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**Taxonomical Investigations on the fauna of *Helconinae*,
Homolobinae and *Ichneutinae* (Hymenoptera, Braconidae)
in provinces Ardahan, Erzurum, Iğdır and Kars
of Turkish north-eastern Anatolian region**

Ahmet BEYERSLAN

Abstract

In order to determine Braconidae fauna of Turkey, adult specimens of Helconinae, Homolobinae and Ichneutinae were collected from various habitats of Turkish north-eastern Anatolian region using Malaise and light traps and sweeping nets between 2012 and 2014. In total, 6 species belonging 3 genera and 3 subfamilies are reported for the studied regions. The numbers of species of each genus are as follows: *Diospilus* HALIDAY, 1833: 4, *Homolobus* FÖRSTER, 1862: 1, *Ichneutes* NEES, 1816: 1.

Key words: Braconidae, Helconinae, Homolobinae and Ichneutinae, fauna, north-east, Anatolia, Turkey

Zusammenfassung

Um die Braconidae Fauna der Türkei zu erforschen wurden erwachsene Exemplare von Helconinae, Homolobinae und Ichneutinae aus verschiedenen Lebensräumen in der nordöstlichen anatolischen Region in den Jahren 2012 und 2014 mittels Malaise- und Licht-Fallen sowie Fangnetz gefangen. Insgesamt wurden in 3 Subfamilien und 3

Gattungen 6 Arten für die untersuchten Regionen gesammelt. Die Anzahl der Arten jeder Gattung sind: *Diospilus* HAIDAY, 1833: 4, *Homolobus* FÖRSTER, 1862: 1, *Ichneutes* NEES, 1816: 1.

Introduction

The Helconinae comprises a medium and economically important family of hymenoptera in all zoogeographic regions, consisting of some 33 genera and about 232 known species. Species of Helconinae are solitary koinobiont endoparasites of larval Coleoptera in wood (especially Cerambycidae, but several of larval Lepidoptera and Hymenoptera) (BELOKOBYLSKIJ & LOBODENKO 1997; YU et al. 2012).

The Homolobinae is a small subfamily with only about 62 valid species and 3 genera worldwide. They are known as endoparasitoids of exposed lepidopterous larvae (van ACHTERBERG 1993). Species of the Homolobinae parasitise caterpillars that feed exposed at night, especially Geometridae and Noctuidae or microlepidopteran larvae that feed in weakly concealed sites such as spinnings, buds, etc. (Tortricidae, Gelechiidae). Species of Homolobinae are solitary koinobiont endoparasitoids and kill the host in its pupation chamber, in which the parasitoid cocoon is spun. They overwinter as cocoons and eclose by detaching a cap (SHAW & HUDDLESTON 1991).

The Ichneutinae is a relatively small subfamily with only 89 valid species and 10 genera (TOBIAS & BELOKOBYLSKIJ 1981; BELOKOBYLSKIJ 1986; 1990; PAPP 1987; YU et al. 2012). Most members of the Ichneutinae are koinobiont endoparasitoids of sawfly larvae of the families Argidae and Tenthredinidae, however one lineage, comprised of the genera *Oligoneurus* SZÉPLIGETI, 1902, *Paroligoneurus* MUESEBECK, 1931 and *Lispixys* MASON, 1969, switched 10 leaf-mining lepidopteran hosts. The few genera with known biologies suggest that all members of the subfamily may be egg-larval parasitoids, attacking the egg stage but emerging from the larval stage (SHARKEY & WHARTON 1994).

Material and Methods

Adult specimens of Helconinae, Homolobinae and Ichneutinae were collected from various habitats of the Turkish north-eastern Anatolian region using Malaise and light traps and sweeping nets. The obtained adult specimens were then pinned and properly labelled. Relevant literature was used for taxonomical examination of the material. The specimens were identified mostly using the keys by TOBIAS (1986), SHARKEY & WHARTON 1994. Van ACHTERBERG 1992; The general distribution of species is given by BRAET & van ACHTERBERG 2001; SHARKEY & WHARTON 1994; the known host species of the species of Helconinae, Homolobinae and Ichneutinae are given according to YU et al. (2012). In addition, locality, the altitude of locality, collection date, sex, number of individuals, and collectors of each species are given.

Results

Helconinae

Genus: *Diospilus* HALIDAY, 1833

Diospilus Belokobylskiji BEYERSLAN, 2008

Material examined: Erzurum, Oltu, İnanmış, (40°27'46"N, 41°42'27"E), 1820 m. 13.09.2012, M.Yurtcan, 3♂♂.

Distribution: Western Palearctic.

Host: Unknown.

Diospilus capito (NEES, 1834)

Material examined: Ardahan-Çıldır-Eskibeyrehatun Köyü, (41°7'47"N 42°54'32"E), 1950 m. 24.06.2013, E.Çoban, 1♂; Ardahan-Tazeköy, (41°1'32"N, 42°52'34"E), 1934 m. 15.09.2012, E.Çoban, 1♂.

Erzurum-İspir-Çamlıkaya-Başyurt Ormanları, (40°41'41"N 41°08'27"E), 2200 m. 16.08.2013, M.Yurtcan, 1♀; Erzurum-Narman, (40°20'46"N 41°54'51"E), 1567 m. 27.06.2013, A. Beyerslan, 1♂; Erzurum-Şenkaya-İkizpınar, (40°35'31"N 42°20'30"E), 1818 m. 27.06.2013, Ö.Şahsuvaroğlu, 1♀.

Kars-Boğatepe Köyü, (40°49'05"N 42°52'02"E), 2227 m. 26.08.2013, Ö.Şahsuvaroğlu, 2♀♀; Kars-Digor-Sorguç, (40°12'52"N, 43°55'8"E), 1563 m. 25.06.2012, M.Yurtcan, 1♀, 1♂; Kars-Digor-Sorguçkavaklı, (40°12'52"N, 43°55'8"E), h: 1563 m., 25.06.2012, M.Yurtcan, 1♀, 1♂.

Distribution: Palearctic.

Host: Coleoptera. Attelabidae: *Byctiscus betulae* (LINNAEUS, 1758). Chrysomelidae: *Psylliodes chrysocephala* (LINNAEUS, 1758). Curculionidae: *Ceutorhynchus picitarsis* (GYLLENHAAL, 1837); *C. assimilis* (PAYKULL, 1792); *C. contractus* (MARSHAM, 1802); *C. leprieuri* BRISOUT, 1881; *C. napi* GYLLENHAAL, 1837; *C. pleurostigma* (MARSHAM, 1802); *C. quadridens* (PANZER, 1795); *C. rapae* (GYLLENHAAL, 1837); *C. sulcicollis* (PAYKULL, 1800); *Gymnetron antirrhini* (PAYKULL, 1800); *G. tetrum* (FABRICIUS, 1792); *Hypurus bertrandi* (PERRIS, 1852); *Magdalis ruficornis* (LINNAEUS, 1758). Elateridae: *Anobium latreillei* DUFOUR, 1843; *A. punctatum* de GEER, 1774. Nitidulidae: *Meligethes aeneus* (FABRICIUS, 1775); *M. viridescens* (FABRICIUS, 1787).

Diospilus inflexus REINHARD, 1862 (syn. *ovutus* [YU et al. 2012])

Material examined: Ardahan-Tazeköy, (41°1'32"N, 42°52'34"E), 1930 m. 15.09.2012, E. Çoban, 2♂♂. Erzurum-Şenkaya-Sındıran, (40°37'12"N, 42°22'22"E), 1512 m. 21.06.2012, M. Yurtcan, 1♀. Kars-Sarıkaş-Horasan yolu, (40°16'49"N, 42°38'59"E), 2040 m. 21.09.2012, M. Yurtcan, 2♀♀.

Distribution: Western Palearctic.

Host: Unknown.

***Diospilus nigricornis* (WESMAEL 1835) (syn. *rufipes* [YU et al. 2012])**

Material examined: Erzurum-Şenkaya-Sındıran, (40°37'12"N, 42°22'22"E), 1512 m. 21.06.2012, M. Yurtcan, 2♀♀; Kars-Susuz-Incesu, (40°44'45"N, 43°7'30"E), 1760 m. 17.09.2012, A. Beyerslan, 2♂♂.

Hosts: Coleoptera, Anobiidae: *Xestobium plumbeum* (ILLIGER, 1801). Atelabidae: *Byctiscus populi* (LINNAEUS, 1758). Curculionidae: *Ceutorhynchus pleurostigma* (MARSHAM, 1802); *Ceutorhynchus sulcicollis* (PAYKULL, 1800); *Curculio crux* (FABRICIUS, 1776); *Rynchaenus salicis* (LINNAEUS, 1758). Cerambycidae: *Pogonocherus hispidus* LINNAEUS, 1758). Hymenoptera, Tenthredinidae: *Pontania proxima* (SERVILLE, 1823); *Pontania vesicator* (BREMI-WOLF, 1849).

Distribution: Palearctic.

Homolobinae

Genus: *Homolobus* FÖRSTER, 1862

***Homolobus (Apatia) truncator* (SAY, 1829)**

Material examined: Ardahan-Çamlıçatak, (41°07'18"N 42°50'19"E), 1850 m. 15.09.2012, A.Beyerslan, 2♀♀; 22.08.2013, Ö.Şahsuvaroğlu, 1♀, 3♂♂; Ardahan-Çıldır, (41°5'8"N, 43°10'32"E), 1967 m. 16.09.2012, E.Çoban, 1♀; Ardahan-Çıldır-Eskibeyrehatun Köyü, (41°7'47"N 42°54'32"E), 1950 m. 22.08.2013, M.Yurtcan, 1♀; Erzurum-Aşkale-Çayköy, (39°56'43"N 40°48'21"E), 1715 m. 18.08.2013, M.Yurtcan, 1♀; Erzurum-Aziziye-Yeşil Mahallesi, (39°56'10"N 41°08'20"E), 1770 m. 18.08.2013, E.Çoban, 1♀; Erzurum-Horasan-Orman işletme Müdürlüğü, (40°1'47"N, 42°2'48"E), 1560 m. 17.08.2013, 2♀♀, 25.08.2013, E.Çoban, 4♀, 4♂♂; M.Yurtcan, 1♀; 2♂♂; Erzurum-İspir-Ardıçlı, (40°33'4"N, 41°13'55"E), 1809 m. 19.06.2012, M.Yurtcan, 1♀; Erzurum-İspir-Köprüköy, (39°58'1"N, 41°52'17"E), 1602 m. 11.09.2012, E. Çoban, 1♂; Erzurum-İspir-Petekli köyü, (40°25'38"N, 40°54'48"E), 1400 m. 11.09.2012, M.Yurtcan, 1♀; Erzurum-Köprüköy, (39°58'01"N, 41°52'17"E), 1602 m. 17.08.2013, M.Yurtcan, 1♀; Erzurum-Köprüköy, (39°58'1"N, 41°52'17"E), 1602 m., 17.06.2012, M.Yurtcan, 1♀; Erzurum-Oltu-Güzelsu, (40°36'15"N, 42°4'31"E), 1200 m., 12.09.2012, M.Yurtcan, 1♂; Erzurum-Oltu-Yolboyu Köyü, (40°39'3"N, 42°9'4"E), 1114 m. 20.06.2012, A. Beyerslan, 1♀.

Erzurum-Pasinler-Övenler, (39°59'16"N 41°34'38"E) 1740 m. 17.08.2013, M.Yurtcan, 1♀; Erzurum-Şenkaya-Gözalın köyü, (40°39'33"N, 42°16'33"E), 1168 m. 13.09.2012, Ö. Şahsuvaroğlu, 1♀.

Iğdır-Karakoyunlu-Taşburun, (39°58'55"N, 44°12'3"E), 839 m. 26.06.2012, M.Yurtcan, 1♀; Iğdır-Tuzluca-Gaziler, (40°6'10"N, 43°28'51"E), 1028 m. 21.09.2012, M.Yurtcan, 1♀, 1♂; Ö.Keleş, 1♀, 1♂; Ö.Şahsuvaroğlu, 1♀, 1♂; Iğdır-Tuzluca-Köprübaşı, (40°2'35"N, 43°41'19"E), 1100 m. 20.09.2012, M.Yurtcan, 2♀♀, 1♂; Ö.Keleş, 1♀; Ö.Şahsuvaroğlu, 2♀♀.

Kars-Arpaçay-Çanaksu, (41°59'32"N, 43°18'04"E), 1990 m. 16.09.2012, Ö.Şahsuvaroğlu, 1♂; Kars-Boğazköy, (40°41'19"N, 43°6'47"E), 1693 m. 17.09.2012, A.Beyerslan, 4♀♀; Kars-Kağızman, (40°9'53", 43°5'49"E), 1214 m. 27.06.2012, M.Yurtcan, 1♀; 21.09.2012, M.Yurtcan, 2♂♂; Kars-Kağızman-Aydınkavak, (40°9'11"N, 43°19'14"E), 1115 m. 20.09.2012, A.Beyerslan, 5♂♂, 2♀♀, E.Çoban, 1♂, 2♀♀; Kars-Kağızman-Morpet, (40°15'16"N, 42°58'36"E), 1486 m. 20.09.2012, A.Beyerslan, 3♂♂, 1♀, Ö.Şahsuvaroğlu, 1♂, 3♀♀.

Kars-Kağızman-Paslı, (40°16'36"N, 42°57'22"E), 1785 m. 21.09.2012, A.Beyerslan, 1♀, E.Çoban, 1♀, M.Yurtcan, 3♀♀, 3♂♂, Ö.Keleş, 1♀; Kars-Sarıkaş-Bayraktape, (40°17'29"N, 42°36'0"E), 2644 m. 19.09.2012, Ö.Şahsuvaroğlu, 1♂; Kars-Sarıkaş-Karakurt,

(40°10'03"N 42°36'36"E), 1475 m. 24.08.2013, M.Yurtcan, 1♀; Kars-Sarikamiş-Kayak tesisi 1.etap, (40°18'44"N, 42°36'29"E), 2320 m. 19.09.2012, E.Çoban, 4♀♀; Kars-Sarikamiş-Kızılcubuk, (40°21'59"N, 42°32'10"E), 2472 m. 18.09.2012, E.Çoban, 2♀♀; Kars-Sarikamiş-Orman İşletme Müdürlüğü, (40°1'47"N, 42°2'48"E), 1560 m. 24.08.2013, A.Beyerslan, 1♀, 3♂; Kars-Selim-Gürbüzler-Bayburt yaylası, (40°27'10"N, 42°33'27"E), 2100 m. 18.09.2012, M.Yurtcan, 1♀; Kars-Susuz-Incesu, (40°44'45"N, 43°7'30"E), 1760 m. 17.09.2012, E.Çoban, 2♀♀, 7♂♂, M.Yurtcan, 4♀♀, 2♂♂, Ö.Keleş, 2♀♀.

D i s t r i b u t i o n : Afrotropical, Palearctic, Nearctic, Neotropic, Oriental.

H o s t s : Lepidoptera, Gelechiidae: *Phthorimaea operculella* (ZELLER, 1873). Geometridae: *Agriopis bajaria* (DENIS & SCHIFFERMÜLLER, 1775); *Anisodes lyciscaria* (GUENÉE, 1858); *Ascotis selenaria* (DENIS & SCHIFFERMÜLLER, 1775); *Besma quercivoraria* (GUENÉE, 1857); *Casilda consecraria* (RAMBUR, 1858); *Chiasmia clathrata* (LINNAEUS, 1758); *Glossotrophia annae* (MENTZER, 1990); *G. asellaria* (HERRICH-SCHÄFFER, 1847); *G. rufomixtaria* (GRASLIN, 1863); *Hypagyrtis piniata* (PACKARD, 1870); *Lambdina fervidaria* (HÜBNER, 1827); *Lambdina fiscellaria* (GUENÉE, 1857); *Lycia hirtaria* (CLERCK, 1759); *L. zonaria* (DENNIS & SCHIFFERMÜLLER, 1775); *Pachycnemia hippocastanaria* (HÜBNER, 1799); *Rhodometra sacraria* (LINNAEUS, 1767). Lasiocampidae: *Malacosoma neustria* (LINNAEUS, 1758). Noctuidae: *Agrotis ipsilon* (HUFNAGEL, 1766); *orthogonia* (MORRISON, 1876); *segetum* (DENIS & SCHIFFERMÜLLER, 1775); *subterranea* (FABRICIUS, 1794); *venerabilis* (WALKER, 1857); *Anumeta cestina* (STAUDINGER, 1884); *Autographa gamma* (LINNAEUS, 1758); *Calophasia platyptera* (ESPER, 1788); *Catocala nymphagoga* (ESPER, 1787); *Emmelia trabealis* (SCOPOLI, 1763); *Euxoa tristicula* (MORRISON, 1875); *Helicoverpa zea* (BODDIE, 1850); *H. zea* (*Medicago sativa*); (BODDIE, 1850); *Lacanobia contigua* (DENIS & SCHIFFERMÜLLER, 1775); *Mocis latipes* (GUENÉE, 1852); *M. latipes* (*Cynodon dactylon*) (GUENÉE, 1852); *Panolis flammea* (DENIS & SCHIFFERMÜLLER, 1775); *Protorthodes smithii* (DYAR, 1904); *Pseudaletia unipuncta* (HAWORTH, 1809); *Rhyacia simulans* (HUFNAGEL, 1766); *Spodoptera exigua* (HÜBNER, 1808); *Asparagus setaceus* KUNTH, 1850; *S. frugiperda* (SMITH, 1797); *S. litura* (FABRICIUS, 1775); *S. ornithogalli* (GUENÉE, 1852); *S. ornithogalli* (GUENÉE, 1852); *Xestia c-nigrum* (LINNAEUS, 1758); *X. smithii* (Snellen, 1896). Pyralidae: *Achyra rantalis* (GUENÉE, 1854); *Loxostege sticticalis* (LINNAEUS, 1761).

I c h n e u t i n a e

G e n u s : *Ichneutes* NEES, 1816

***Ichneutes reunitor* NEES, 1816**

M a t e r i a l e x a m i n e d : Kars-Sarikamiş-Söğütlü çeşme, (40°16'58"N, 42°34'18" E) 2350 m. 24.06.2013, E.Çoban, 4♂♂.

D i s t r i b u t i o n : Holarctic.

H o s t s : Coleoptera, Curculionidae: *Ips typographus* (LATREILLE, 1802). Homoptera, Aphididae: *Nomennudum frigidus* (LATREILLE, 1802). Hymenoptera, Diprionidae: *Neodiprion sertifer* (GEOFFROY, 1785). Tenthredinidae: *Aneugmenus padi* (LINNAEUS, 1761); *Croesus septentrionalis* (LINNAEUS, 1758); *Hemichroa crocea* (GEOFFROY, 1785); *Nematus leucotrochus* (HARTIG, 1837); *N. melanaspis* (HARTIG, 1840); *N. myosotidis* (FABRICIUS,

1804); *N. pavidus* (SERVILLE, 1823); *N. ribesii* (SCOPOLI, 1763); *N. salicis* (LINNAEUS, 1758); *Pontania proxima* (SERVILLE, 1823); *P. viminalis* (LINNAEUS, 1758); *Priophorus pallipes* (SERVILLE, 1823); *Pristiphora abietina* (CHRIST, 1791); *P. alnivora* (SERVILLE, 1823); *P. compressa* (HARTIG, 1837); *P. melanocarpa* (HARTIG, 1840); *P. micronematica* (MALAISE, 1931); *P. moesta* (ZADDACH, 1876); *P. politivaginata* (TAEGER & BLANK, 2006). *Trichiocampus viminalis* (SERVILLE, 1823).

Discussion

The most common species in the research region is *H. (A.) truncator* (SAY) which was recorded from 32 localities. However it uses 46 species of Gelechiidae (1), Geometridae (16), Lasiocampidae (1), Noctuidae (28) and Pyralidae (2) of Lepidoptera as host organisms. For this reason, it can be considered as a potential biological control agent.

The zoogeographical distributions of species are as follows: *D. Belokobylskiji* BEYERSLAN, *D. inflexus* REINHARD from Western Palearctic; *D. capito* (NEES) and *D. nigricornis* (WESMAEL) from Palearctic; *I. reunitor* NEES from Holarctic and *H. (A.) truncator* (SAY) from Afrotropical, Palearctic, Nearctic, Neotropic and Oriental Region. so that the latter is a cosmopolitan species.

The species of *Diospilini* are parasitoids of economically important agricultural pests. The most common species in Turkey was found to be *D. capito* (NEES), which was recorded from many of the provinces sampled throughout the country (BEYERSLAN, et al. 2008). *D. capito* (NEES) is a parasitoid of various species of Attelabidae, Chrysomelidae, Curculionidae, Elateridae, and Nitidulidae (Coleoptera). It is an important population regulatory factor of *Meligethes aeneus* (Nitidulidae), which is a serious pest on oil seed rape (HUSBERG & HOKKANEN 2001; BILLQUIST & EKBOM 2001; KEVVÄI et al. 2005).

Ichneutinae is represented only by *I. reunitor* NEES in Turkey and previously was recorded from Sivas (BEYERSLAN & AYDOĞDU 2013). *I. reunitor* NEES attacks and kills one species of Curculionidae (Coleoptera), one species of Aphididae (Homoptera), one species of Diprionidae and twenty species of Tenthredinidae. Therefore, this species is highly beneficial because it serves as biological control agent for the natural suppression of populations of these insect pests.

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References

- BELOKOBYSKIJ S.A. (1986): Five new species of the parasitic wasps (Hymenoptera, Braconidae) from USSR Asian part. – In: The Hymenoptera of the East Siberia and Far East. Collection of scientific papers. Vladivostok: 28-40. (In Russian).
- BELOKOBYSKIJ S.A. (1990): A contribution on the braconid fauna (Hymenoptera) of the Far East. – *Vestnik Zoologii* **6**: 31-39.
- BELOKOBYSKIJ S.A. & Y.S. LOBODENKO (1997): Brief review of Palaearctic species of the genus *Diospilus* (Hymenoptera, Braconidae) with description of four new species. – *Zoologicheskii zhurnal* **6** (8): 915-924.
- BEYERSLAN A. & M. AYDOĞDU (2013): Additions to the rare Species of Braconidae Fauna (Hymenoptera: Braconidae) from Turkey. – *Munis Entomology & Zoology* **8**, No. 1.
- BEYERSLAN A., Çetin ERDOĞAN Ö. & M. AYDOĞDU (2008): *Diospilus* Belokobylskiji BEYERSLAN nov.sp., with new records of Diospilini (Hymenoptera: Braconidae: Helconinae) from Turkey. – *Entomol News* **119**: 403-410.
- BILLQUIST A. & B. EKBOM (2001): Effects of host plant species on the interaction between the parasitic wasp *Diospilus capito* and pollen beetles (*Meligethes* spp.). – *Agricultural and Forest Entomology* **3**: 147-152.
- BRAET Y. & C. van ACHTERBERG (2001): Notes on the genera *Exasticolus* van ACHTERBERG (Homolobinae) and *Orgilus* Haliday (Orgilinae) (Hymenoptera: Braconidae), with the description of three new species from French Guiana. – *Zoologische Mededelingen Leiden* **75** (5): 89-102.
- HUSBERG G.B. & H.M.T. HOKKANEN (2001): Effects of *Metarhizium anisopliae* on the pollen beetle *Meligethes aeneus* and its parasitoids *Phradis morionellus* and *Diospilus capito*. – *Biocontrol* **46**: 261-273.
- KEVVAI R., VEROMANN E. & A. LUIK (2005): Pollen beetles (*Meligethes aeneus* F.) and their hymenopterous parasitoids in the spring oilseed rape. – *Agronomy, Transactions of EAU*
- PAPP J. (1987): First survey of the braconid fauna of the Kiskunság National Park, Hungary (Hymenoptera, Braconidae). – *The Fauna of the Kiskunság National Park* **2**: 314-334.
- SHAW M.R. & T. HUDDLESTON (1991): Classification and biology of braconid wasps (Hymenoptera: Braconidae). – *Handbooks of the Identification of British Insects* **7**: 1-126.
- SHARKEY M. J. & R.A. WHARTON, (1994): A revision of the genera of the world Ichneutinae (Hymenoptera: Braconidae). – *Journal of Natural History* **28**: 873-912, figs 1-50.
- TOBIAS V.I. (1986): Keys to the Insects of the European Part of USSR. Volume III: Hymenoptera IV. (Subfam. Braconinae). – Leningrad, USSR: Nauka: pp. 95-150 (in English).
- TOBIAS V.I. & S.A. BELOKOBYSKIJ (1981): Braconid genera (Hymenoptera, Braconidae) from Primorye territory new to science and to USSR fauna, – *Entomologicheskoe Obozrenie* **60**: 354-363.
- van ACHTERBERG C. (1992): Revisionary notes on the subfamily Homolobinae (Hymenoptera: Ichneumonoidea). – *Zoologische Mededelingen* **66** (25): 359-368.
- van ACHTERBERG C. (1993): Illustrated key to the subfamilies of the Braconidae (Hymenoptera: Ichneumonoidea). – *Zoologische Mededelingen* **283**: 1-189.
- YU D.S., van ACHTERBERG C. & K. HORSTMANN (2006): World Ichneumonoidea 2004. Taxonomy, Biology, Morphology and Distribution (Braconidae). – *Taxapad 2005* (Scientific Names for Information Management) Interactive Catalogue on DVD/ CDROM. Vancouver.

Author's address:

Ahmet BEYERSLAN
Department of Biology
Faculty of Sciences
Trakya University 22030 Edirne, Turkey
E-Mail: abeyars@trakya.edu.tr

Druck, Eigentümer, Herausgeber, Verleger und für den Inhalt verantwortlich:
Maximilian SCHWARZ, Konsulent f. Wissenschaft der Oberösterreichischen Landesregierung, Eibenweg 6,
A-4052 Ansfelden, Austria; maximilian.schwarz@liwest.at.

Redaktion: Fritz GUSENLEITNER, Biologiezentrum Linz, f.gusenleitner@landesmuseum.at;
Roland GERSTMEIER, Lehrstuhl f. Zoologie, TU München, gerstmei@wzw.tum.de;
Thomas WITT, Tengstraße 33, D-80796 München, thomas@witt-thomas.com
Berthold CLEWING, Akademischer Verlag München, avm@druckmedien.de;
Harald SULAK, Museum Witt München, h.sulak@atelier-sulak.de;

Mitarbeiter: Karin TRAXLER, Biologiezentrum Linz, bio.redaktion@landesmuseum.at;
Heike REICHERT, Museum Witt München, heike_reichert66@web.de;
Erich DILLER, Zool. Staatssammlung München, Erich.Diller@zsm.mwn.de.

Adresse: Entomofauna, Redaktion und Schriftentausch Thomas WITT, c/o Museum Witt München,
Tengstr. 33, 80796 München, Deutschland, thomas@witt-thomas.com;
Entomofauna, Redaktion c/o Fritz GUSENLEITNER, Lungitzerstr. 51, 4222 St. Georgen/Gusen,
Austria, f.gusenleitner@landesmuseum.at.

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