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***Microchelonus* SZÉPLIGETI 1908 (Hymenoptera: Braconidae: Cheloninae) species from the Marmara, Western and Blacksea regions of Turkey**

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**Abstract:** The study was carried out in spring, summer and autumn periods between 1985-2004 year from a wide range of habitats at different altitudes in the Marmara, Western and Middle Blacksea regions of Turkey. 18 species were determined and all of them belonging to *Microchelonus* SZÉPLIGETI 1908, eight species are reported for the first time in the Turkish fauna. The general distribution and known hosts of the taxa are added. This research is the first faunistic study on *Microchelonus* (Hymenoptera: Braconidae: Cheloninae) fauna of Turkey.

**Keywords:** Hymenoptera, Cheloninae, *Microchelonus*, fauna, Turkey.

### Introduction

The Braconidae is the largest group of parasitic Hymenoptera with least 40.000 species worldwide (WAHL & SHARKEY 1993). They are well disturbed and highly diverse in almost all terrestrial habitats (LA SALLE & GAULD 1993), and play important role as the regulatory agents for phytophagous insect populations dynamic, particularly the economically important insects pests (LA SALLE 1993). All members of the subfamily Cheloninae (Hymenoptera: Braconidae) are solitary egg-larval koinobiont endoparasitoids of Lepidoptera (SHAW & HUDDLESTON 1991). Species of *Microchelonus* mainly exploit host groups that have concealed Lepidoptera larvae (Coleophoridae, Cosmopterygidae, Elachistidae, Gelechiidae, Momphidae, Oecophoridae, Tortricidae, Pyralidae) and Cynipidae (Hymenoptera) (SHENEFELT 1973, TOBIAS 1986, PAPP 2004).

To date, a total of 250 species of *Microchelonus* have been reported in the world and approximately 90 species are found in the Palaearctic region (TOBIAS 1986).

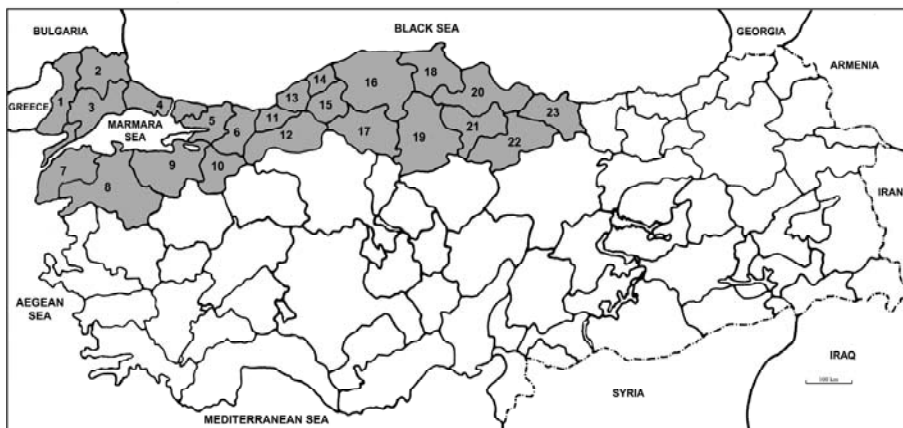
The studies of Turkish *Microchelonus* fauna were carried out by BEYARSLAN (1985, 1995) and PAPP (2004). Together, all these studies have found that at present the *Microchelonus* fauna of Turkey comprises 16 species. The faunistic study of the *Microchelonus* species of Turkey hasn't been carried out up to now. This research is the first faunistic study on *Microchelonus* fauna of Turkey.

The aim of this study was to survey the Lepidoptera and Hymenoptera parasitoids from a wide range of habitats at different altitudes in the Marmara, Western and Blacksea regions of Turkey.

## Material and methods

Solitary egg-larval endoparasitoid *Microchelonus* species were collected from pastures, vegetable garden, crop fields, hazelnut garden, orchards, fir, beech, pine, oak and mixed forests at different altitudes in Turkish Marmara, Western and Blacksea regions between 1985 and 2004. The materials were obtained using a sweeping nets and malesian traps. The specimens were then pinned and labeled according to taxonomic rules and regulations. Pertinent literature was used for determination of species (ABDINBEKOVA 1975, BEYARSLAN 1995, FAHRINGER 1934, PAPP 1990, 1995, 1999, 2004, TOBIAS 1976, 1986, 1994, 1996). References are used for known distributions of the species in the world (BEYARSLAN 1985, 1995, PAPP 1989, 1996, 2002, 2004, SHENEFELT 1973, TOBIAS 1986, 1989, ZAYKOV 1982). The materials are deposited in the Collection of Biological Department of Trakya University, Edirne, Turkey (T.U.).

Localities (with grid numbers) and collecting dates are listed for 18 species found in research areas. The collecting places (provinces) of species are shown on the map (Fig. 1).



**Fig. 1:** Collecting places of *Microchelonus* species in Research areas: Marmara Region; (1) Edirne, (2) Kirklareli, (3) Tekirdag, (4) Istanbul, (5) Izmit, (6) Adapazari, (7) Canakkale, (8) Balikesir, (9) Bursa, (10) Bilecik. Western Blacksea Region; (11) Duzce, (12) Bolu, (13) Zonguldak; (14)Bartın; (15) Karabuk, (16) Kastamonu, (17) Cankiri, (18) Sinop. Middle Blacksea Region; (19) Corum, (20) Samsun, (21) Amasya, (22) Tokat, (23) Ordu.

## Results

### *Microchelonus* SZÉPLIGETI 1908

### *Microchelonus (Microchelonus) arnoldii* (TOBIAS 1964)

**Material examined:** Edirne-Lalapasa-Dogankoy, mixed forests, 370m, 05.07.1997, 1 ♀; Kastamonu-Daday-Ballidag, mixed forests, 1750m, 01.07.2001, 1 ♀; Tokat-Turhal-Ucyol, mixed forests, 1040m, 07.07.2003, 1 ♀.

**Distribution in Turkey:** Marmara and Western Blacksea regions.

**General Distribution:** Hungary, Kazakhstan, Rumanian, Turkey (First record).

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) atripes* (THOMSON 1874)**

**Material examined:** Bilecik-Ayvacic, pasture, 700m, 09.07.1993, 2 ♀♀; Canakkale-Eceabat-Conkbayiri, pasture, 65m, 06.05.1993, 1 ♂; -Tuzgolu, pasture, 10m, 08.06.2001, 3 ♂♂; Duzce-Kabalar, hazelnut garden, 250m, 08.06.2002, 1 ♂; Karabuk-Safranbolu-Incecey-Saricicek mountains, mixed forests, 1567m, 30.06.2001, 1 ♀; Kirklareli-Kofcaz-Beyci, trefoil, 350m, 17.07.2001, 5 ♀♀; Ordu-Unye-Catalpinar, hazelnut garden, 80m, 05.07.2003, 1 ♀; Sinop-Boyabat-Cangal mountains-Kozcagiz, orchard, 1000m, 02.07.2001, 1 ♂; Tekirdag-Saray, trefoil, 110m, 25.08.1992, 1 ♀; Zonguldak-Devrek-Davulga, mixed forests, 800m, 29.06.2001, 5 ♀♀, 6 ♂♂.

**Distribution in Turkey:** Kirklareli (BEYARSLAN 1995), Western and Middle Blacksea regions (first record).

**General Distribution:** Belgium, Croatia, Finland, former Yugoslavia, Germany, Hungary, Sweden, Turkey.

**Hosts:** Parasitoid of lepidopteran *Coleophora* sp. (Coleophoridae).

***Microchelonus (Microchelonus) caucasicus* (ABDINBEKOVA 1967)**

**Material examined:** Adapazari, orchard, 65m, 26.10.1993, 1 ♀, 1 ♂; Bolu-Gerede-Guney, pasture, 1200m, 13.06.2002, 2 ♀♀, 8 ♂♂; Bursa-Inegol-Karacakoy, orchard, 750m, 18.08.1994, 1 ♂; Mustafakemalpassa-Sogutalan, mixed forests, 400m, 11.07.1993, 1 ♀; Canakkale-Eceabat-Tuzgolu, pasture, 10m, 08.06.2001, 2 ♀♀; Corum-Kussaray, pasture, 1015m, 29.06.2004, 1 ♀, 2 ♂♂; Edirne-Lalapasa-Baglik deresi, pasture, 500m, 05.06.1988, 2 ♀♀; -Dogankoy, mixed forests, 370m, 06.06.1987, 1 ♀; 04.05.1992, 7 ♀♀, 3 ♂♂; Hanliyence, pasture, 55 m, 04.06.1992, 2 ♀♀, ♂; Kesan-Koru mountains, pine forests, 300 m, 09.09.1999, ♀; Suleoglu, pasture, 80m, 07.06.1987, 1 ♂; Karabuk-Bostanbuku, pasture, 290m, 13.06.2002, 1 ♀; Kastamonu-Daday-Ballidag, mixed forests, 1750 m, 01.07.2001, 1 ♀; -Sarpun, fir forests, 1350 m, 01.07.2001, 2 ♀♀; Kirklareli-Igneada-Begendik, pasture, 20m, 28.07.1986, 1 ♀; Inece, trefoil, 100m, 02.06.1993, 2 ♂♂; Pinarhisar-Hacifakili, pasture, 150m, 04.06.1993, 1 ♀; Vize-Pabuçdere, pasture, 130m, 12.06.1991, 1 ♂; Istanbul-Gaziosmanpassa-Bogazkoy, oak forests, 60m, 15.06.2001, 1 ♀, 2 ♂♂; Ordu-Akkus-Yukaridugencili, pasture, 1340m, 05.07.2003, 1 ♀; Sinop-Boyabat-Salar, pasture, 450m, 03.07.2001, 1 ♀; Tekirdag-Isiklar, pasture, 210m, 09.09.1999, 1 ♀; Malkara-Izgar, pasture, 90m, 23.05.1992, 1 ♂; Tokat-Niksar-Camici, mixed forests, 1300m, 05.07.2003, 2 ♀♀; Turhal-Ucyol, mixed forests, 1040m, 07.07.2003, 1 ♀.

**Distribution in Turkey:** Bursa, Edirne (BEYARSLAN 1995), Western and Middle Blacksea regions (first record).

**General Distribution:** Hungary, Russia, Turkey.

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) depressus* (THOMSON 1874)**

**Material examined:** Istanbul-Silivri, trefoil, 50m, 25.08.1992, 1 ♀; Kirklareli-Derekoy, mixed forests, 500m, 18.06.1986, 1 ♀.

**Distribution in Turkey:** Marmara region.

**General Distribution:** Finland, Sweden, Turkey (first record).

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) devius* (TOBIAS 1964)**

**Material examined:** Balikesir-Susurluk-Demirkapi, willow and poplar woodland, 65m, 23.07.2001, 1♀; Edirne-Lalapasa-Dogankoy, mixed forests, 370m, 06.06.1987, 4♀♀; Kirlareli-Igneada-Begendik, pasture, 20m, 28.07.1986, 3♀♀, 2♂♂.

**Distribution in Turkey:** Marmara region.

**General Distribution:** Central Asia, Kazakhstan, Southeast Russia, Turkey (first record).

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) excavatus* TOBIAS 1972**

**Material examined:** Corum-Kussaray, pasture, 1015m, 29.06.2004, 1♂; Edirne-Kesan-Sazlidere, pasture, 65m, 31.05.1999, 4♂♂.

**Distribution in Turkey:** Marmara and Middle Blacksea regions.

**General Distribution:** Russia, Mongolia, Turkey (first record).

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) fenestratus* (NEES von ESENBECK 1816)**

**Material examined:** Karabuk-Eskipazar-Ortakoy, pasture, 870m, 28.08.2002, 1♀; Kastamonu-Akkaya, pine forests, 110m, 31.08.2002, 1♀; Arac-Akgecit, pine forests, 400m, 28.06.2002, 1♀; Ilgaz mountains-Catoren, mixed forests, 1280m, 30.08.2002, 3♀♀; Kanligol Milli Parki, pine forests, 1140m, 28.08.2002, 1♀; Tokat-Niksar-Camici, mixed forests, 1300m, 01.09.2003, 8♀♀; Samsun-Salipazari-Derbentalti, beech forests, 970m, 03.07.2003, 4♀♀; Zonguldak-Devrek-Orman isletme, pine forests, 800m, 28.06.2001, 4♀♀, 29.06.2001, 1♀.

**Distribution in Turkey:** Western and Middle Blacksea regions.

**General Distribution:** England, Finland, France, Germany, Hungary, Korea, Poland, Russia, Turkey (first record).

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) flavipalpis* (SZÉPLIGETI 1896)**

**Material examined:** Edirne-Meric, willow and poplar woodland, 60m, 26.07.2000, 1♀; Bilecik-Pazaryeri-Dikilitas, vegetable garden, 700m, 10.09.2002, 1♀, 1♂; Kirlareli-Kofcaz-Erikler, pasture, 430m, 02.08.2000, 1♀; Luleburgaz-Evrensekiz, pasture, 65m, 18.07.2001, 1♀; Istanbul-Sariyer-Kisirmandira, pasture, 35m, 25.06.1993, 1♀; Tekirdag-Cerkezkoy-Velikoy, pasture, 130m, 25.07.2000, 6♀♀, 2♂♂; Kiniklar, pasture, 110m, 26.06.2003, 1♂.

**Distribution in Turkey:** Marmara region.

**General Distribution:** Georgia, Hungary, Mongolia, South Russia, Ukrain, Turkey (first record).

**Hosts:** Parasitoid of lepidopterans *Parametriotes theae* K. (Mompidae), *Sparganothis pilleriana* D. & S. (Tortricidae).

***Microchelonus (Microchelonus) flavonaevulus* (ABDINBEKOVA 1971)**

**Material examined:** Bolu-Gerede-Guney, pasture, 1200m, 13.06.2002, 1♀, 1♂; Mengen-Kiyaslar, pine forest, 610m, 28.06.2001, 2♀♀, 2♂♂; Siyamoglu, mixed forests, 600m, 28.06.2001, 1♀; Bilecik-Pazaryeri, crop field, 700m, 10.07.1993, 2♀♀; Bursa-Inegol-Cerrah, willow and poplar woodland, 400m, 10.07.1993, 1♀; Karacabey-Kulakpinar, trefoil, 50m, 12.07.1993, 1♀; Mustafakemalpaşa-Sogutalan, mixed forests, 400m, 11.07.1993, 2♀♀, 1♂; Edirne-Budakdoganca, pasture, 45m, 05.07.1992, ♀; Lalapasa-Dogankoy, mixed forests, 370m, 05.07.1993, 6♀♀, 2♂♂; -Kalkansogut, poplar woodland, 200m, 05.07.1997, 1♀; Uzunkopru-Calikoy, pasture, 75m, 30.08.1992, 1♀, 1♂; Istanbul-Sariyer-Kisirmandira, pasture, 35m, 25.06.1993, 2♀♀, 1♂; Kastamonu-Arac-Toprakcuma, crop field, 350m, 13.06.2002, 1♀, 2♂♂; Daday-Ballidag-Sarpun, fir forests, 1350m, 01.07.2001, 3♀♀; Kirlareli-Demirkoy-Balaban, mixed forests, 390m, 06.07.1997, 2♀♀, 1♂; Vize-Komurkoy, mixed forests, 180 m, 16.06.2001, 2♀♀; -Kiyikoy, willow and poplar woodland, 15m, 16.06.2001, 2♀♀; Yenicekoy, pasture, 600m, 06.07.1997, 2♀♀, 1♂; Tokat-Turhal-Ucyol, mixed forests, 1040m, 07.07.2003, 3♀♀, 1♂; Zonguldak-Karadenizereglisi, crop field, 40m, 08.06.2002, 1♀, 2♂♂.

**Distribution in Turkey:** Kirlareli (BEYARSLAN 1995), Western and Middle Blacksea regions (first record).

**General Distribution:** Azerbaijani, Bulgaria, Hungary, South and central Russia, Ukrain, Turkey.

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) latrunculus* (MARSHALL 1885)**

**Material examined:** Corum-Kussaray, pasture, 1015m, 29.06.2004, 1♀; Kirlareli-Demirkoy, mixed forests, 330m, 06.07.1997, 7♀♀, 1♂.

**Distribution in Turkey:** Marmara and Western Blacksea regions.

**General Distribution:** Central Russia, England, Finland, former Yugoslavia, Hungary, Poland, Sweden, Switzerland, Turkey (first record).

**Hosts:** Parasitoid of lepidopterans *Tortrix* sp. (Tortricidae), *Depressaria* sp. (Oecophoridae).

***Microchelonus (Microchelonus) magnifissuralis* (ABDINBEKOVA 1971)**

**Material examined:** Amasya-Gumushacikoy, pasture, 849m, 07.07.2004, 1♀, 2♂♂; Edirne-Buyukdolluk, crop field, 50m, 20.06.1987, 2♂♂; Havsa-Ogulpasa, crop field, 50m, 06.06.1992, 2♂♂.

**Distribution in Turkey:** Kirlareli (BEYARSLAN 1995), Middle Blacksea regions (first record).

**General Distribution:** Azerbaijani, Turkey.

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) microphthalmus* (WESMAEL 1838)**

**Material examined:** Bartin, 10m, hazelnut garden, 09.06.2002, 1♂; Bolu-Gerede-Guney, pasture, 1200m, 13.06.2002, 3♂♂; Duzce-Kabalar, hazelnut garden, 250m, 08.06.2002, 1♂; Edirne-Lalapasa-Dogankoy, mixed forests, 370m, 06.06.1987, 1♀; Karabuk-Bostanbuku, pasture, 290m, 13.06.2002, 2♂♂; Cay, orchard, 470m, 28.8.2002, 1♂; Kastamonu-Cide-Kuscukoy, pasture, 220m, 10.06.2002, 1♀; Daday-Ballidag, mixed forests, 1750m, 01.07.2001, 3♀♀, ♂; -Incegiz, pasture, 450m, 01.07.2001, 2♀♀, 1♂; -Sarpun, fir forests, 1350m, 01.07.2001,

1 ♀, 1 ♂; Ilgaz mountains-Catoren, mixed forests, 1280m, 03.07.2001, 1 ♂; Kure-Ersizlerdere-Ipsinler, pasture, 1900m, 12.06.2002, 1 ♀, 5 ♂ ♂; Tosya-Ekinci, orchard, 1000m, 31.08.2002, 2 ♀ ♀; Kirklareli-Yenicekoy, pasture, 600m, 16.06.1987, 1 ♀; Ordu-Akkus-Yukaridugencili, pasture, 1340m, 05.07.2003, 4 ♀ ♀; Golkoy, hazelnut garden, 1020m, 04.07.2003, 2 ♀ ♀, 3 ♂ ♂; 06.07.2004, 4 ♀ ♀; Unye-Catalpinar, hazelnut garden, 80m, 05.07.2003, 1 ♀; Samsun-Havsa-Mismiliagac, pasture, 610m, 02.07.2003, 1 ♀; Kavak-Bogazici, mixed forests, 380m, 02.07.2003, 1 ♀; Sinop-Ayancik-Bakirlizaviye, mixed forests, 780m, 02.07.2001, 9 ♂ ♂; Boyabat-Cangal mountains-Kozcagiz, orchard, 1000m, 02.07.2001, 1 ♀; Demirci, orchard, 30m, 03.07.2001, 1 ♀; 11.06.2002, 1 ♀, 3 ♂ ♂; Yenicam, pasture, 30m, 06.09.2001, 5 ♀ ♀, 4 ♂ ♂; Zonguldak-Caycuma-Yolgecen, orchard, 20m, 09.06.2002, 1 ♀; Devrek-Davulga, mixed forests, 800m, 29.06.2001, 1 ♂; Karadenizereglisi, crop field, 40m, 08.06.2002, 1 ♂.

**Distribution in Turkey:** Edirne (BEYARSLAN 1995), Western and Middle Blacksea regions (first record).

**General Distribution:** Belgium, Finland, former Yugoslavia, France, Germany, Hungary, Korea, Mongolia, Rumanian, Russia, Sweden, Turkey, Turkmenia.

**Hosts:** Parasitoid of lepidopteran *Colleophora hemerobiella* SCOP. (Coleophoridae).

***Microchelonus (Microchelonus) nigritibialis* (ABDINBEKOVA 1971)**

**Material examined:** Adapazari, orchard, 65m, 06.08.1992, 3 ♀ ♀, 1 ♂; Amasya-Kalekoy, orchard, 620m, 08.07.2003, 1 ♀; Tasova-Boraboy, pasture 740m, 08.07.2003, 1 ♀; 29.06.2004, 1 ♀; Bilecik-Cavuskoy, trefoil, 800m, 10.07.1993, 1 ♀; Osmaneli-Icmeler, mixed forests, 800m, 09.07.1993, 6 ♀ ♀; Bursa-Karacabey-Cambazkoy, pasture, 200m, 12.07.1993, 1 ♀; Mustafakemalpaşa-Sogutalan, mixed forests, 400m, 11.07.1993, 2 ♀ ♀; Canakkale-Eceabat-Conkbayiri, pasture, 65m, 06.05.1993, 1 ♀; Corum-Dodurga-Gucumen, mixed forests, 793m, 28.06.2004, 5 ♀ ♀; Kussaray, pasture, 1015m, 29.06.2004, 1 ♀; Hamamlicay, pasture, 835m, 28.06.2004, 1 ♀; Edirne-Lalapasa-Dogankoy, mixed forests, 370m, 06.06.1987, 1 ♀; Saraykpinar, pasture, 41m, 26.07.2003, 1 ♂; Trakya Univ.-Gullapoglu Yerleskesi, pasture, 41m, 15.08.2001, 2 ♂ ♂; Uzunkopru-Calikoy, pasture, 75m, 30.08.1992, 1 ♀, 1 ♂; Istanbul-Catalca-Karamandere, orchard, 50 m, 25.06.1993, 2 ♀ ♀; -Omerli, pasture, 80m, 15.06.2001, 1 ♀; -Durusu, pasture, 110 m, 25.06.1993, 1 ♀; Sariyer-Kisirmandira, pasture, 35m, 25.06.1993, 1 ♀, 1 ♂; Karabuk-Bostanbuku, pasture, 290m, 13.06.2002, 1 ♀, 1 ♂; Cay, orchard, 470m, 13.06.2002, 2 ♀ ♀; Kastamonu-Arac-Akgecit, pine forests, 400m, 28.08.2002, 1 ♂; Kirklareli-Babaeski-Nadirli, willow and poplar woodland, 70 m, 07.09.1990, 1 ♀; Demirkoy-Balaban, mixed forests, 390m, 06.07.1997, 2 ♀ ♀; Luleburgaz-Evrensekiz, pasture, 65m, 25.08.1992, 1 ♀, 1 ♂; -Seyitler, pasture, 75m, 18.07.2001, 1 ♀; -Turkgeldi Farm, orchard, 65m, 17.09.1994, 1 ♀; Vize, pasture, 150m, 25.08.1992, 1 ♀; Samsun-Kavak-Bogazici, mixed forests, 380m, 02.07.2003, 1 ♀; Vezirkopru-Kizilcaoren, mixed forests, 500m, 02.07.2002, 1 ♀, 1 ♂; Sinop-Kure-Ikizciler, fir forests, 1960m, 12.06.2002, 1 ♀; Tekirdag-Karacaali, pasture, 120m, 25.06.2003, 2 ♀ ♀, 2 ♂ ♂; Malkara, trefoil, 100m, 26.07.2000, 1 ♀; Sarkoy-Guzelkoy, orchard, 150m, 25.06.2003, 1 ♂; Zonguldak-Devrek-Davulga, mixed forests, 800m, 29.06.2001, 1 ♀.

**Distribution in Turkey:** Edirne, Tekirdag (BEYARSLAN 1995), Western and Middle Blacksea regions (first record).

**General Distribution:** Azerbaijani, Mongolia, Turkey.

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) risorius* (REINHARD 1867)**

**Material examined:** Bilecik-Cavuskoy, trefoil, 800m, 10.07.1993, 1 ♂; Kirklareli-Derekoy-Gumruk, mixed forests, 590m, 23.07.2000, 1 ♂; Ordu-Unye-Catalpinar, hazelnut garden, 80m, 05.07.2003, 1 ♂.

**Distribution in Turkey:** ? (PAPP 2004), Marmara, Western and Middle Blacksea regions (first record).

**General Distribution:** Armenia, Croatia, England, Finland, former Czechoslovakia, Germany, Hungary, Italy, Kazakhstan, Mongolia, Russia, Turkey.

**Hosts:** Parasitoid of hymenopterans *Biorhiza terminalis* F., *Biorhiza pallida* O. (Cynipidae).

***Microchelonus (Microchelonus) rostratus* (TOBIAS 1966)**

**Material examined:** Amasya-Merzifon-Uzunagac, mixed forests, 1600m, 09.07.2003, 2♀♀, 2♂♂; Corum-Kussaray, pasture, 1015m, 29.06.2004, 1♀, 1♂; Edirne-Hanlyenice, pasture, 55m, 04.06.1992, 1♀; Karabuk-Bostanbuku, pasture, 290m, 13.06.2002, 1♀; Kastamonu-Daday-Ballidag-Sarpun, fir forests, 1350m, 01.07.2001, 1♀; Ordu-Akkus-Yukaridugencili, pasture, 1340m, 05.07.2003, 3♀♀, 4♂♂; Unye-Catalpinar, hazelnut garden, 80m, 05.07.2003, 1♂; Tekirdag-Sarkoy-Guzelkoy, orchard, 150m, 25.06.2003, 1♂; Muratli-Hanoglu, crop field, 87m, 09.06.2001, 2♀♀; Tokat-Camagzi, orchard, 692m, 01.07.2004, 3♀♀, 1♂; Turhal-Ucyol, mixed forests, 1040m, 07.07.2003, 17♀♀, 7♂♂.

**Distribution in Turkey:** Edirne (BEYARSLAN 1995), Western and Middle Blacksea regions (first record).

**General Distribution:** Armenia, Azerbaijani, Bulgaria, Hungary, Mongolia, Russia, Turkey, Turkmenia, Ukraine.

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) subarcuatilis* TOBIAS 1986**

**Material examined:** Amasya-Merzifon-Tavsan mountains-Uzunagac, mixed forests, 1600m, 09.07.2003, 1♀; Bilecik-Osmaneli-Icmeler, mixed forests, 800m, 09.07.1993, 4♀♀, 2♂♂; Bursa-Mustafakemalpaşa-Sogutalan, mixed forests, 400m, 11.07.1993, 17♀♀, 14♂♂; Canakkale-Biga-Camlidere, pasture, 50m, 20.08.1994, 3♀♀, 3♂♂; Kaz mountains-Hacifakili, mixed forests, 700m, 16.09.1992, 2♀♀; Kirlareli-Luleburgaz-Seyitler, pasture, 75m, 18.07.2001, 1♀; Tekirdag-Ganos mountains, pasture, 760m, 14.07.1986, 1♀.

**Distribution in Turkey:** Marmara and Western Blacksea regions.

**General Distribution:** Hungary, Mongolia, Turkey (First record).

**Hosts:** So far unknown.

***Microchelonus (Microchelonus) subcontractus* (ABDINBEKOVA 1971)**

**Material examined:** Canakkale-Eceabat-Conkbayiri, pasture, 65m, 06.05.1993, 1♂; Edirne-Iskenderkoy, pasture, 41m, 28.05.1993, 2♀♀, 1♂; Lalapasa-Dogankoy, mixed forests, 370m, 06.06.1987, 3♂♂; Kirlareli-Demirkoy-Boztas, mixed forests, 350m, 06.07.1997, 1♂; Karabuk-Eskipazar-Ortakoy, pasture, 870m, 28.08.2002, 1♂; Samsun-Vezirkopru-Incesu, pasture, 240m, 28.08.2003, 6♂♂; Sinop-Boyabat-Yabanli, vegetable garden, 900m, 07.09.2001, 2♀♀, 15♂♂; Tekirdag-Hayrabolu, trefoil, 90m, 26.07.2000, 1♂; Isiklar, pasture, 210m, 24.08.2000, 1♂.

**Distribution in Turkey:** Edirne, Gaziantep, Icel, Kirlareli (BEYARSLAN 1995), Western Blacksea regions (first record).

**General Distribution:** Hungary, Mongolia, Turkey.

**Hosts:** Parasitoid of lepidopterans *Vulcaniella extremella* W. (Cosmopterygidae); *Elachista* sp. (Elachistidae).

***Microchelonus (Microchelonus) sulcatus (JURINE 1807)***

**Material examined:** Adapazari-Goktepe, trefoil, 50m, 08.07.1993, 1♂; Pamukova-Mecele, willow and poplar woodland, 20m, 25.07.2001, 2♀♀; Sapanca-Ataturk Milli Parki, oak forests, 10m, 27.06.2001, 2♀♀; Balikesir-Manyas-Kayacakoy, trefoil, 100m, 15.07.1993, 1♀; -Kuscenneti, pasture, 15m, 11.05.1991, 1♀, 1♂; Susurluk: 18.09.1992, 2♀♀; Bilecik-Bayirkoy, vegetable garden, 210m, 17.08.1994, 1♂; Bolu-Gerede-Guney, pasture, 1200m, 13.06.2002, 1♂; Siyamoglu, mixed forests, 600m, 28.06.2001, 1♂; Bursa-Karacabey-Cambazkoy, pasture, 200m, 12.7.1993, 1♀; -Hara, trefoil, 30m, 23.07.2001, 1♀; Canakkale-Eceabat-Conkbayiri, pasture, 65m, 06.05.1993, 1♂; Gelibolu-Cumali, crop field, 50m, 07.06.2001, 1♀, 1♂; -Findikli, mixed forests, 380m, 07.06.2001, 1♀, 1♂; Guney, pasture, 20m, 31.05.1993, 1♀; Yenice-Sameteli, vegetable garden, 140m, 12.09.2002, 1♂, Cankiri-Cerkes, pasture, 1170m, 04.07.2001, 1♂; Edirne-Iskenderkoy, pasture, 41m, 28.05.1993, 1♀; Kesan-Koru mountains, pine forests, 300m, 25.08.2000, 1♀; 09.09.1999, 1♀, 1♂; Lalapasa-Dogankoy, mixed forests, 370m, 04.05.1992, 3♂♂; Suakacagi, oak grove, 210m, 01.09.2001, 1♀; Karabuk-Bostanbuku, pasture, 290m, 28.08.2002, 1♀, 4♂♂; Kastamonu-Arac-Akgecit, pine forests, 400m, 28.6.2002, 1♂; Cide, orchard, 60m, 10.06.2002, 1♂; Doganyurt-Denizbuku, mixed forests, 200m, 10.06.2002, 1♀, 1♂; Kirklareli-Demirkoy, mixed forests, 330m, 16.06.1987, 1♀; -Boztas, mixed forests, 350 m, 06.07.1997, 1♂; Derekoy, mixed forests, 500m, 06.08.1985, 10♀♀, 2♂♂; Igneada-Begendik, pasture, 20 m, 28.07.1986, 6♀♀, 2♂♂; Luleburgaz-Seyitler, pasture, 75m, 18.07.2001, 2♀♀; Vize-Pabuccdere, pasture, 130m, 12.06.1991, 1♂; Istanbul-Gaziosmanpasa-Bogazkoy, oak forests, 60m, 15.06.2001, 5♀♀; Catalca-Aydinlar, pasture, 70m, 25.8.1992, 1♀; -Durusu, pasture, 110m, 14.06.2001, 5♀♀; -Karamandere, orchard, 50m, 26.08.1991, 2♀♀, 2♂♂; Sariyer-Kisirmandira, pasture, 35m, 25.06.1993, 2♀♀; Silivri, trefoil, 50m, 25.08.1992, 1♀; -Buyukkilicli, pasture, 150m, 15.06.2001, 1♀, 1♂; Kucuksinekli, orchard, 170m, 03.09.2001, 1♀, 1♂; Izmit-Sapanca-Istanbul Univ. Tesis., pine forests, 60m, 16.08.1994, 1♂; Sinop-Ayancik-Bakirlizaviye, mixed forests, 780m, 02.07.2001, 1♀; Tekirdag-Corlu, trefoil, 65m, 12.08.1993, 1♀; -Beyazkoy, pasture, 50m, 12.08.1993, 1♀; Ganos mountains, pasture, 760m, 14.07.1986, 3♀♀, 3♂♂; Muratli, pasture, 60m, 07.09.1999, 1♀; Ucmakdere, orchard, 270m, 24.08.2000, 1♀; Yazirkoy, crop field, 60m, 23.08.2000, 1♀; Tokat-Pazar-Ballica, orchard, 1020 m, 07.07.2003, 3♀♀, 1♂; Zonguldak-Caycuma-Yolgecen, orchard, 20 m, 09.06.2002, ♀, 2♂♂.

**Distribution in Turkey:** Antalya, Burdur, Isparta, Icel, Kahramanmaraş (Beyarslan 1985), Western and Middle Blacksea regions (first record).

**General Distribution:** Egypt, Belgium, England, Finland, former Czechoslovakia, former Yugoslavia, France, Germany, Hungary, Italy, Lithuania, Netherlands, Mongolia, Poland, Russia, Sweden, Switzerland, Turkey.

**Hosts:** Parasitoid of lepidoptera *Rhyacionia buoliana* SCHIFF., *Tortrix* sp. (Tortricidae); *Gelechia mulinella* Z., *Pectinophora gossypiella* S. (Gelechiidae); *Mompha epilobiella* ROOM. (Mompidae); *Ephestia kuehniella* Z. (Pyrilidae).

In the present survey 18 taxa of lepidoptera parasitoids were found in Marmara, Western and Middle Blacksea regions, of which 8 are recognized as new to the Turkish fauna. Accordingly, the number of *Microchelonus* species in Turkey has increased from 16 to 24.

Lepidoptera caterpillars, which occur commonly in orchards, vegetable area, crop fields, forests, are frequently accompanied by a considerable number of natural enemies. The greatest importance in the nature is attached to the endoparasitoid insects belonging to the genus of *Microchelonus*. Even infrequent treatments of insecticides on plantations have limited the population of parasitoids and reduced their species richness.

Many species of Braconidae use a hosts insects which are important economically as pests of crops. The need for programmed "biological" control is already becoming more urgent than the effectiveness of chemical methods of pest control declines. The use of parasitoid insects in the control of pest species has not met more than sporadic success.



To be effective in biological control an intimate knowledge of the biology of the insects involved is essential, and this depends upon an accurate knowledge of their taxonomy.

As a result of this study, *Microchelonus atripes*, *M. caucasicus*, *M. microphthalmus*, *M. nigriritibialis*, *M. rostratus*, *M. sulcatus* obtained from orchards, *Microchelonus atripes*, *M. microphthalmus*, *M. risorius*, *M. rostratus* obtained from hazelnut garden and *M. flavipalpis*, *M. subcontractus*, *M. sulcatus* obtained from vegetable garden, *M. flavonaevulus*, *M. magnifissuralis*, *M. microphthalmus*, *M. rostratus*, *M. sulcatus* obtained from crop fields, these species can be used as biological control agents of the Lepidoptera hosts.

Additional research is required on the parasitoids of Lepidoptera in Turkey. Research on native species as potential biocontrol agents for exporation also merits serious attention.

### Zoogeographical Remarks

The majority of the 18 species described in this study are disturbed in the Palaearctic region. They can be divided into the following groups according to their zoogeographical distributions (TAGLIANTI et al. 1999).

- Palaearctic: *Microchelonus (M.) sulcatus* (JURINE 1807).
- West-Palaearctic: *Microchelonus (M.) atripes* (THOMSON 1874), *Microchelonus (M.) depressus* (THOMSON 1874).
- Asiatic-European: *Microchelonus (M.) arnoldii* (TOBIAS 1964), *Microchelonus (M.) devius* (TOBIAS 1964), *Microchelonus (M.) excavatus* TOBIAS 1972, *Microchelonus (M.) fenestratus* (NEES 1816), *Microchelonus (M.) flavipalpis* (SZÉPLIGETI 1896), *Microchelonus (M.) microphthalmus* (ABDINBEKOVA 1971), *Microchelonus (M.) risorius* (REINHARD 1867), *Microchelonus (M.) rostratus* (TOBIAS 1966).
- Sibero-European: *Microchelonus (M.) caucasicus* (ABDINBEKOVA 1967), *Microchelonus (M.) flavonaevulus* (ABDINBEKOVA 1971), *Microchelonus (M.) latrunculus* (MARSHALL 1885).
- Centralasiatic-European: *Microchelonus (M.) nigriritibialis* (ABDINBEKOVA 1971), *Microchelonus (M.) subarcuatilis* TOBIAS 1986, *Microchelonus (M.) subcontractus* (ABDINBEKOVA 1971).
- Turano-European: *Microchelonus (M.) magnifissuralis* (ABDINBEKOVA 1971).

### Zusammenfassung

Vorliegende Studie wurde im Zeitraum 1985-2004 zwischen Frühling und Herbst in Marmara, im Westen und in der Mitte der Schwarzemeer-Region der Türkei durchgeführt. 18 Arten der Gattung *Microchelonus* SZÉPLIGETI 1908 konnten nachgewiesen werden, 8 davon stellen Neufunde für die Türkei dar. Allgemeine Verbreitung und bekannte Wirte der Taxa werden angeführt. Diese Untersuchung ist die erste Erforschung der *Microchelonus*-Fauna (Hymenoptera: Braconidae: Cheloniinae) der Türkei.

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