



WASP FAUNA OF SUBFAMILIES (EUMENINAE, POLISTINAE AND VESPINAE) FROM DIR, KHYBER PAKHTUNKHWA, PAKISTAN

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S.A.R planned the project, M.A.R analyzed and identified the material, M.Q wrote the data, K.S sorted out the material, K.M search the different localities for collection, S.D look after the experiment, A.K finalized the data and A.R help out in the Submission of the manuscript.

Key words:

Wasp, Hymenoptera,
Vespidae, Dir,
Pakistan, Biogeography

ABSTRACT

During present study 13 species under five genera are recorded from Dir (Upper and Lower Dir), Khyber Pakhtunkhwa Pakistan. Out of 13 species four species are recorded under two genera of subfamily Eumeninae while four species represented one genus of subfamily Polistinae and five species belonged to two genera of subfamily Vespinae. Seven species *Allorhynchium argentatum* (Fabricius, 1804), *Delta pyriforme pyriforme* (Fabricius, 1775), *Polistes gallicus* (Linnaeus, 1767), *P. indicus* (Stolfa, 1934), *Vespa tropica* (Linnaeus, 1758), *V. orientalis* (Linnaeus, 1771) and *Vespula vulgaris* (Linnaeus, 1758) are new records for Dir. This new records enhance the wealth of wasp fauna in this region. The collected material also shows the diversity in these species.

1. INTRODUCTION

Vespidae is one of the largest cosmopolitan family of order Hymenoptera belongs to the superfamily Vespoidea [1]. The members of this family are mostly found in tropical regions, with more than 5000 species throughout the World. Vespidae wasps play important role in the terrestrial ecosystem viz., act as a pollinators, scavengers, bio-control agents and some areas they are invasive pests [2], [3]. Bingham [4] initiated the work on this important family in Indian subcontinent. In Pakistan, various authors worked on this important family such as Chaudhry *et al.*, [5], Das and Gupta [6,7], Archer [8], Gusenleitner [9,10,11], Dvořák [12], Bodlah *et al.*, [13,14,15], Mahmood *et al.*, [16], Siddiqui *et al.*, [17], Shah [18], Faiz *et al.*, [19], Rasool *et al.*,

[20]. this family holds many species which are still waiting to be explored from various areas of Pakistan. The present research work is based on the collection of vespidae wasp fauna collected from Dir, a part of Malakand division affiliated with Palaearctic biogeography. Dir lies in the valley of the Panjkora River which raises high in the Hindu Kush at 35.45°N and joins the Swat River near Chakdara in Malakand district at 34.40 °N. Dir is rocky mountainous with peaks rising to 16,000 feet in the north-east and 8858 feet towards South Chakdara. Dir is bounded with Swat towards East, Bajaur agency towards Southwest, Chitral towards North and Afghanistan towards West. Administratively Dir is divided in to two districts i.e. Upper and Lower Dir.

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2. MATERIAL AND METHODS

Wasps collection were carried out during 2013-2014. All recorded Vespidae species represented ten different localities of Lower and Upper Dir, Khyber Pakhtunkhwa. The localities of Upper Dir, viz., Warai, Barawal, Darorra, Sheringal, Kalkot and Lower Dir viz., Chakdara, Timergara, Rabat, Talash, Samar Bagh. The identification of specimens was done by using the Labomet CZM4-4X the microscope up to the species level with the help of taxonomic keys and other available literature. Moreover, identified species were confirmed with identified specimens of wasps housed at National Insect Museum (NIM), National Agricultural Research Center (NARC), Islamabad, Pakistan.

3. RESULTS AND DISCUSSION

Family: Vespidae

Subfamily: Eumeninae

Genus: *Allorhynchium* van der Vecht, 1963

a. *Allorhynchium argentatum* (Fabricius, 1804)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Timergara, 18-iii-2013, 2♀, leg. Rauf; 17-iv-2013, 2♀, 2♂, Rauf; 27-v-2013, 2♀, leg. Rauf; 29-vi-2013, 2♀, 1♂, leg. Rauf; 15-vii-2013, 2♀, leg. Rauf; 7-viii-2013, 1♀, leg. Rauf; 19-ix-2013, 2♀, 2♂, leg. Rauf.

Remarks: During this study *A. argentatum* is reported first time from Lower Dir: Timergara which is a new locality records for this species from Dir. Earlier, this species was reported from various localities of Pakistan such as from Federal Capital Area: Islamabad; Punjab: Attock, Chakwal, Jhelum and Rawalpindi; Khyber-Pakhtunkhwa: Abbottabad; Sindh: Thatta, (Halaji Lake); Gilgit-Baltistan: Ghizer and Skardu [5], [9], [10], [17], [19].

Biogeographical affiliations: Mostly occur in Oriental Region.

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

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Chakdara, 18-iii-2013, 2♀, leg. Rauf; 17-iv-2013, 2♀, 2♂, leg. Rauf; 27-v-2013, 2♀, leg. Rauf; 29-vi-2013, 2♀, 1♂, leg. Rauf; 15-vii-2013, 2♀, leg. Rauf; 7-viii-2013, 1♀, leg. Rauf; 19-ix-2013, 2♀, 2♂, leg. Rauf; Upper Dir: Kalkot, 11-iii-2013, 1♀, leg. Rauf; 10-iv-2013, 2♀, leg. Rauf; 25-v-2013, 2♀, leg. Rauf; 15-vi-2013, 3♀,

leg. Rauf; 27-vii-2013, 1♂, leg. Rauf; 18-viii-2013, 2♀, 2♂, leg. Rauf; 14-ix-2013, 2♀, 2♂, leg. Rauf.

Remarks: Earlier this species was reported from Dir [16]. However, during this study it was found from Chakdara (Lower Dir) and Kalkot (Upper Dir). This species is already known from various localities of Pakistan such as Federal Capital Area: Islamabad; Punjab: Attock, Chakwal, Faisalabad, Gujrat, Gujranwala, Jhelum, Jhang, Multan and Murree; Khyber-Pakhtunkhwa: Abbottabad, Battagram, Balakot, Mansehra, Dir, Peshawar; Baluchistan: Noshkey; Azad Jammu and Kashmir: Bagh; Gilgit-Baltistan: Ghizer and Hunza [9], [13], [14], [16], [17], [19].

Biogeographical affiliations: Mostly occur in Afrotropical and Palearctic Regions.

c. *Delta esuriens esuriens* (Fabricius, 1787)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Rabat, 21-iii-2013, 2♀, leg. Rauf; 29-iv-2013, 1♀, leg. Rauf; 25-v-2013, 2♀, leg. Rauf; 22-vi-2013, 2♂, leg. Rauf; 27-vii-2013, 2♀, 2♂, leg. Rauf; 11-viii-2013, 1♀, leg. Rauf; 16-ix-2013, 1♀, leg. Rauf; Upper Dir: Sheringal, 20-iii-2013, 2♀, leg. Rauf; 13-iv-2013, 1♂, Rauf; 14-v-2013, 2♀, leg. Rauf; 28-vi-2013, 1♀, leg. Rauf; 12-vii-2013, 2♀, 2♂, leg. Rauf; 24-viii-2013, 1♀, leg. Rauf; 15-ix-2013, 2♀, leg. Rauf.

Remarks: During study this species was reported from Rabat (Lower Dir) and Sheringal (Upper Dir). Earlier, this species described from Federal Capital Area: Islamabad and various localities of Punjab province such as Attock, Bakhar, Chakwal, Muzafargarh, Layyah, Mianwali, Rawalpindi, Khanpur, Head Fareed; from Khyber-Pakhtunkhwa: Dir, Swat, Balakot, Mansehra and Abbottabad; Baluchistan: Quetta have been reported [9], [14], [16], [17], [18].

Biogeographical affiliations: Occur in Afrotropical, Oriental and Palearctic Regions.

d. *Delta pyriforme pyriforme* (Fabricius, 1775)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Talash, 21-iii-2013, 2♀, leg. Rauf; 29-iv-2013, 1♀, leg. Rauf; 25-v-2013, 2♀, leg. Rauf; 22-vi-2013, 2♂, leg. Rauf; 27-vii-2013, 2♀, 2♂, leg. Rauf; 11-viii-2013, 1♀, leg. Rauf; 16-ix-2013, 1♀, leg. Rauf.

Remarks: New locality record for Lower Dir, district locality Talash. Earlier, this species was reported from Federal Capital Area: Islamabad; Punjab: Attock, Bakhar, Jhelum, Layyah, Muzafargarh, Rawalpindi, Khushab, Sargodha, Jhang, D.G. Khan, Mianwali, Rajanpure and Bahawalpur; Khyber-Pakhtunkhwa: Peshawar [10], [14], [16], [17].

Biogeographical affiliations: Australian and Oriental Regions.

Subfamily: Polistinae

Genus: *Polistes* Latreille, 1802

a. *Polistes (Polistes) gallicus* (Linnaeus, 1767)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Sheringal, 25-v-2013, 2♀, leg. Rauf; 15-vi-2013, 2♀, leg. Rauf; 27-vii-2013, 3♀, 2♂, leg. Rauf; 18-viii-2013, 3♀, leg. Rauf; 14-ix-2013, 2♀, 2♂, leg. Rauf.

Remarks: New locality record for Lower Dir, district locality Sheringal. Earlier, this species was reported from Baluchistan: Hazarganji and Ziarat [12]. However from Gilgit-Baltistan: Jaglot, Skardu, Gilgit, Ghizer and Hunza-Nagar have been reported [10], [16], [19].

Bio-ecological Zone: Palaearctic, Australian, Nearctic and Neotropical.

b. *Polistes (Polistes) indicus* (Stolfa, 1934)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Barawal, 10-iv-2013, 3♀, leg. Rauf; 25-v-2013, 2♀, leg. Rauf; 13-vi-2013, 3♀, 2♂, leg. Rauf; 15-vii-2013, 3♀, leg. Rauf; 10-viii-2013, 2♀, leg. Rauf; 25-ix-2013, 1♀, leg. Rauf.

Remarks: New locality records for Dir, district locality Lower Dir: Barawal. Earlier, Das and Gupta [6] reported this species from Salt Range, Punjab. However from various localities of Pakistan this species was reported from Khyber-Pakhtunkhwa: Peshawar, Kohat, Abad Khel, Mansehra, Balakot, Baffa, Oghi, Battagram, Alia, Abbottabad, Havelian and Ayubia; Gilgit-Baltistan: Chilas, Gasdas, Ghizar valley, Hunza, Thiee, Jaglot, Gilgit and Astore; Sindh: Sukkur, Ghotki, Allahyar Pinhwar, Taj Mohammad Ruk, Punjab: Bahawalpur, Chak, 28 BC, Attock, Rawalpindi, Jhelum and Chakwal [10], [12], [16], [17], [18], [19].

Biogeographical affiliations: Mostly occur in Afrotropical and Palaearctic Region.

c. *Polistes rothneyi carletoni* (van der Vecht, 1968)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Timergara, 19-iv-2013, 3♀, 2♂, leg. Rauf; 22-v-2013, 2♀, 3♂, leg. Rauf; 23-vi-2013, 1♀, 1♂, leg. Rauf; 21-vii-2013, 3♀, 2♂, leg. Rauf; 19-viii-2013, 1♀, leg. Rauf; 19-ix-2013, 2♀, leg. Rauf; Upper Dir: Warai, 20-iv-2013, 2♀, 1♂, Rauf; 18-v-2013, 2♀, 2♂, leg. Rauf; 20-vi-2013, 2♀, 2♂, leg. Rauf; 25-vii-2013, 2♀, 1♂, leg. Rauf; 15-viii-2013, 3♀, 2♂, leg. Rauf.

Remarks: During the study this species is recorded from Lower Dir: Timergara and Upper Dir: Warai which is a new locality records for this species from Dir. Earlier, this species was reported from Khyber-Pakhtunkhwa: Hazara Chitral, Bamboret valley, Brun, Balakot, Baffa, Dir, Miadam, Mardan, Mansehra, Gari habibullah, Jaba, Peshawar, Abbottabad, Havelian and Ayubia; Punjab: Jhelum valley, Murree hills, Attock and Rawalpindi; Federal Capital area: Islamabad; Gilgit-Baltistan: Daimar, Bagrot, Sassi, Gech, Gilgit, Ghizer and Astore. [5], [6], [7], [16], [17], [18], [19].

Biogeographical affiliations: Palaearctic Region.

d. *Polistes wattii* (Cameron, 1900)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Chakdara, 18-iii-2013, 1♀, leg. Rauf; 17-iv-2013, 2♀, 1♂, Rauf; 27-v-2013, 2♀, leg. Rauf; 29-vi-2013, 3♀, 1♂, leg. Rauf; 21-iii-2013, 2♀, leg. Rauf; 29-iv-2013, 2♀, leg. Rauf; 25-v-2013, 3♀, leg. Rauf; 22-vi-2013, 4♀, leg. Rauf; Samar Bagh, 04-iv-2013, 2♀, leg. Rauf; 06-v-2013, 3♀, leg. Rauf; 10-vi-2013, 3♀, leg. Rauf; 7-vii-2013, 2♀, 2♂, leg. Rauf; Upper Dir: Warai, 20-iv-2013, 3♀, 2♂, leg. Rauf; 18-v-2013, 3♀, 2♂, leg. Rauf; Barawal, 10-iv-2013, 3♀, leg. Rauf; 25-v-2013, 2♀, leg. Rauf; Darorra, 22-iv-2013, 3♀, leg. Rauf; 15-v-2013, 3♀, leg. Rauf; 10-vi-2013, 2♀, leg. Rauf; 22-vii-2013, 3♀, leg. Rauf; 20-viii-2013, 1♀, leg. Rauf.

Remarks: During the study this species is recorded from Lower Dir: Chakdara, Samar Bagh, Rabat and Upper Dir: Warai, Barawal, Darorra. This species is already reported from Punjab: Abbaspur, Bahawalpur, Habib Massan, Khewra, Attock, Rawalpindi, Murree and Taxila; Federal Capital Area: Islamabad; Sindh: Karachi, Drago, Ghotki, Sukkur, Rajab Ali Bharo and Allahyar; Khyber-Pakhtunkhwa: Abbottabad, Mansehra, Peshawar, Kohat, Dir, Warsak and Mardan; Gilgit-Baltistan: Basha, Gilgit, Chillas, Hunza-Nagar, Diamer, Dassu,

Ghizer and Skardu [6], [7], [10], [16], [17], [18], [19].

Biogeographical affiliations: Afrotropical and Palaearctic Region.

Subfamily: Vespinae

Genus: *Vespa* Linnaeus, 1758

a. *Vespa orientalis* (Linnaeus, 1771)

Material examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Chakdara, 18-iii-2013, 2♀, 2♂, leg. Rauf; 17-iv-2013, 2♀, 2♂, leg. Rauf; 27-v-2013, 2♀, 2♂, leg. Rauf; 29-vi-2013, 3♀, 1♂, leg. Rauf; 15-vii-2013, 2♀, 2♂, leg. Rauf; 7-viii-2013, 1♀, 1♂, leg. Rauf; Timergara, 22-v-2013, 2♀, leg. Rauf; 23-vi-2013, 2♀, 1♂, leg. Rauf; 21-vii-2013, 3♀, 2♂, leg. Rauf; 19-viii-2013, 1♀, leg. Rauf; 19-ix-2013, 2♀, leg. Rauf; Rabat, 29-iv-2013, 3♀, leg. Rauf; 25-v-2013, 3♀, leg. Rauf; 22-vi-2013, 2♀, 2♂, leg. Rauf; 27-vii-2013, 2♀, 2♂, leg. Rauf; 11-viii-2013, 2♀, leg. Rauf; Talash, 04-v-2013, 2♀, leg. Rauf; 12-vi-2013, 3♀, 3♂, leg. Rauf; 2-vii-2013, 2♀, 2♂, leg. Rauf; 17-viii-2013, 3♀, leg. Rauf; Samar Bagh, 04-iv-2013, 2♀, 2♂, leg. Rauf; 06-v-2013, 1♀, leg. Rauf; 10-vi-2013, 3♀, 2♂, leg. Rauf; 7-vii-2013, 3♀, 2♂, leg. Rauf; 09-viii-2013, 2♀, 1♂, leg. Rauf; Upper Dir: Warai, 20-vi-2013, 2♀, 2♂, leg. Rauf; 25-vii-2013, 2♀, 1♂, leg. Rauf; 15-viii-2013, 3♀, 2♂, leg. Rauf; Barawal, 15-vii-2013, 3♀, 2♂, leg. Rauf; 10-viii-2013, 1♀, leg. Rauf; 25-ix-2013, 1♀, leg. Rauf; Darorra, 15-v-2013, 2♀, 2♂, leg. Rauf; 10-vi-2013, 2♀, leg. Rauf; 22-vii-2013, 3♀, 2♂, leg. Rauf; 20-viii-2013, 3♀, leg. Rauf; 10-ix-2013, 2♀, leg. Rauf; Sheringal, 12-vii-2013, 3♀, 2♂, leg. Rauf; 24-viii-2013, 1♀, 1♂, leg. Rauf; Kalkot, 15-vi-2013, 2♀, leg. Rauf; 27-vii-2013, 2♀, 1♂, leg. Rauf; 18-viii-2013, 3♀, 2♂, leg. Rauf.

Remarks: New locality records for Dir. However, this species is common and found in all localities of Lower and Upper Dir. Earlier, this species was reported from Federal Capital Area: Islamabad; Punjab: Fort Abbas, Attock, Chakwal, Rawalpindi and Murree; Khyber-Pakhtunkhwa: Abbottabad, Bannu, Battagram, Bamboret valley, Chitral, Charsada, Havelian, Brun, Kohat, Peshawar, Mardan, Warsak, Mansehra, Baffa and Balakot; Gilgit-Baltistan: Gilgit, Chillas, Astore, Ghizer, Dassu, Nomal, Jaglot [10], [12], [16], [17], [18], [19].

Biogeographical affiliations: Mostly occur in Palaearctic, Oriental and Afrotropical Regions.

b. *Vespa tropica* (Linnaeus, 1758)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Chakdara, 18-iii-2013, 2♀, leg. Rauf; 17-iv-2013, 2♀, 2♂, leg. Rauf; 27-v-2013, 2♀, 2♂, leg. Rauf; 29-vi-2013, 1♀, 1♂, leg. Rauf; 15-vii-2013, 2♀, 2♂, leg. Rauf; 7-viii-2013, 2♀, 1♂, leg. Rauf; 19-ix-2013, 2♀, leg. Rauf; Samar Bagh, 17-iii-2013, 2♀, leg. Rauf; 04-iv-2013, 2♀, 2♂, leg. Rauf; 06-v-2013, 2♀, leg. Rauf; 10-vi-2013, 3♀, 2♂, leg. Rauf; 7-vii-2013, 3♀, 2♂, leg. Rauf; 09-viii-2013, 2♀, 1♂, leg. Rauf; 01-ix-2013, 3♀, leg. Rauf; Upper Dir: Darorra, 11-iii-2013, 3♀, leg. Rauf; leg. Rauf; 22-vii-2013, 3♀, 2♂, leg. Rauf; 20-viii-2013, 3♀, leg. Rauf; 10-ix-2013, 2♀, leg. Rauf.

Remarks: New locality records for Dir from Lower Dir: Chakdara, Samar Bagh and Upper Dir: Darorra. This species was reported from Khyber Pakhtunkhwa: Abbottabad, Ayubia, Havelian, Hazara, Battagram, Alia, Mansehra, Balakot, Oghi, Baffa, Chitral, Bamboret valley, Brun, Peshawar; Punjab: Rawalpindi, Attock, Chakwal [5], [12], [16], [17], [18].

Biogeographical affiliations: Palaearctic and Oriental Region.

c. *Vespa velutina* (Lepeletier, 1836)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Chakdara, 14-iv-2013, 3♀, 2♂, leg. Rauf; 7-v-2013, 2♀, 2♂, leg. Rauf; 21-vi-2013, 3♀, 2♂, leg. Rauf; 10-vii-2013, 2♀, leg. Rauf; 27-viii-2013, 3♀, 1♂, leg. Rauf; 14-ix-2013, 1♀, leg. Rauf; Talash, 20-iii-2013, 3♀, 2♂, leg. Rauf; 13-iv-2013, 3♀, 2♂, leg. Rauf; 29-v-2013, 2♀, leg. Rauf; 19-vi-2013, 3♀, 2♂, leg. Rauf; 22-vii-2013, 2♀, leg. Rauf; 10-viii-2013, 3♀, 3♂, leg. Rauf; 01-ix-2013, 3♀, 2♂, leg. Rauf; Upper Dir: Barawal, 5-v-2013, 3♀, leg. Rauf; 23-vi-2013, 3♀, 2♂, leg. Rauf; 25-vii-2013, 3♀, leg. Rauf; Warai, 27-iv-2013, 3♀, 2♂, leg. Rauf; 20-v-2013, 4♀, leg. Rauf; 12-vi-2013, 4♀, 3♂, leg. Rauf; 28-vii-2013, 3♀, 2♂, leg. Rauf; 20-viii-2013, 3♀, leg. Rauf.

Remarks: Earlier, Mahmood *et al.*, [16] reported this species from Dir. During present study this species is reported from Lower Dir: Chakdara, Talash and Upper Dir: Barawal, Warai. From various localities of Pakistan this species was reported from Khyber-Pakhtunkhwa: Swat, Chitral, Charbagh, Nathia Gali, Shangla, Shougran, Dir, Garihabibullah, Jaba, Abbottabad, Havelian, Battagram, Alia, Mansehra, Oghi and Balakot; Gilgit-Baltistan: Diamar, Ghizer, Hunza-Nagar, Skardu, Chilas, Gilgit, Nomal; Federal

Capital Area: Islamabad; Punjab: Attock, Jhelum, Murree, Rawalpindi and Chakwal [12], [16], [17], [18], [19].

Biogeographical affiliations: Palaearctic and Oriental.

Genus: *Vespula* Thomson, 1869

1. *Vespula germanica* (Fabricius, 1793)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Timergara, 19-iv-2013, 3♀, 2♂, leg. Rauf; 22-v-2013, 2♀, leg. Rauf; 23-vi-2013, 2♀, 2♂, leg. Rauf; 21-vii-2013, 3♀, leg. Rauf; 19-viii-2013, 2♀, leg. Rauf; 19-ix-2013, 2♀, leg. Rauf; Rabat, 29-iv-2013, 3♀, 2♂, leg. Rauf; 25-v-2013, 2♀, leg. Rauf; 22-vi-2013, 3♀, 2♂, leg. Rauf; 27-vii-2013, 3♀, leg. Rauf; 11-viii-2013, 3♀, leg. Rauf; 16-ix-2013, 3♀, 2♂, leg. Rauf; Upper Dir: Barawal, 25-v-2013, 2♀, leg. Rauf; 13-vi-2013, 3♀, 2♂, leg. Rauf; 15-vii-2013, 1♀, 2♂, leg. Rauf; 10-viii-2013, 2♀, leg. Rauf; 25-ix-2013, 2♀, leg. Rauf; Kalkot, 15-vi-2013, 3♀, leg. Rauf; 27-vii-2013, 3♀, 2♂, leg. Rauf; 18-viii-2013, 3♀, leg. Rauf.

Remarks: During present study this species is recorded from Lower Dir: Timergara, Rabat and Upper Dir: Barawal, Kalkot. Already this species was reported from Baluchistan: Kalat, Ziarat; Khyber-Pakhtunkhwa: Chitral, Dir, Swat, Abbottabad, Havelian, Ayubia, Mansehra, Balakot, Baffa, Kalam; Gilgit-Baltistan: Daimir, Chillas, Gulmit, Khyber, Khuramabad, Shish kot, Gulkin, Passu, Aliabad, Nagar, Denor, Sost, Misger, Ghizer, Skardu and Gilgit. [5], [12], [16], [18], [19].

Biogeographical affiliations: Mostly occur in Afrotropical, Palaearctic and Oriental Region.

2. *Vespula vulgaris* (Linnaeus, 1758)

Material Examined: PAKISTAN: Khyber Pakhtunkhwa: Lower Dir: Rabat, 29-iv-2013, 3♀, leg. Rauf; 25-v-2013, 2♀, leg. Rauf; 22-vi-2013, 2♀, 2♂, leg. Rauf; 27-vii-2013, 3♀, 2♂, leg. Rauf; 11-viii-2013, 3♀, leg. Rauf; Upper Dir: Kalkot, 11-iii-2013, 2♀, leg. Rauf; 10-iv-2013, 2♀, 2♂, leg. Rauf; 25-v-2013, 1♀, leg. Rauf; 15-vi-2013, 2♀, leg. Rauf; 27-vii-2013, 2♀, 2♂, leg. Rauf; 18-viii-2013, 1♀, leg. Rauf.

Remarks: New locality records for Dir from Lower Dir: Rabat and Upper Dir: Kalkot. Already this species is reported from Gilgit-Baltistan: Hunza and Astore [19].

Biogeographical affiliations: Occur in Palaearctic Region.

Table 1- Biogeographical Affiliations of Vespid Fauna of Dir.

Sr. No.	Species Name	Afrotropical	Australian	Nearctic	Neotropic	Oriental	Palaearctic
1.	<i>Allorhynchium argentatum</i>	-	-	-	-	+	-
2.	<i>Delta dimidiatipenne</i>	+	-	-	-	-	+
3.	<i>D. esuriens esurien</i>	+	-	-	-	+	-
4.	<i>D. pyriforme pyriforme</i>	-	+	-	-	+	-
5.	<i>Polistes gallicus</i>	-	+	+	+	-	+
6.	<i>P. indicus</i>	+	-	-	-	-	+
7.	<i>P. rothneyi carletoni</i>	-	-	-	-	-	+
8.	<i>P. wattii</i>	+	-	-	-	-	+
9.	<i>Vespa orientalis</i>	+	-	-	-	+	+
10.	<i>V. tropica</i>	-	-	-	-	+	+
11.	<i>V. velutina</i>	-	-	-	-	+	+
12.	<i>Vespula germanica</i>	+	-	-	-	+	+
13.	<i>V. vulgaris</i>	-	-	-	-	-	+

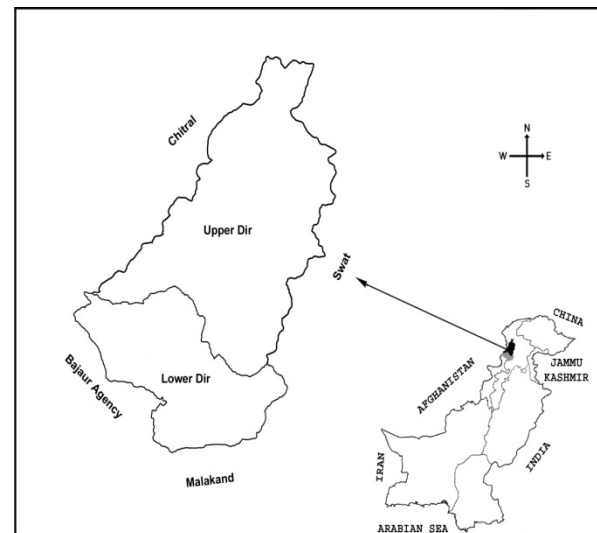


Figure 1- Map of Lower and Upper Dir.

4. CONCLUSION

Wasps are important in agriculture as pest of fruits and predator of agricultural pests. Their existence is important in web of life. To know their species diversity, faunistic studies are essential. By knowing their area wise studies it will be helpful to know their species in particular area. Furthermore, protection from their sting and venom are important for human as well as livestock. Thirteen species under five genera are reported during this study from both districts of Dir i.e. Upper and Lower Dir. Out of 13

reported species seven species *Allorhynchium argentatum*, *Delta pyriforme pyriforme*, *Polistes gallicus*, *P. indicus* (Stolfa, 1934), *Vespa tropica* (Linnaeus, 1758), *V. orientalis* and *Vespula vulgaris* (Linnaeus, 1758) are new records for Dir. Further, studies are suggested to explore more species form Dir and vicinities.

5. CONFLICT OF INTERESTS

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

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