakot, Bagh and Banjosa; **Baluchistan:** Quetta, Chiltan National Park and Noshkey; **Islamabad** (Federal Capital Area); **Punjab:** Attock, Jhang, Gujrat, Chakwal, Gujranwala, Jhelum, Murree, Faisalabad and Multan; **Khyber-Pakhtunkhwa:** Battagram, Mansehra, Abbottabad, Balakot, Upper and Lower Dir, Peshawar; **Sindh:** Dadu, Larkana, Sukkur, Nagarparkar, Hyderabad, Umarmkot, Korangi (Karachi); Gilgit-Baltistan: Ghizer and Hunza [7] [8] [9] [10] [11] [12] [13] [14] [15] [16].

Genus: *Eumenes* Latreille, 1802

3. *Eumenes coronatus coronatus* (Panzer, 1799)

Remarks: Earlier reported from Azad Jammu and Kashmir: district Muzaffarabad [4].

4. *Eumenes placens* Nurse, 1903

Material Examined: Azad Jammu and Kashmir: district Muzaffarabad: Punjokot, 10-vii-2009, 12.vii.2009, Leg. A. Bukhari, 2♀; 12.vii.2009, Leg. A. Bukhari, 1♂; (Ex. NIM).

Remarks: New record for Azad Jammu and Kashmir: Muzaffarabad. Earlier this species was reported from **Punjab:** Murree [17].

Genus: *Knemodynerus* Blüthgen, 1940

5. *Knemodynerus excellens* (Pérez, 1907)

Material Examined: Azad Jammu and Kashmir: Muzaffarabad: 25-v-2013, Leg. A. Sultan, 1♀; (Ex. NIM).

Remarks: First time recorded from Azad Jammu and Kashmir: Muzaffarabad. This species was already reported from **Punjab:** Multan and **Baluchistan:** Quetta [4] [7].

Subfamily: Polistinae

Genus: *Polistes* Latreille, 1802

6. *Polistes dominula* (Christ, 1791)

Material Examined: Azad Jammu and Kashmir: Muzaffarabad: 10-vii-2009, Leg. A. Bukhari, 1♀; (Ex. NIM).

Remarks: First time recorded from **Azad Jammu and Kashmir:** Muzaffarabad. Earlier this species was reported from **Baluchistan:** Hazarganji and Ziarat; **Khyber-Pakhtunkhwa:** Chitral, Bamboret, Brun; **Islamabad** (Federal Capital Area); **Punjab:** Jhelum; **Gilgit-Baltistan:** Jaglot, Skardu, Gilgit, Ghizer and Hunza-Nagar; **Sindh:** Nawabshah [4] [6] [10] [13] [18] [19] [20].

7. *Polistes indicus* Stolfa, 1934

Material Examined: **Azad Jammu and Kashmir:** Muzaffarabad: 23-v-2013, Leg. A. Rafi, 1♀; (Ex. NIM).

Remarks: First time recorded from **Azad Jammu and Kashmir:** Muzaffarabad. Earlier this species was reported from **Khyber-Pakhtunkhwa:** Abbottabad, Kohat, Peshawar, Baffa, Abad Khel, Allae, Mansehra, Battagram, Oghi, Balakot, Havelian and Ayubia; **Gilgit-Baltistan:** Hunza, Gasdas, Thiee, Ghizar, Jaglot, Chilas, Gilgit and Astore; **Punjab:** Bahawalpur, Jhelum, Attock, Rawalpindi and Chakwal; **Sindh:** Allahyar Pinhwar, Ghotki, Sukkur and Taj Mohammad Ruk [4] [6] [10] [13] [20].

8. *Polistes stigma tamula* (Fabricius, 1798)

Material Examined: **Azad Jammu and Kashmir:** Muzaffarabad: 10-vii-2009, Leg. A. Bukhari, 1♀; (Ex. NIM).

Remarks: First time recorded from **Azad Jammu and Kashmir:** Muzaffarabad. Earlier this species was reported from **Khyber-Pakhtunkhwa:** Balakot, Siadu Sharif, Abbottabad, Swat, Miadam, Oghi, Battagram, Mansehra, Baffa, Allae, Havelian and Ayubia; **Punjab:** Murree, Parriata; **Sindh:** Karachi, Badin, Manjhand; **Azad Jammu and Kashmir:** district Poonch: Rawalakot, Khaigala, Paniola, Hajira, Banjosa anad Ali Sojal [4] [10] [12] [15].

9. *Polistes olivaceus* (DeGeer, 1773)

Material Examined: **Azad Jammu and Kashmir:** Muzaffarabad: Punjkot, 10-vii-2009, Leg. A. Bukhari, 1♀; 12-vii-2009, Leg. A. Bukhari, 2♀; (Ex. NIM).

Remarks: First time recorded from **Azad Jammu and Kashmir:** Muzaffarabad. Earlier reported from **Islamabad** (Federal Capital Area); **Khyber-Pakhtunkhwa:** Baffa, Naran, Allae, Mansehra, Balakot, Oghi, Battagram, Abbottabad, Ayubia and Havelian; **Gilgit-Baltistan:** Nagar, Astore, Doyan;

Punjab: Attock, Rawalpindi, Chakwal and Jhelum [4] [10] [11] [12].

10. *Polistes rothneyi carletoni* van der Vecht, 1968

Material Examined: **Azad Jammu and Kashmir:** Muzaffarabad: 23-v-2013, Leg. A. Rafi, 2♀; 10-vii-2009, Leg. A. Bukhari, 1♀; (Ex. NIM).

Remarks: New record for district Muzaffarabad, Azad Jammu and Kashmir. However this species was already reported from **Azad Jammu and Kashmir:** district Poonch, Rawalakot, Paniola, Khaigala, Banjosa, and Chaprian; **Khyber-Pakhtunkhwa:** Dir, Miadam, Jaba, Gari Habibullah, Abbottabad, Mardan, Peshawar, Chitral, Drosh, Bamboret, Brun, Hazara, Mansehra, Balakot, Baffa, Havelian and Ayubia; **Punjab:** Rawalpindi, Jhelum, Murree hills; **Islamabad** (Federal Capital Area); **Gilgit-Baltistan:** Gilgit, Ghizer and Astore [10] [11] [12] [13] [14] [16] [19] [20] [21].

11. *Polistes wattii* Cameron, 1900

Material Examined: **Azad Jammu and Kashmir:** Muzaffarabad: 10-viii-2010, Leg. A. Rafi, 4♀; (Ex. NIM).

Remarks: First time recorded from **Azad Jammu and Kashmir.** Earlier this species was reported from **Punjab:** Bahawalpur, Habib Massan, Abbaspur, Rawalpindi, Attock, Murree, Taxila, Khewra; **Sindh:** Karachi, Ghotki, Sukkur, Drago, Rajab Ali Bharo, Allahyar Pinhwar; **Khyber-Pakhtunkhwa:** Dir, Kohat, Abbottabad, Peshawar, Warsak, Mansehra, Mardan; **Gilgit-Baltistan:** Diامر, Gilgit, Dassu, Basha, Chillas Hunza-Nagar, Sukkhur, Ghizer and Skardu [4] [6] [10] [11] [12] [13] [16] [18] [19].

Genus: *Ropalidia* Guerin-Meneville, 1831

12. *Ropalidia brevita* Das & Gupta, 1989

Material Examined: **Azad Jammu and Kashmir:** Muzaffarabad: 23-v-2013, Leg. A. Rafi, 2♀; (Ex. NIM).

Remarks: First time recorded from **Azad Jammu and Kashmir:** district Muzaffarabad. Earlier reported from **Islamabad** (Federal Capital Area); **Khyber-Pakhtunkhwa:** Mansehra, Ghari Habibullah, Battagram, Allae, Abbottabad, Havelian, Balakot and Oghi; **Punjab:** Rawalpindi, Murree, Attock, Chakwal and Jhelum; **Sindh:** Hyderabad, Mirpur Khas, Umarmkot ([10] [11] [12] [15].

13. *Ropalidia colorata colorata* van der Vecht, 1941

Material Examined: Azad Jammu and Kashmir: Muzaffarabad: (Punjkot) 10-vii-2009, Leg. A. Bukhari, 1♀; (Ex. NIM).

Remarks: First time recorded from **Azad Jammu and Kashmir:** district Muzaffarabad. Earlier this species was reported from **Khyber-Pakhtunkhwa:** Peshawar; **Punjab:** Murree hills [2].

Subfamily: Vespinae

Genus: *Vespa* Linnaeus, 1758

14. *Vespa basalis* Smith, 1852

Material Examined: Azad Jammu and Kashmir: Muzaffarabad: 05-vii-2007, Leg. A. Shahzad, 3♀; 23-v-2013, Leg. A. Rafi, 1♀; (Ex. NIM).

Remarks: Earlier reported from Azad Jammu and Kashmir: district Poonch, Rawalakot, Hajira, and Mandhol; **Khyber-Pakhtunkhwa:** Abbottabad, Battagram Mardan, Havelian Mansehra, Baffa and Balakot; **Islamabad** (Federal Capital Area); **Punjab:** Rawalpindi and Attock [4] [10] [11] [12] [14].

15. *Vespa orientalis* Linnaeus, 1771

Material Examined: Azad Jammu and Kashmir: Muzaffarabad: 23-v-2013, Leg. A. Bukhari, 1♀; 05-vii-2007, Leg. A. Shahzad, 3♀; (Ex. NIM).

Remarks: New record for district Muzaffarabad, Azad Jammu and Kashmir. However, this species was earlier reported from **Azad Jammu and Kashmir:** district Poonch, Rawalakot, Topa, Thorar and Mandhol; **Khyber Pakhtunkhwa:** Chitral, Bamboret, Brun, Jamrud, Bannuu, Peshawar, Kohat, Charsada, Battagram, Allae, Warsak, Abbottabad, Mansehra, Mardan, Baffa and Balakot; **Gilgit-Baltistan:** Chillas, Dassu, Gilgit, Nomal, Jaglot Ghizer and Astore; **Islamabad:** Dadu City, Mirpur Mathelo, Kandhkot, Thari Mirwah, Kirthar National Park and Mirpur Khas; **Baluchistan:** Quetta [4] [6] [10] [11] [12] [13] [14] [15] [20].

16. *Vespa tropica* (Linnaeus, 1758)

Material Examined: Azad Jammu and Kashmir: Muzaffarabad: 25-v-2013, Leg. A. Sultan, 1♀; 05-vii-2007, Leg. Amjad, 3♀; (Ex. NIM).

Remarks: New record for district Muzaffarabad, Azad Jammu and Kashmir. However, this species was earlier reported from **Azad Jammu and Kashmir:** district Poonch, Rawalakot, Mandhol and

Hajira; **Khyber-Pakhtunkhwa:** Battagram, Allae, Havelian, Ayubia, Mansehra, Balakot, Oghi, Baffa, Hazara, Chitral, Abbottabad, Peshawar, Bamboret, Brun; **Islamabad** (Federal Capital Area); **Punjab:** Attock, Rawalpindi and Chakwal [4] [10] [11] [12] [14] [20] [21].

17. *Vespa velutina* Lepeletier, 1836

Material Examined: Azad Jammu and Kashmir: Muzaffarabad: 23-v-2013, Leg. A. Rafi, 1♀; 05-vii-2007, Leg. A. Shahzad, 2♀; (Ex. NIM).

Remarks: Earlier this species was reported from Azad Jammu and Kashmir: **district Muzaffarabad:** Pir Chinasi and district Poonch: Rawalakot, Topa, Thorar, Hajira and Mandhol; **Khyber-Pakhtunkhwa:** Chitral, Swat, Charbagh, Shangla, Dir, Shougran, Garihabibullah, Jaba, Abbottabad, Battagram, Allae, Havelian, Mansehra, Oghi, Balakot and Nathia gali; **Gilgit-Baltistan:** Diamar, Hunza-Nagar, Ghizer, Gilgit, Skardu, Chilas and Nomal; **Islamabad** (Federal Capital Area); **Punjab:** Rawalpindi, Murree, Attock Jhelum and Chakwal [4] [10] [11] [13] [14] [16] [20].

4. CONCLUSION

Result showed that the area of Azad Jammu and Kashmir of Pakistan has rich fauna wasps of different families. Further studies are recommended to explore the new species, new wasp family and subfamilies in the area.

5. CONFLICT OF INTEREST

All authors have declared that there is no conflict of interest regarding publication of this article.

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