

## Systematical Studies on the Genus *Bracon* (*Glabrobracon*) (Hymenoptera, Braconidae: Braconinae) in Ankara Province\*

Yasemin GÜLER, Neşe ÇAĞATAY

Hacettepe University, Faculty of Science, Department of Biology, 06532, Beytepe- Ankara - TURKEY

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**Abstract:** The present study includes the species *Bracon* (*Glabrobracon*) *osculator* Nees, *B. (G.) lividus* Telenga, *B. (G.) planinotus* Tobias, *B. (G.) tschitcherini* Kokoujev, *B. (G.) helleni* Telenga, *B. (G.) piger* Wesmael, *B. (G.) variator* Nees from the genus *Bracon* Fabricius (Hymenoptera, Braconidae: Braconinae). Morphological descriptions and its general distribution and distribution in Turkey are given. *Bracon* (*G.*) *planinotus* Tobias and *B. (G.) helleni* Telenga were found to be new records for Turkish fauna.

**Key Words:** Braconidae, Braconinae, *Bracon*, Systematic, Distribution

### Ankara İli *Bracon* (*Glabrobracon*) (Hymenoptera, Braconidae: Braconinae) Cinsi Üzerine Sistematik Çalışmalar

**Özet:** *Bracon* Fabricius (Hymenoptera, Braconidae: Braconinae) cinsine ait *Bracon* (*Glabrobracon*) *osculator* Nees, *B. (G.) lividus* Telenga, *B. (G.) planinotus* Tobias, *B. (G.) tschitcherini* Kokoujev, *B. (G.) helleni* Telenga, *B. (G.) piger* Wesmael ve *B. (G.) variator* Nees türlerinin incelendiği bu çalışmada, morfolojik tanımlar, genel ve Türkiye yayılışları verilmiştir. *Bracon* (*G.*) *planinotus* Tobias ve *B. (G.) helleni* Telenga, Türkiye faunası için yeni kayıttır.

**Anahtar Sözcükler:** Braconidae, Braconinae, *Bracon*, Sistematik, Dağılım

### Introduction

The Braconinae is a large and widespread subfamily in Braconidae, which is one of the largest families in the Hymenoptera, including 43 subfamilies and more than 15,000 species (1, 2). It is known that there are about 2500 described species of Braconinae belonging to 250 genera, and 500 of them are distributed in the Palaearctic Region (3-5). The *Bracon*, having approximately 300 species reported from the Palaearctic region, is the largest genus in the subfamily Braconinae, and has worldwide distribution (6).

In Turkey, some studies were carried out by Beyarslan (7-9), Beyarslan and Fischer (10), and Beyarslan and İnanç (4, 11) on this group in the Marmara and the Mediterranean regions, and 76 species of Braconinae were recorded (7).

In the present study, *Bracon* (*Glabrobracon*) *osculator* Nees, *B. (G.) lividus* Telenga, *B. (G.) planinotus* Tobias, *B. (G.) tschitcherini* Kokoujev, *B. (G.) helleni* Telenga, *B. (G.)*

*piger* Wesmael, and *B. (G.) variator* Nees from the genus *Bracon*, most of which appear to be primary parasites of the larvae of Lepidoptera and Coleoptera, which are pests of economically important plants (12, 13), were systematically examined. *Bracon* (*G.*) *planinotus* Tobias and *B. (G.) helleni* Telenga found were to be new records for Turkish fauna.

### Materials and Methods

The material for the present study was collected by sweep-net and aspirators from Ayaş, Çankaya, Elmadağ, Haymana and Kızılcahamam (Ankara) between May 1995 and August 1996, and sacrificed with ethyl acetate. The specimens were mounted on triangular labels and were examined by stereoscopic binocular microscope (Nikon SMZ-U). The figures of the body parts with systematical importance, like wings and legs, were drawn under the stereoscopic microscope with a camera lucida. The terminology follows that proposed by van Achterberg

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(14). For the determination of the species, the key and systematic characters used follow those proposed by Papp (15), Beyarslan (8), Beyarslan and Fischer (10) and Tobias (13). In addition, the specimens were checked by Dr. Beyarslan.

The measurements of the head and mesosoma, the length of vein 3-SR, vein r and vein SR1 in the fore wing, and the length of tibial spur and basitarsus are given, because of their diagnostic values.

The specimens are preserved in the collections of the Department of Biology, Hacettepe University (Ankara).

**Abbreviations Used in the Figures**

- bts basitarsus
- msc mesoscutum
- mtn metanotum
- no notauli
- pr propodeum
- r radial vein
- sc scutellum
- ss scutellar sulcus
- S2 second metasomal suture
- spo spurs
- SR sectio radii
- St6 sixth sternite
- T1 first metasomal tergite
- T2 second metasomal tergite
- T3 third metasomal tergite
- T8 eighth metasomal tergite

**Results**

**Genus *Bracon* Fabricius, 1804**

*Bracon* Fabricius 1804 Syst. Piezat.

Type-species: *Ichneumon minutator* Fabricius, 1798.

Syn. : *Brachon* Agassiz, 1846; *Brazon* Schulz, 1911; *Microbracon* Ashmead, 1890; *Amicoplidea* Ashmead, 1900; *Macrodyctium* Ashmead, 1900; *Tropidobracon* Ashmead, 1900; *Liobracon* (Ashmead) Nason, 1905; *Eutropobracon* Ayyar, 1928

**Key to the Species of *Bracon* Fabricius (*Glabrobracon*)**

- 1- Ovipositor as long as body, barely shorter or longer; wings darkened .....2
- 1'- Ovipositor as long as metasoma, slightly longer or shorter; if much longer, then wings light colored .....3
- 2 - Mesosoma not more than 1.5 times as long as high, mesonotum fairly steeply inclined toward pronotum and greatly raised above it; body orange; stigma dark brown; ovipositor slightly shorter than body .....*B. (G.) lividus* Tel.
- 2'- Mesosoma more than 2 times as long as high; mesonotum gently sloping to pronotum and slightly raised above it; body orange, mesosoma with somewhat developed dark pattern; stigma basally yellow, apically brown; ovipositor slightly longer than body ...*B. (G.) planinotus* Tobias
- 3- Wings light colored, absolutely lacking smoky tinge or with very slight tinge; radial cell reaching wing apex; body usually orange, rarely mesosoma with somewhat developed dark pattern; stigma yellow .....*B. (G.) tschitscherini* Kok.
- 3'- Wings darkened .....4
- 4- Second metasomal tergite much shorter than 3rd.; body orange, stigma yellow with dark apex. Ovipositor slightly longer than metasoma .....*B. (G.) helleni* Telenga
- 4'- Second metasomal tergite as long as 3rd or slightly shorter .....5
- 5- Third tergite posteriorly unsclerotized; second suture shallow and slightly straight .....*B. (G.) osculator* Nees
- 5'- Third tergite posteriorly sclerotized; second suture distinct, anteriorly curved in middle ...6
- 6- Head slightly transverse; second tergite as long as third .....*B. (G.) piger* Wesm.
- 6'- Head distinctly transverse; second tergite shorter than third .....*B. (G.) variator* Nees

3.1. *Bracon (Glabrobracon) osculator* Nees, 1812

*Bracon osculator* Nees von Esenbeck (1811) 1812  
Mag. Ges. nat. Fr. Berl. 5:10, ♀ ♂

Syn.: *Braco* (-n) *bisignatus* Wesmael, 1838; *B. degenerator* Marshall, 1885; *B. minutus* Szepligeti, 1901; *B. cingulator* Szepligeti, 1901; *B. temporalis* Telenga, 1936; *B. venustus* Telenga, 1936 (Figs. 1-10).

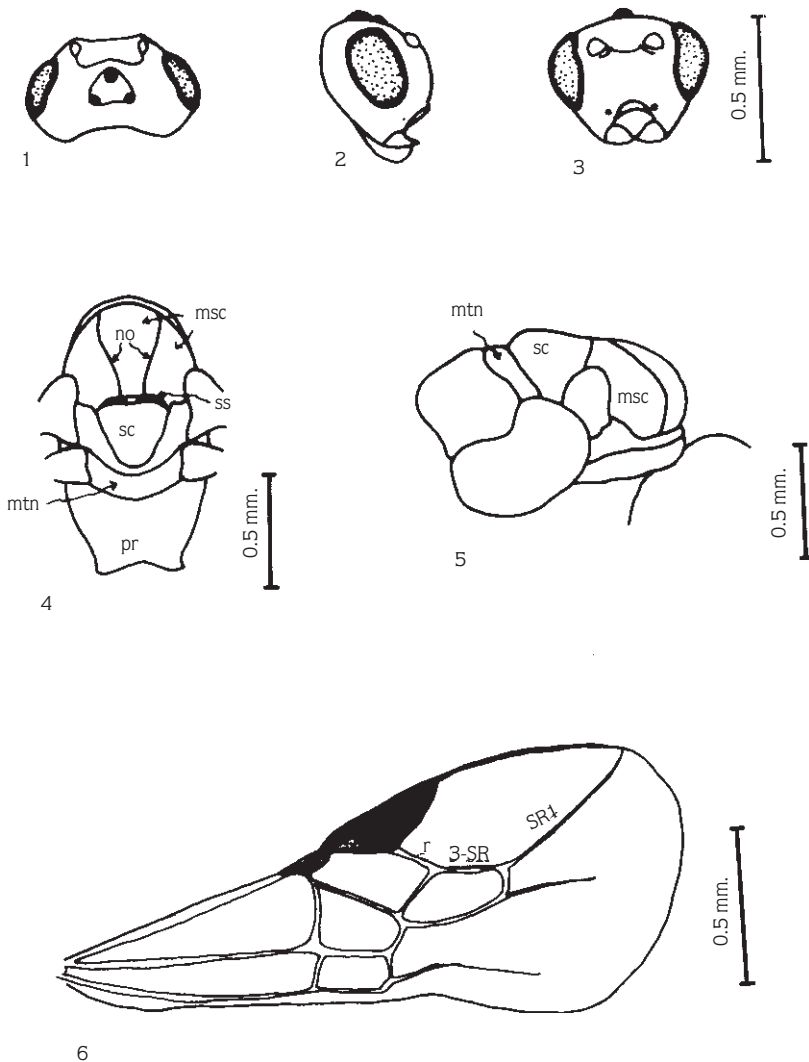
Head black, transverse, temple round, width of head: height=13:10, without sculpture, with sparse short and white hairs; obtuse angle between anterior ocellus and posterior ocelli; compound eyes oval; antennal sockets much closer to eyes than each other; antenna with 26 flagellomeres, as long as body; mandible orange; palpi yellow.

Mesosoma dark brown, comparatively long, in normal form, length of mesosoma: height = 3:2, with sparse hairs; notauli distinct; scutellum higher than mesoscutum and metanotum; scutellar sulcus deep, with crenulate; propodeum without carina.

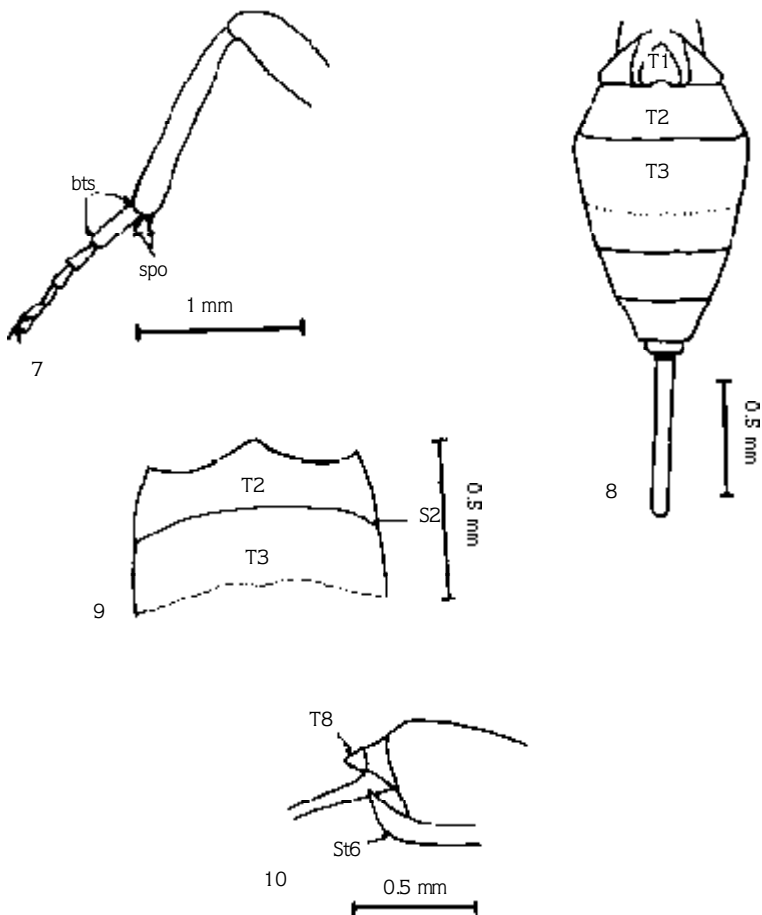
Wings hyaline; veins and stigma brown; in fore wing length of 3-SR 1.6 times that of r, SR1 2 times that of 3-SR.

Legs yellow; length of tibial spurs about 0.2 times that of basitarsus.

Metasoma dark brown, elliptic; tergites medially black, without sculptures but rugulose; second tergite shorter than third; third tergite posteriorly unsclerotized; second suture shallow and slightly straight; sixth sternite



Figs. 1-6. *Bracon osculator* Nees: 1. Head, dorsal aspect. 2. Head, lateral aspect. 3. Head, frontal aspect. 4. Mesosoma, dorsal aspect. 5. Mesosoma, lateral aspect. 6. Fore wing.



Figs. 7-10. *Bracon osculator* Nees: 7. Hind femur, tibia and tarsi. 8. Metasoma, dorsal aspect. 9. Tergites 2-3. 10. 8th tergite and 6th sternite, lateral aspect.

cannot reach level of eighth tergite apically; ovipositor sheath reddish, half the length of metasoma.

Length of body 2.10mm, of ovipositor sheath 0.90mm.

Material examined: Kızılcahamam, 24.1.1995, 1 ♀; Haymana, 1995, 1 ; Ayaş- Başberek, 13.7.1996, 1 ♀

General distribution: Mongolia, Azerbaijan, Caucasus, Russia, Yugoslavia, Italy, Romania, Poland, Hungary, Switzerland, Sweden, Siberia, Spain, Finland, Denmark, Austria, Belgium, the Netherlands, Germany, France and England (8, 11).

Distribution in Turkey: Hatay (Dört Yol), İçel (Erdemli, Silifke), Antalya (Finike), Isparta (Merkez) (8), Bursa (İnegöl-Taraklı, Karacabey-Çingeneçme), İzmit (Sapanca- İstanbul Ü. Tesisleri) (11).

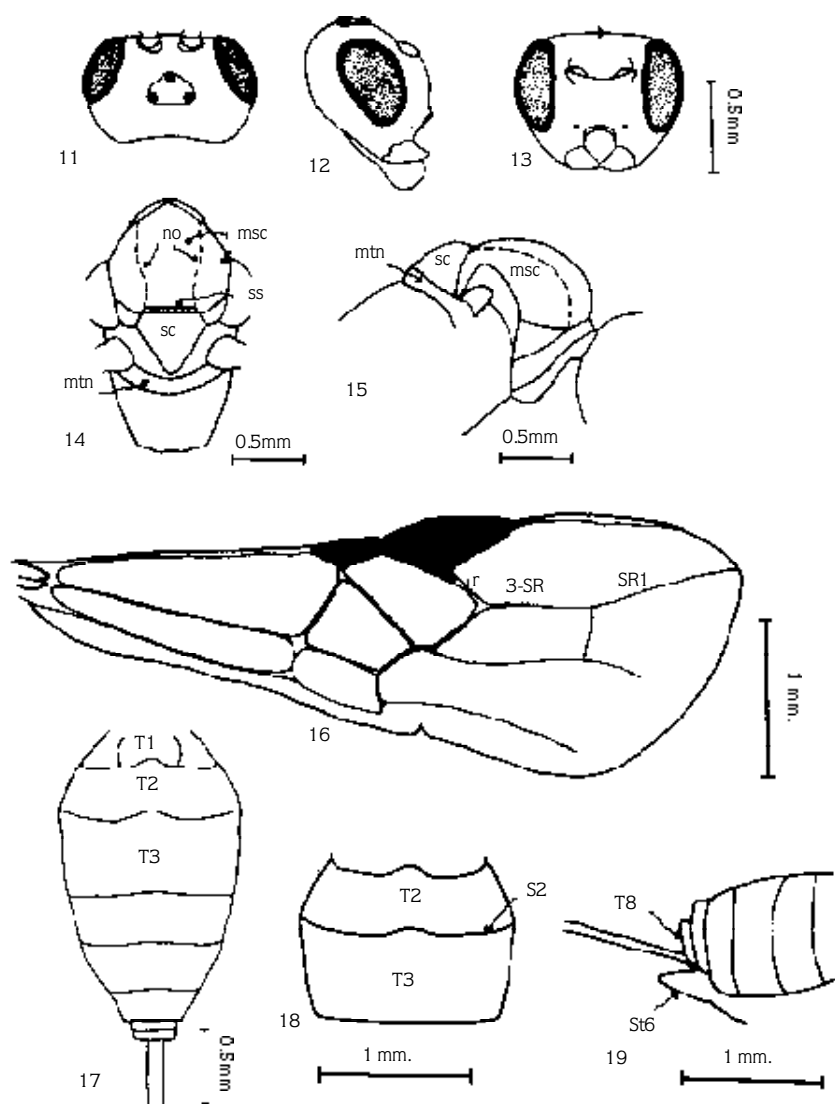
### 3. 2. *Bracon (Glabrobracon) lividus* Telenga, 1936

*Bracon (Glabrobracon) lividus* Telenga, 1936  
Fauna SSSR 5 (2): 210, 390, ♀ (Figs. 11- 19).

Head orange, transverse, temple round, width of head: height=19:17, without sculpture, with sparse short and white hairs; obtuse angle between anterior ocellus and posterior ocelli; compound eyes oval; antennal sockets much closer to eyes than each other; antenna with 33 flagellomeres, as long as body; mandible orange, with apical part black; palpi brown.

Mesosoma orange, comparatively long, in normal form, length of mesosoma: height = 7:4, with sparse hairs; notauli indistinct; scutellum slightly higher than mesoscutum and metanotum; scutellar sulcus deep, with crenulate; propodeum black, without carina.

Wings brown; veins and stigma dark brown; in fore wing length of 3-SR 2 times that of r, SR1 1.6 times that of 3-SR.



Figs. 11-19. *B. lividus* Telenga: 11. Head, dorsal aspect, 12. Head, lateral aspect, 13. Head, frontal aspect, 14. Mesosoma, dorsal aspect, 15. Mesosoma, lateral aspect, 16. Fore wing, 17. Metasoma, dorsal aspect, 18. Tergites 2-3, 19. 8th tergite and 6th sternite, lateral aspect.

Legs orange, coxae brown; length of tibial spurs about 0.3 times that of basitarsus.

Metasoma orange, more or less oval; tergites without sculptures; second tergite shorter than third; third tergite posteriorly sclerotized; second suture distinct, anteriorly curved in middle; sixth sternite projecting beyond eighth tergite apically; ovipositor sheath black, longer than metasoma.

Length of body 3.75mm, of ovipositor sheath 2.90mm.

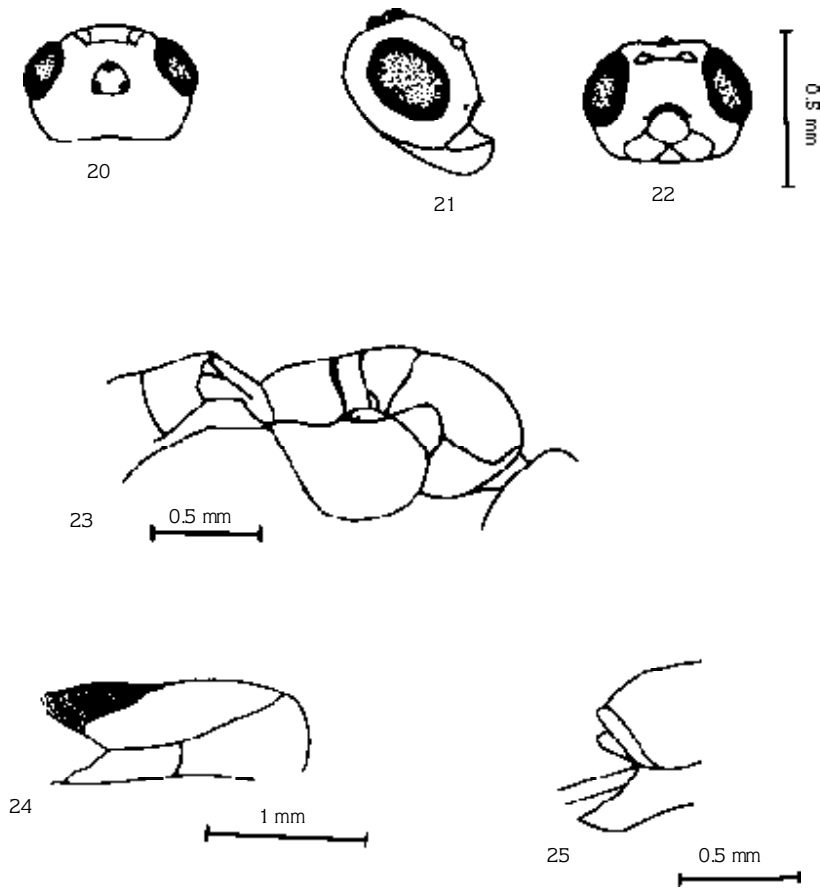
Material examined: Haymana-Bayraklı, 5.8.1995, 2♀ ♀

General distribution: Caucasus and Armenia (11, 13).

Distribution in Turkey: Balıkesir (Gönen-Gebeçinar), Bilecik (Küplü), Bursa (Karacabey-Çingençeşme), Çanakkale (Biga- Çınardere), İzmit (Sapanca- İstanbul Ü. Tesisi) (11).

3. 3. *Bracon (Glabrobracon) planinotus* Tobias, 1957  
*Bracon (Glabrobracon) planinotus* Tobias 1957, Ent. Obozr. 36 (2): 487, ♀ ♂, (Figs. 20- 25).

Head orange, transverse, temple round, width of head: height= 7:6, without sculpture, with sparse short and white hairs; obtuse angle between anterior ocellus and posterior ocelli; compound eyes oval; antennal sockets much closer to eyes than each other; antenna



Figs. 20- 25. *B. planinotus* Tobias: 20. Head, dorsal aspect, 21. Head, lateral aspect, 22. Head, frontal aspect, 23. Mesosoma, lateral aspect, 24. Detail of marginal cell of fore wing, 25. 8th tergite and 6th sternite, lateral aspect.

with 22 flagellomeres, as long as body; mandible orange, with apical part brown; palpi brown.

Mesosoma orange with black spots, much longer than wide, length of mesosoma: height = 16:5, with sparse hairs; notauli indistinct; scutellum in same level with mesoscutum and metanotum; scutellar sulcus deep, with crenulate; propodeum black, without carina.

Wings brown; veins brown; stigma basally yellow, apically brown; in fore wing length of 3-SR 1.7 times that of r, SR1 2 times that of 3-SR.

Legs brown, fore coxa orange; length of tibial spurs about 0.5 times that of basitarsus.

Metasoma orange, elongately elliptical; tergites without sculptures; second tergite shorter than third; third tergite posteriorly sclerotized; second suture distinct, anteriorly curved in middle; sixth sternite projecting beyond eighth tergite apically; ovipositor sheath dark brown, longer than metasoma.

Length of body 2.50mm, of ovipositor sheath 2.60mm.

Material examined: Ayaş, 3.6.1995, 2 ♀ ♀

General distribution: Russia, Kazakhstan (13).

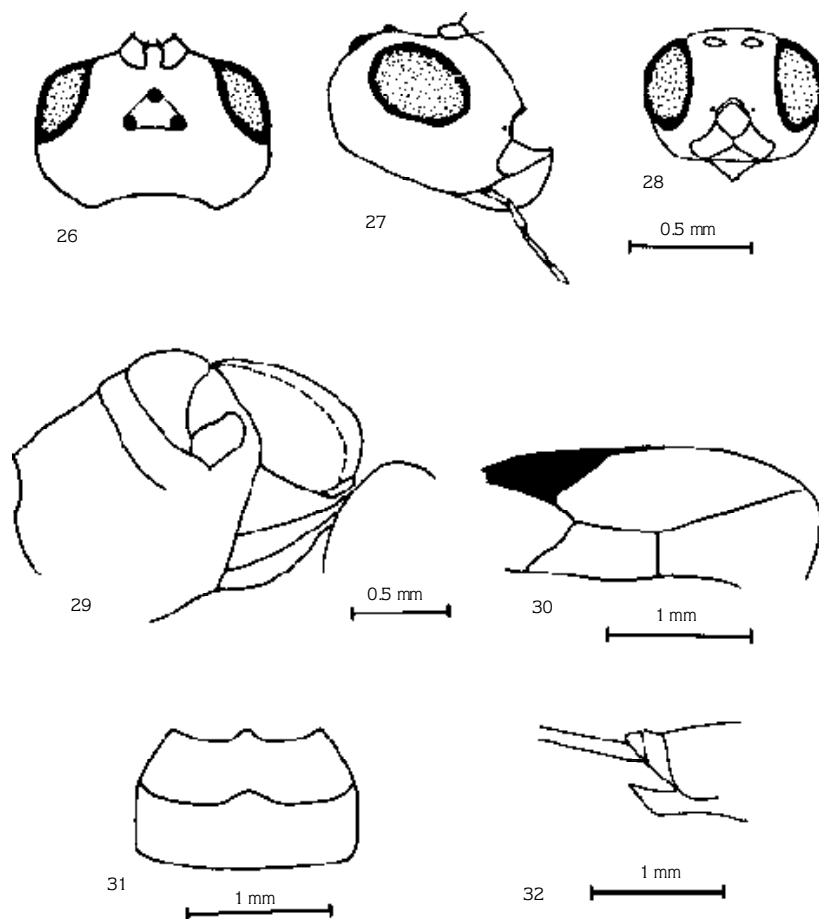
Distribution in Turkey: New record for Turkish fauna.

3. 4. *Bracon* (*Glabrobracon*) *tschitscherini* Kokoujev, 1904

*Bracon tschcherini* Kokoujev 1904 Russk. ent. Obozr. 4, 213, ♀

Syn.: *B. (Glabrobracon) ochrostigma* Telenga, 1936; *B. (G.) xanthostigma* Telenga, 1936 (Figs. 26- 32).

Head orange, quadrate, under eyes temple straight then slightly curved, width of head: height= 5:4, without sculpture, with sparse short and white hairs; right angle between anterior ocellus and posterior ocelli; compound eyes oval; distance between antennal sockets equal to distance between an antennal socket and compound eye;



Figs. 26-32. *B. tschitcherini* Kokoujev: 26. Head, dorsal aspect, 27. Head, lateral aspect, 28. Head, frontal aspect, 29. Mesosoma, lateral aspect, 30. Detail of marginal cell of fore wing, 31. Tergites 2-3, 32. 8th tergite and 6th sternite, lateral aspect.

antenna with 27 flagellomeres, shorter than body; mandible and palpi yellow.

Mesosoma orange with black spots, comparatively long, in normal form, length of mesosoma: height = 5:2, with sparse hairs; notauli indistinct; scutellum higher than mesoscutum and metanotum; scutellar sulcus deep, with crenulate; propodeum without carina.

Wings hyaline; veins dark brown; stigma yellow; in fore wing length of 3-SR 2.7 times that of r, SR1 1.5 times that of 3-SR.

Legs orange, apical part of tarsi and hind tibia black; length of tibial spurs about 0.3 times that of basitarsus.

Metasoma orange, more or less oval; tergites without sculptures; second tergite as long as third; third tergite posteriorly sclerotized; second suture distinct, anteriorly curved in middle; sixth sternite can reach level of eighth tergite apically; ovipositor sheath black, longer than metasoma.

Length of body 3.80mm, of ovipositor sheath 2.60mm.

Material examined: Kızılcahamam, 24. 6. 1995, 1 ♂; Elmadağ-Deliler, 23. 7. 1995, 1 ♀; Haymana, 5. 8. 1995, 1 ♂ 1 ♀

General distribution: Middle Asia, Azerbaijan, Kazakhstan (13), Turkmenia, South Caucasus, Russia, Romania and Hungary (8, 11).

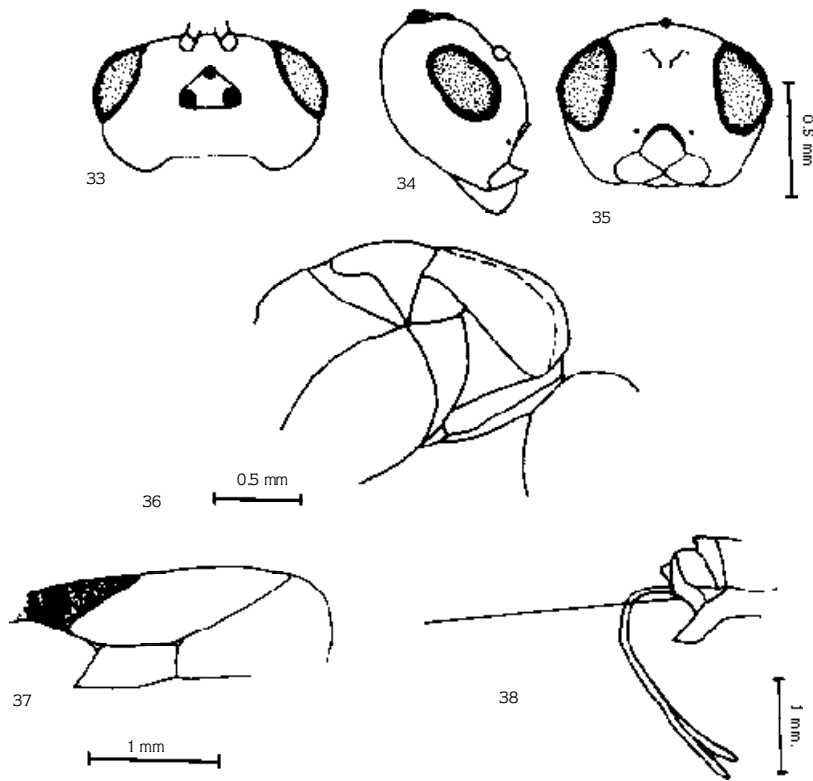
Distribution in Turkey: İçel (Erdemli, Silifke), Antalya (Merkez, Kumluca, Finike, Korkuteli) (8), Bilecik (Bakırköy) (12).

### 3. 5. *Bracon (Glabrobracon) helleni* Telenga, 1936

*Bracon (Glabrobracon) helleni* Telenga 1936 Fauna SSSR 5 (2): 200, 388, ♂ ♀, (Figs. 33- 38)

Head orange, transverse, under eyes temple straight then slightly curved, width of head: height= 6:5, without sculpture, with sparse short and white hairs; right angle





Figs. 33-38. *B. helleni* Telenga: 33. Head, dorsal aspect, 34. Head, lateral aspect, 35. Head, frontal aspect, 36. Mesosoma, lateral aspect, 37. Detail of marginal cell of fore wing, 38. 8th tergite and 6th sternite, lateral aspect.

between anterior ocellus and posterior ocelli; compound eyes oval; antennal sockets much closer to each other than eyes; antenna with 30 flagellomeres, as long as body; mandible orange, with apical part dark brown; palpi brown.

Mesosoma orange, comparatively long, in normal form, length of mesosoma: height = 2:1, with sparse hairs; notauli indistinct; scutellum in the same level with mesoscutum and metanotum; scutellar sulcus deep, with crenulate; propodeum black, without carina.

Wings smoke colored; stigma basally yellow, apically brown; in fore wing length of 3-SR about 2 times that of r, SR1 2 times that of 3-SR.

Legs yellow, middle and hind coxa black; length of tibial spurs about 0.3 times that of basitarsus.

Metasoma orange, elliptic; first tergite medially black; tergites without sculptures; second tergite shorter than third; third tergite posteriorly sclerotized; second suture distinct, anteriorly curved in middle; sixth sternite cannot reach level of eighth tergite apically; ovipositor sheath black, longer than metasoma.

Length of body 3.70mm, of ovipositor sheath 2.50mm.

Material examined: Ayaş, 3.6.1995, 1 ♀

General distribution: U.S.S.R.

Distribution in Turkey: New record for Turkish fauna.

**3. 6. *Bracon* (*Glabrobracon*) *piger* Wesmael, 1838**

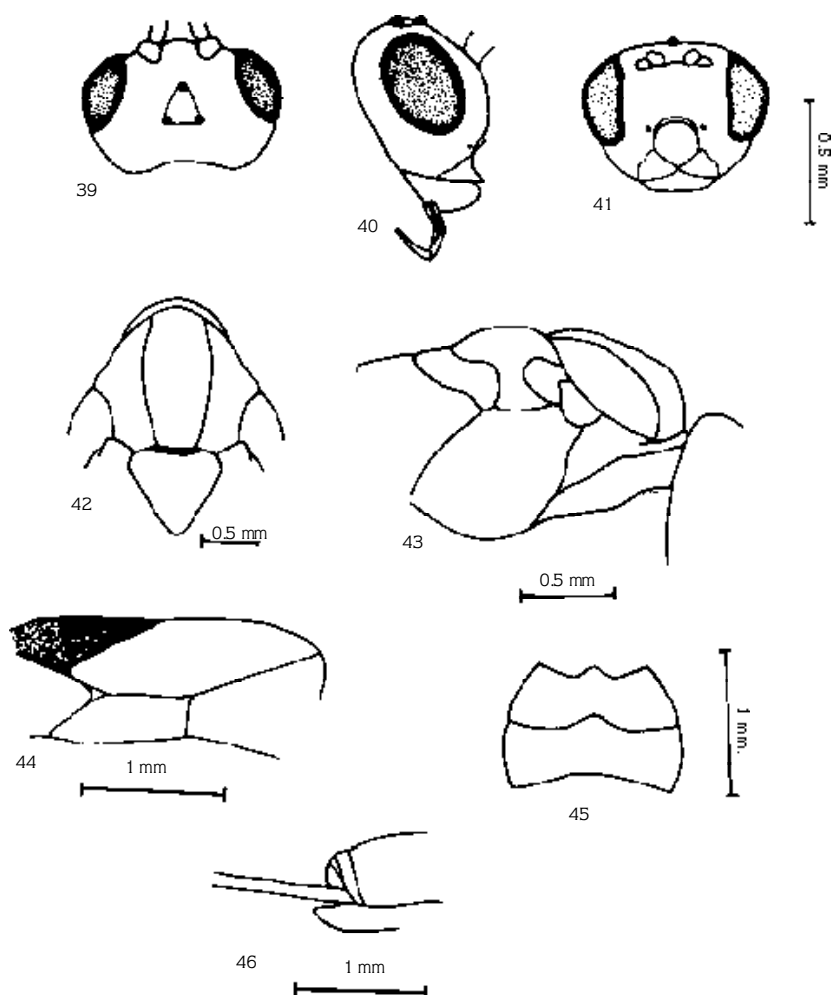
*Bracon piger* Wesmael 1838 Nouv. Mem. Acad. Brux. 11: 48

Syn.: *B. semiluteus* Walker, 1874; *B. semilunatus* Dalla Torre, 1898; *Microbracon piger* Strong, 1937, (Figs. 39- 46).

Head black, quadrate, temple round, width of head: height= 7:5, without sculpture, with sparse short and white hairs; acute angle between anterior ocellus and posterior ocelli; compound eyes oval; antennal sockets much closer to eyes than each other; antenna with 29 flagellomeres, as long as body; mandible orange, with apical part dark brown; palpi dark brown.

Mesosoma black, comparatively long, in normal form, length of mesosoma: height=23:10, with sparse hairs;





Figs. 39-46. *B. piger* Wesm.: 39. Head, dorsal aspect, 40. Head, lateral aspect, 41. Head, frontal aspect, 42. Mesonotum, dorsal aspect, 43. Mesosoma, lateral aspect, 44. Fore wing, 45. Tergites 2-3, 46. 8th tergite and 6th sternite, lateral aspect.

notauli distinct; scutellum slightly higher than mesoscutum and metanotum; scutellar sulcus deep, with crenulate; propodeum without carina.

Wings dark brown; veins and stigma brown; in fore wing length of 3-SR 2.5 times that of r, SR1 about 1.5 times that of 3-SR.

Legs black, distal part of tibia and hind femur reddish; length of tibial spurs about 0.3 times that of basitarsus.

Metasoma orange, more or less oval; tergites without sculptures; second tergite as long as third; third tergite posteriorly sclerotized; second suture distinct, anteriorly curved in middle; sixth sternite somewhat projecting beyond eighth tergite apically; ovipositor sheath black, longer than metasoma.

Length of body 3.15mm, of ovipositor sheath 2.25mm.

Material examined: Elmadağ, 23.7.1995, 1 ♀; Çankaya-Beytepe, 25.5.1996, 2 ♀ ♀

General distribution: Kazakhstan, Caucasus (13), Japan, Russia, Romania, Czechoslovakia, Hungary, Austria, Italy, Belgium, France, England (8, 11).

Distribution in Turkey: Kahramanmaraş (Afşin), Adana (Merkez), İçel (Erdemli), Isparta (Merkez, Eğirdir), Burdur (Bucak) (8), Bursa (Karacabey-Kulakpınar), Edirne (Merkez, Meriç, Uzunköprü-Kırcasalih), Tekirdağ (Işıklar), Şanlıurfa (Birecik) (11).

### 3. 7. *Bracon (Glabrobracon) variator* Nees, 1812

*Bracon variator* Nees von Esenbeck (1811) 1812  
Mag. Ges. naturf. Fr. Berl. 5: 7, ♀ ♂

Syn.: *B. guttator* Panzer, 1805; *B. caudiger* Thomson, 1892; *B. collinus* Szepligeti, 1896; *B.*

*hyalinipennis* Szepilgeti, 1901; *B. rotundatus* Szepilgeti, (1901); *B. roberti* Morley, 1908; *Glabrobracon variator* Kolubajiv, 1934; *Braxo praecox* Wesmael, 1838; *Microbracon praecox* Thomson, 1953; *M. variator* Thomson, 1953, (Figs. 47- 53).

Head orange with black spots, transverse, temple round, width of head: height= 6:5, without sculpture, with sparse short and white hairs; acute angle between anterior ocellus and posterior ocelli; compound eyes oval; antennal sockets much closer to eyes than each other; antenna with 25 flagellomeres, shorter than body; mandible yellow, with apical part brown; palpi black.

Mesosoma orange, metanotum black, comparatively long, in normal form, length of mesosoma: height = 19:9, with sparse hairs; notauli indistinct; scutellum slightly higher than mesoscutum and metanotum; scutellar sulcus deep, with crenulate; propodeum black, without carina.

Wings brown; veins dark brown; stigma basally brown, apically yellow; in fore wing length of 3-SR 1.6 times that of r, SR1 2 times that of 3-SR.

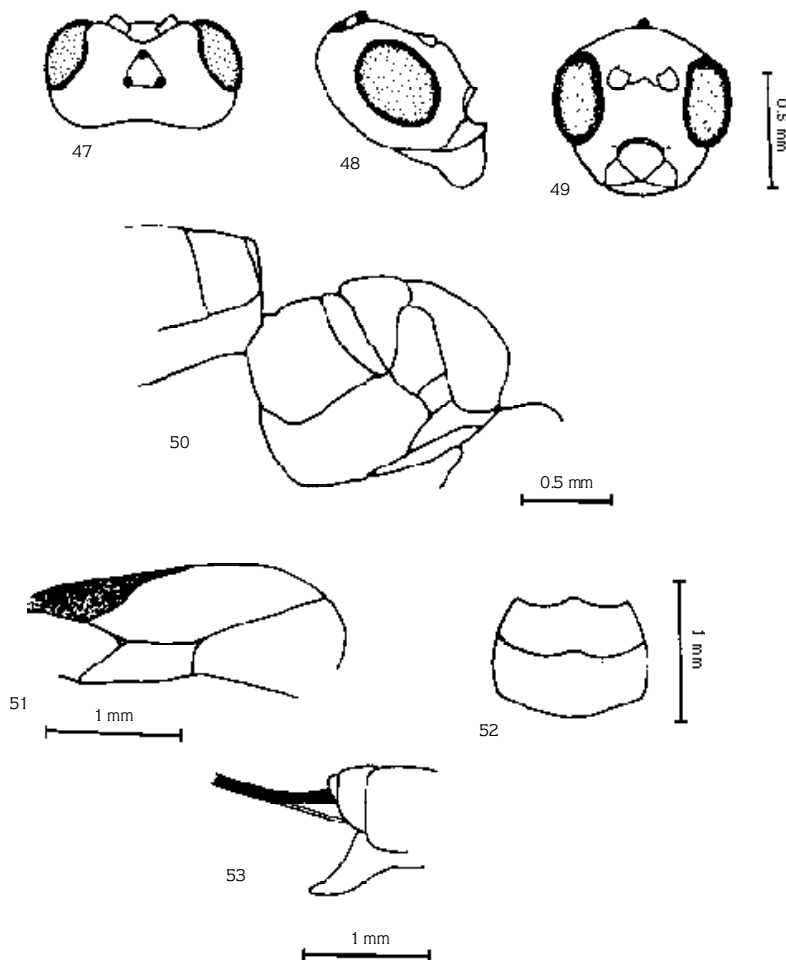
Legs orange with dark brown spots; length of tibial spurs about 0.3 times that of basitarsus.

Metasoma orange, more or less oval; tergites without sculptures; second tergite shorter than third; third tergite posteriorly sclerotized; second suture distinct, anteriorly curved in middle; sixth sternite projecting beyond eighth tergite apically; ovipositor sheath black, longer than metasoma.

Length of body 3.15mm, of ovipositor sheath 2.50mm.

Material examined: Elmadağ, Deliler, 23.7.1995, 2♀ ♀

General distribution: China, Middle Asia, Mongolia, Siberia, Russia, Crimea, Iran, Romania, Yugoslavia,



Figs. 47-53. *B. variator* Nees: 47. Head, dorsal aspect, 48. Head, lateral aspect, 49. Head, frontal aspect, 50. Mesosoma, lateral aspect, 51. Fore wing, 52. Tergites 2-3, 53. 8th tergite and 6th sternite, lateral aspect.

Czechoslovakia, Hungary, Finland, Sweden, Italy, Belgium, the Netherlands, Poland, Austria, Germany, France, Spain, England, Mongolia, Switzerland and Turkey (8, 11).

Distribution in Turkey: Kahramanmaraş (Merkez, Elbistan, Afşin), Adana (Merkez, Feke), İçel (Silifke, Mut), Antalya (Korkuteli, Elmalı), Isparta (Merkez, Eğirdir) (8), Konya (15), Adapazarı (Göktepe), Balıkesir (Gönen-Gebeçinar, Manyas-Karacaköy, Kuşçenneti), Bilecik (Çakırpınar, Çavuşköy, Pazaryeri, Bahçesultan, Yeniköy), Bursa (İnegöl-Mezitli, Karacabey-Canbazköy, Çingenceşme, Keles-Baraklı, Orhaneli-Çırpı, Uluçam-Doğanlı), Çanakkale (Biga-Çınardere, Çan), Edirne (Hadımağa, Trakya Ü. Kampüsü, Enez, Meriç, K.altıağaç, Uzunköprü-Yeniköy), İstanbul (Çatalca-Binkılıç), İzmit (Sapanca-İstanbul Ü. Tesisleri, Uzuntarla), Kırklareli (Doğanca, Babaeski-Alpullu, Lüleburgaz-Evrensekiz), Şanlıurfa (Birecik), Tekirdağ (Mermerköy, Naipköy, Muratlı, Saray-Safaalan), Van (Merkez, Gürpınar) (11).

## Conclusion

The genus *Bracon Fabricius* is distinguished from the other genera by frons without a 'Y' shaped projection between the antennal sockets; posterior part of propleuron without longitudinal carina; first metasomal tergite not transverse, 3rd and 4th metasomal tergites without anterolateral areas. Species-level identification of the genus *Bracon* is fairly complicated. The genus *Bracon* is divided into subgenera based on the Palaearctic fauna, in order to overcome most of the difficulties of its

## References

1. Achterberg, C. van, Illustrated Key to the Subfamilies of the Braconidae (Hymenoptera: Ichneumonoidea). Zoologische Verhandlungen, Leiden 283. 30.x., 1- 189, 1993.
2. Wharton, R. A., Bionomics of the Braconidae. Annu. Rev. Entomol., 38: 121- 43, 1993.
3. Shaw, M. R., Huddleston, T., Classification and Biology of Braconid Wasps (Hymenoptera: Braconidae). Handbooks for the Identification of British Insects, Vol. 7. Part 11, 1991.
4. Beyarslan, A., İnanç, F., Marmara Bölgesi Braconinae (Hym.: Braconidae) Faunası Üzerinde Taksonomik Araştırmalar I. Türkiye III. Biyolojik Mücadele Kongresi Bildirileri, Ent. Der. Yayınları No: 7, 67-82, 1994.
5. Chrishti, M.J.K., Quicke, D.L.J., A New Genus and Phylogenetic Analysis of the Bathyaulacini and Glyptomorphini (Hymenoptera: Braconidae: Braconinae). Systematic Entomology, 20, 73-84, 1995.
6. Papp, J., A Revision of Thomson's Species of *Bracon* Fabr. (Hymenoptera: Braconidae). Opusc. Ent., 34:3, 177- 205, 1969.
7. Beyarslan, A., Die Arten Der Tribus Vipionini Telenga Aus Der Turkei (Hymenoptera: Braconidae: Braconinae). Linzer biol Beitr., 23:2, 495-519, 1991.
8. Beyarslan, A., Türkiye'nin Akdeniz Bölgesi' nde Saptanan *Bracon Fabricius* (Hym., Braconidae, Braconinae) Türleri Üzerinde Araştırmalar I. Doğa Tr. Bio. D. 10.1, 39-52, 1986.
9. Beyarslan, A., Trakya Bölgesi' nde Braconinae Faunası Üzerinde Sistemik Araştırmalar. Türkiye I. Entomoloji Kongresi, 595- 604, İzmir, 1987.
10. Beyarslan, A., Fischer, M., Bestimmungsschlüssel zur Identifikation der palaarktischen Bracon- Arten des Subgenus *Glabrobracon* Tobias (Hymenoptera, Braconidae, Braconinae). Ann. Naturhist. Mus. Wien, 91B: 137- 145, 1990.

classification. But it has limited use for classifying many tropical members (17). The subgenus *Glabrobracon* is recognized by the loss of the sculptures, mostly on the abdomen, with a long radial cell in the usual, small oral cavity, short apical segment of the hind tarsi and thin antennae (13).

Differences in the body colors of the species *B. (G.) planinotus* Tobias and *B. (G.) variator* Nees are determined by comparing the descriptions given in this study with the descriptions given in the literature. Tobias (14) states that the species *B. (G.) planinotus* Tobias has a black body and light colored metasoma sometimes, and Papp (6) states that the species *B. (G.) variator* Nees has a black head and mesosoma, and a black 1st metasomal tergite and that the other metasomal tergites are yellow with black spots. However, in this study, was determined that *B. (G.) planinotus* Tobias has an orange head and metasoma, and its mesosoma is orange with black spots, and *B. (G.) variator* Nees has an orange head and mesosoma both with black spots and a fully orange metasoma.

These differences are considered variations due to the population of the two species in the area of study.

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11. Beyarslan, A., İnanç, F., Marmara Bölgesi' nin Doğu Kesiminin Braconidae (Hym.) Faunasının Tesbiti. Proje No: TBAG- 1135, 240s, 1995.
12. Quicke, D.L.J., Sharkey, M.J., A key to and notes on the genera of Braconinae (Hymenoptera: Braconidae) from America North of Mexico with Descriptions of Two New Genera and Three New Species. Can. Ent., 121:337-361, 1989.
13. Tobias, V.I., Keys of the Insects of the European Part of the USSR. Volume 3, Hymenoptera, Part 4, Science Publishers, Lebanon, New Hampshire, USA, xvi+883 pages, 1995.
14. Achterberg, C. van, Revision of the Subfamily Blacinae Foerster (Hymenoptera, Braconidae). Zool. Verh. Leiden 249, 30-XII:1-324, figs. 1- 1250, 1988.
15. Papp, J., Zur Kenntnis der *Bracon*- Arten Österreichs (Hymenoptera, Braconidae). Ann. Naturhistor. Mus. Wien, 78: 415- 435, 1974.
16. Öncüler, C., Türkiye Bitki Zararlısı Böceklerin Parazit ve Predatör Kataloğu. 1. Baskı, Bornova- İzmir, 1991, Ege Ü. Zir. Fak. Yay. No: 505, 326 p.
16. Quicke, D. L. J., The Old World Genera of Braconine Wasps (Hym.: Braconidae). Journal Of Natural History, 21., 43-157, 1987.