

A new Bumblebee species of **Pyrobombus** Dalla Torre (Hymenoptera, Apidae, Bombinae) in Eastern Anatolia, Turkey

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Summary

A new bumblebee species, Pyrobombus (Melanobombus) erzurumensis sp.n. from the vicinity of Erzurum, mostly Kargapazarı and Dumlu mountains was collected and described.

Introduction

Bumblebees are beneficial insects, pollinating a wide range of wild and cultivated plants including those of great economic importance (Free, 1970; Loken, 1973; Özbek, 1976).

Because of the topographic and climatic conditions bumblebee fauna of Turkey is very rich, and most of them are colourful insects (Reinig, 1968, 1971; Özbek, 1983). Özbek (1983) listed 29 species or sub-species in the eastern Anatolia. Studies conducted recently by the same author (Özbek, 1990) has shown that more species than that have occurred in this area.

In eastern Anatolia there are 9 bumblebee species or subspecies having similar color pattern; white, black interalar band and red tail. Those are Alpigenobombus wurfleini (Rad., 1859), Bombias handlirschianus (Vogt, 1909), Megabombus (Thoracobombus) mlokoszewiczi (Rad., 1877), M. (T.) ruderarius simulatilis (Rad., 1880), M. (T.) sylvanum daghestanicus (Rad., 1880), Pyrobombus (Cullumanobombus) cullumanus apollineus (Skorikov, 1910), P. (Melanobombus) incertus (Mor., 1881), P. (Pyrobombus) brodmannicus (Vogt, 1909), and P. (Sibiricobombus) niveatus (Kriechbaumer, 1870) (Tkalcu, 1972; Özbek

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1983). Pyrobombus (Melanobombus) erzurumensis sp.n. has the same color pattern as the ones above mentioned.

The subgenus of Melanobombus of genus Pyrobombus has had four species occurring in Turkey namely P. (M.) lapidarius caucasicus (Rad.) P. (M.) sicheli (Rad.), P. (M.) alagesianus (Reinig) and P. (M.) incertus (Mor.) (Rasmont, 1983; Özbek, 1990).

Material and Methods

Material was collected by author with net by sweeping flower heads. Drawing made by using camera-lucida and stereoscopic microscope.

Because of the diagnostic value the following measurements were made : a-b: distal width of malar area, c-d : the length of malar area (Fig.1). T_{1-6} , St_{1-6} in female, T_{1-6} , St_{1-6} in male: individual gastral tergits and sternits; F_{1-13} individual flagellar segments. The body length : the distance from face of head to tip of abdomen; interalar width : the length between tegulae. All measurements were taken on dried specimens.

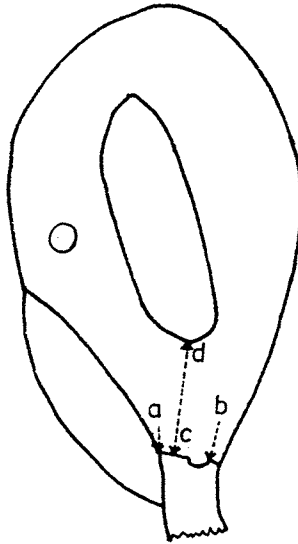


Fig.1. Diagram showing lateral view of bumblebee head,
a-b: distal width of malar area, c-d : malar space

Results and Discussion

In this study some specimens collected from Kargapazarı, Palandöken and Dumlu mountains were similar to Pyrobombus (Melanobombus) incertus (Mor.) which is very common in eastern Anatolia, but it was found that they are different from that species, and named as Pyrobombus (Melanobombus) erzurumensis sp.n.

Pyrobombus (Melanobombus) erzurumensis sp.n.

Holotype (female, queen) : Dumlu Dağları, Erzurum, 25.6.1983, 2900 m, *Taraxacum officinale* L. (Özbek, leg.) in the Museum of Plant Protection Department, Agricultural Faculty, Atatürk University, Erzurum, Turkey.

Paratypes : (1 Female), Dumlu Dağları, Erzurum, 25.6.1983, 2900 m (Özbek, leg.); (1 female), Kargapazarı Dağları, Radar Yolu, 20.7.1989, 2300 m (Özbek, leg.); (1 female) Başaklı, Oltu, Erzurum, 12.7.1978 (Özbek, leg.); (1 female), Horasan, Erzurum 15.7.1973 (Doğanlar, leg.); (2 males) Dumlu Dağları, Güngörmez yolu, 5.8.1990, 2400 m (Özbek, leg.); (5 males) Kargapazarı Dağları, Radar Yolu, Erzurum, 24.8.1988, 2600-2800 m (Özbek, leg.); (2 males) Kargapazarı Dağları, Radar Yolu, Erzurum, 20.8.1989 (Özbek, leg.); (1 male) Kireçli Dağı, Karayolları Bakım Evi, Narman, Erzurum, 2400 m, 13.7.1989, (Özbek, leg.); (5 males) Kargapazarı Dağları, Radar Yolu, 11.8.1990, 2600 m; (9 males) Kargapazarı Dağları, Radar Yolu, Erzurum, 2500-2600 m, 22.8.1990 (Özbek, leg.) in the Museum of Plant Protection Department, Agricultural Faculty, Atatürk University, Erzurum, Turkey. 2 males paratypes were sent to the British Museum (N.H.) in London, 2 males paratypes to Dr.B.Tkalcu, Praha, Czechoslovakia.

Female (queen) : Head slightly longer than wide; malar space distinctly shorter than distal width, surface smooth and shining, punctures minute, sparse and hardly evident medially; ocelli touching or just in front of supra-orbital line, impunctate area of ocellar orbital field small, punctured band broad and well-defined; clypeus hardly shorter than distal width, and flattened, disc of clypeus with sparse punctures; labral furrow moderately deep, well-defined, and broadened anteriorly forming V shape; labral tubercle weakly alutaceous, punctured at base, anteriorly flattened; eyes directed in front of posterior mandibular condyle; F_1 considerably longer than F_2 , shorter than F_{2+3} , F_2 shorter than F_3 , F_3 just shorter than F_4 ; tegulae blackish; wings slightly infuscated, veins testaceous to black; integument color of hind tibiae and basitarsi black.

Pubescence of head entirely black, collar including pleura and scutellum white, posterior half of scutum and metapleura black, forming a distinct interalar band, T_1 and T_2 white, T_3 black, T_{4-6} red or reddish brown, St_{2-3} blackish brown, St_{4-6} brownish, legs in general black, hind trochanter and femur with some admixture of grey ; hind basitarsus with longest hairs of posterior fringe slightly exceeding half the greatest width of the segment of so, outer surface covered with dense plumose hairs.

Body length (n=5) : 18.45-19.30 (18.88) mm, interalar width : 5.61-5.69 (5.66) mm, length of malar area : 0.67-0.70 (0.68) mm, distal width of malar area : 0.79-0.81 (0.80) mm.

Male : Head slightly longer than wide; ocelli touching supra-orbital line; malar space as long as or very slightly shorter than distal width, longer than F_1 , but shorter than F_{2+3} ; F_1 markedly longer than F_2 and F_3 , F_2 about as long as distal width, longer than half of F_1 , shorter than F_3 , F_3 equal in length to F_4 (Fig. 2A); anterior and posterior fringes of hind tibia long, longest hairs in posterior fringe longer than the greatest width of the segment; hind basitarsus slightly narrowed towards the base, about 3 times longer than the greatest width, longest hairs in posterior fringe 1.5 times the greatest width of the segment; all segments of legs black. Sternit 7 apically with three process, St_8 gradually narrowed toward the tip, but narrowly rounded, volsella (lacinia) slightly emarginated at apex and longer than squama (gonostylus), squama rounded transverse with a small fingerlike process near the inner base, hook of sagitta (penis valve) turned inwards, and produced into a sharp point (Fig. 3 A,B,C).

Pubescences of head copious and elongated, pile of vertex and face below antennal sockets white intermixed with black, the rest of the head including beard and posterior of head entirely black; collar, scutellum and propodeum white, interalar band distinct, venter of thorax blackish; hairs of legs largely copious, elongate, mostly black in some specimens black and white hairs intermixed, hind tibiae and basitarsi posteriorly with long black hairs, in some hairs getting pale distally or completely; T_{1-2} white, T_3 black, T_{4-7} red or brownish red, sternits medially with very long greyish-white, laterally blackish hairs.

Body length (n=10) : 13.65-15.20 (14.07) mm, interalar width : 4.39-4.54 (4.47) mm, length of malar area : 0.491-0.504 (0.500) mm, distal width of malar area : 0.498-0.504 (0.503) mm; length of $F_{1,4}$: 0.438, 0.286, 0.353, 0.351 mm respectively; flagellum : 3.528-3.603 (3.598) mm (Fig.2).

Pyrobombus erzurumensis and P. incertus are at the same subgenus Melanobombus and are similar in many structural characters. Therefore the most remarkable differences were indicated below (Fig.2, 3, 4).

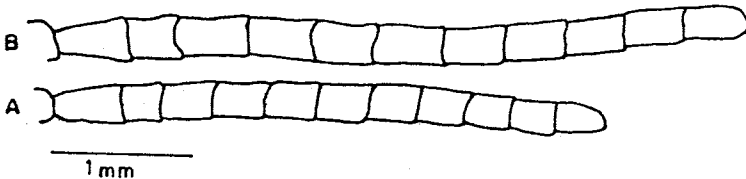


Fig. 2. Flagellar segments of males. A. Pyrobombus erzurumensis sp.n., B. Pyrobombus incertus (Mor.)

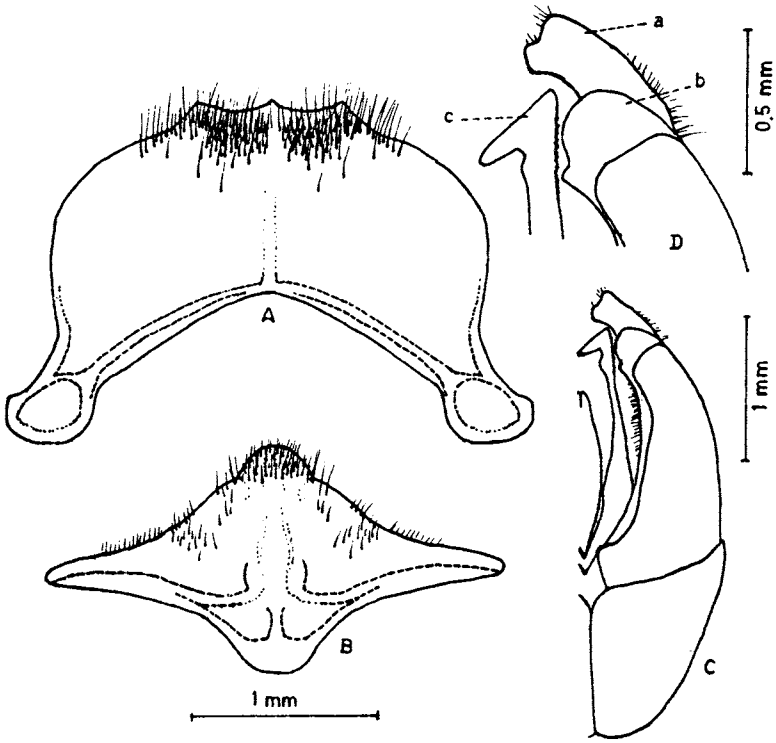


Fig. 3. *Pyrobombus erzurumensis* sp.n. male. A: Sternit 7, B: Sternit 8, C-D : Genitalia. a.Lacinia (volsella), b.Squama (gonostylus), c. Sagitta (penis valve)

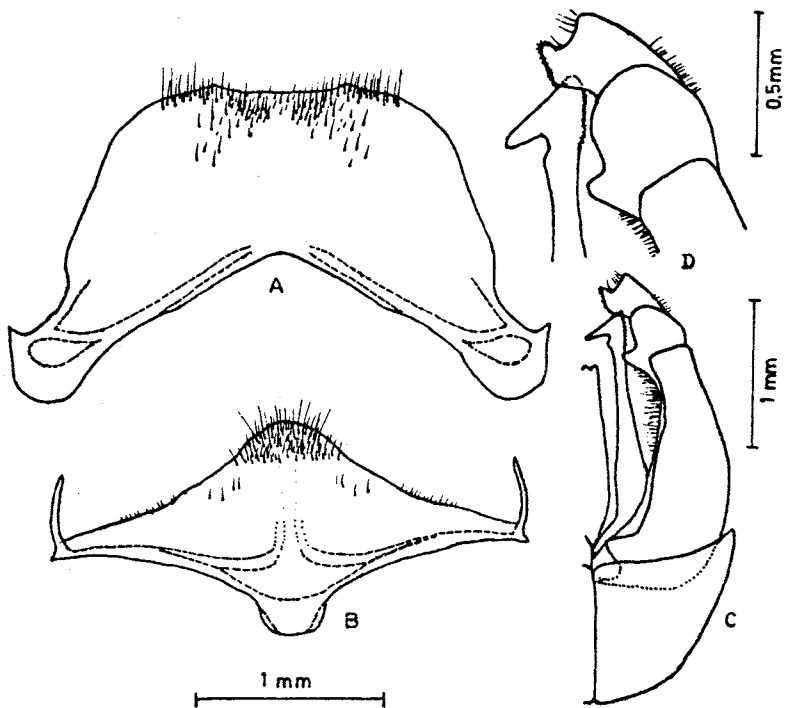


Fig. 4. *Pyrobombus incertus* (Mor.) male. A: Sternit 7, B: Sternit 8, C-D: Genitalia. a.Lacinia (volsella), b. Squama (gonostylus), c.Sagitta (penis valve)

P. erzurumensis

P. incertus

Female (Queen)

Malar space distinctly shorter than distal width (length: 6.68, width: 0.80 mm).

Impunctate area of ocellar orbital field small.

Punctured band between lateral ocelli and compound eyes broad.

Labral furrow moderately deep, and broadened anteriorly forming V shape.

Labral tubercle weakly alutaceous, anteriorly flattened.

Integument color of hind tibiae and basitarsi black.

Body medium size (length:18.88, interalar width:5.66 mm).

Malar space slightly shorter than distal width (length: 0.96, width: 0.99 mm).

Impunctate area of ocellar orbital field large.

Punctured band between lateral ocelli and compound eyes narrow.

Labral furrow very deep forming U shape or intermediate to U and V.

Labral tubercle strongly alutaceous, anteriorly pointed.

Integument color of hind tibiae and basitarsi mostly brown or reddish brown.

Body large size (length:22.40, interalar width: 6.30 mm).

Male

Malar space as long as or very slightly shorter than distal width.

Flagellum short (3.60 mm).

Integument color of all segments of legs black.

St₇ apically with three small process.

St₈ narrowly rounded at apical tip

Lacinia (volsella) longer than squama (gonostylus).

Lacinia slightly emarginated at apex.

Fingerlike process of squama smaller.

Pubescence of head copious and elongated, hairs on vertex and face below antennal sockets intermixed with black and white, the rest of it entirely black.

Venter of thorax with blackish hairs.

Malar space just longer than distal width.

Flagellum long (4.22 mm).

Integument color of distal segments of legs brownish.

St₇ truncated apically.

St₈ broadly rounded at apical tip.

Lacinia shorter than squama.

Lacinia fairly emarginated at apex.

Fingerlike process of squama larger.

Pubescence of head normal, hairs on vertex and face white, the rest of head white with scattered elongate black hairs.

Venter of thorax with white hairs.

Legs largely copious, elongate mostly black hairs.

Sternits medially with very long greyish-white, laterally blackish hairs.

Interalar width 4.47 mm.

Hairs of legs normal, mostly white and brownish.

Hairs of sternits normal in length, and white.

Interalar width 3.40 mm.

Özet

Doğu Anadolu'da yeni bir Bambuları türü, Pyrobombus erzurumensis (Hymenoptera:Apidae: Bombinae)

Doğu Anadolu Bölgesi'nin yabanarı faunasını tesbit çalışmaları sürdürülürken Dumlu, Kargapazarı ve Palandöken dağlarından toplanan bazı örneklerin mevcut türlerden farklı oldukları anlaşılmış, yeni bir tür olduğu ortaya konmuş ve Pyrobombus (Melanobombus) erzurumensis sp.n. olarak isimlendirilerek tanımlanmıştır. Aynı altcins (Melanobombus) giren ve birbirine çok benzeyen Pyrobombus incertus (Mor.) ile karşılaştırılarak hem erkek hem de dişilerdeki farklılıklar belirtilmiştir.

References

- Free, J.B., 1970. Insect Pollination Crops. Acad. Press, London, New York, 544 pp.
- Loken, A., 1973. Studies on Scandinavian Bumble bee (Hymenoptera:Apidae) Norwegian J.Entomol., 20 (1) : 1-218.
- Özbek, H. 1976. Pollinator bees on alfalfa in the Erzurum region of Turkey. J.Apicul.Res., 15 (3/4) : 145-148.
- Özbek, H., 1983. Doğu Anadolu'nun bazı yörelerindeki Bombinae (Hym.: Apoidea, Bombidae) türleri üzerinde taksonomik ve bazı biyolojik çalışmalar. Atatürk Üniv.Yayın No.621, Ziraat Fak.Yayın No.287, Atatürk Üniv.Basımevi, Erzurum, 70 s.
- Özbek, H., 1990. Palandöken ve Kargapazarı dağları arı (Hymenoptera: Apoidea) faunası. X. Ulusal Biyoloji Kongresi (18-20 Temmuz 1990, Erzurum). Zooloji Bildirileri, 153-162.
- Rasmont, P., 1983. Catalogue Commente Des Bourdons De La Région Ouest-Paléarchtique (Hym., Apoidea, Apidae). Faculte des Sciences Agronomiques De L'état, Gembloux, Belgique, 71 pp.
- Reinig, W.F., 1968. Über die Hummeln und Schmarötzerhummeln Northwest-Anatoliens (Hym., Apidae). NachbBl. Bayer. Ent., 17 : 101-112.
- Reinig, W.F., 1971. Zur Faunistik und Zoogeographie des Vorderen Orients. 3. Beitrag zur Kenntnis der Hummeln und Schmarötzerhummeln Anatoliens (Hym., Apidae). Veröff. zool. StSamml. Münch., 15: 141-165.
- Tkalcu, B., 1973. Taxonomie von Pyrobombus brodmannicus (Vogt) (Hymenoptera, Apoidea, Bombinae). Acta ent. bohemoslov., 70 : 259-268.