

ICHNEUMONIDS (HYMENOPTERA: ICHNEUMONIDAE) FROM THE DANUBE DELTA BIOSPHERE RESERVE (TULCEA COUNTY, ROMANIA)

CAMIL ȘTEFAN LUNGU-CONSTANTINEANU, RAOUL CONSTANTINEANU

This study presents 16 ichneumonidae species of 14 genera, belonging to subfamilies Banchinae, Campopleginae, Cryptinae, Diplazontinae, Ichneumoninae, Orthocentrinae and Tryphoninae, collected in 2016 from the Chilia Veche, Pardina and Tătaru isle (Danube Delta Biosphere Reserve, Tulcea county). The species *Plectiscus callidulus* (Holmgren, 1858) is mentioned for the first time in Romania. The other 15 species are rare in Romanian fauna.

Keywords: Hymenoptera, Ichneumonidae, new records, Danube Delta Biosphere Reserve, Romania.

INTRODUCTION

Among parasitoid insects, Hymenoptera is an important order, especially those belonging to the family Ichneumonidae, part of the useful entomofauna. These parasitoid insects are considered very important bioindicators. The data about their size population reveal an important information about the phytosanitary situation, about the infestation degree with specific pests.

Their large or small presence reveals important information about the phytosanitary status, about the infestation degree with specific pests.

We consider important the study of the useful ichneumonological fauna in different crops in the Danube Delta Biosphere Reserve, Tulcea county. Our research has been achieved in Chilia Veche, Pardina and Tătaru isle. Till now, about 416 species belonging to the family Ichneumonidae were published in more than 50 papers, regarding this biosphere reserve, but no species was recorded from these stations.

MATERIAL AND METHODS

The field observations and collecting of the material were achieved during May 2016. The location of the studied stations are: Pardina – with barley crop and nearby there are willow and poplar forests (woods); Tătaru isle – with corn crop

and nearby there are forests with linden tree, *Tilia* sp., grayish oak, *Quercus pedunculiflora* C. Koch and pedunculate oak, *Q. robur* L.; Chilia Veche – with corn (*Zea mays* L.) and rape (*Brassica napus* L.) crops and nearby there are the forests with elm (*Ulmus* sp.), ash (*Fraxinus excelsior* L) and oak (*Quercus* sp.).

RESULTS

We present the synopsis of the 16 species collected from Chilia Veche, Pardina, and Tătaru isle.

Family ICHNEUMONIDAE Latreille, 1802
Subfamily BANCHINAE Wesmael, 1845

I. Genus *Exetastes* Gravenhorst, 1829

Type species: *Ichneumon fornicator* Fabricius, 1781, Ichn. Eur., **3**: 1–1097.

1. *Exetastes atrator* (Förster, 1771), ♀

Synonyms:

- 1771 *Ichneumon atrator* Förster, Novae species insectorum, Centuria, **1**: 81–85, London;
- 1783 *Ichneumon cinctipes* Retzius, Caroli De Geer genera et species insectorum e generosissimi auctoris scriptis extraxit, degessit, latine quoad partem reddidit, et terminologiam insectorum Linneanam addidit, Lipsiae, 220 pp. (Ichneumonidae on pp. 67–70).

Material: 1 ♀, May 10, 2016, corn crop, Chilia Veche, Danube Delta, Biosphere Reserve (Tulcea county).

Length: 11 mm.

Hosts: *Amathes c-nigrum* L. (Lep., Noctuidae) (Constantineanu & Voicu, 1982), *Mamestra brassicae* L., *M. persicariae* L., *M. oleracea* L., *M. contigua* Schiff., *M. suasa* Schiff., *Mesoligia furuncula* Schiff., *Heliothis virescens* (Hufn.) (Lep., Noctuidae), *Rhyacionia pinicolana* Doub., *R. buoliana* Schiff. (Lep., Tortricidae) (Pisică, 2001).

Geographical distribution: Western Europe, former USSR, India and Japan (Atanasov *et al.*, 1981). In Romania, it is a relatively rare species, being previously reported from Târnăveni (Mureș county); Natural Reserve “Valea lui David”, Lețcani (Iași county); Natural reserve “Ponoare” (Suceava county); Bicăz (Neamț county); Ghimbav (Brașov county); Murighiol, Danube Delta Biosphere Reserve (Tulcea county) (Pisică, 2001).

Subfamily CAMPOPLEGINAE Förster, 1869

II. Genus *Bathyplectes* Förster, 1869

Type species: *Campoplex exiguus* Gravenhorst 1829, Verh. Naturhist. Ver. Preuss. Rheinl. Westf., **25**: 135–221.

2. *Bathyplectes anurus* (Thomson, 1887), ♂

Material: 1 ♂, May 10, 2016, corn crop, Chilia Veche, Danube Delta Biosphere Reserve (Tulcea county).

Length: 4 mm.

Hosts: *Hypera postica* (Gill.) (Col, Curculionidae) (Constantineanu *et al.*, 1975).

Geographical distribution: Sweden, Holland, Germany, South of former USSR. In Romania it is a rare species, being previously reported from Valea Mraconia, Ogradena (Mehedinți county) and Ocna Dejului (Cluj county).

III. Genus *Eriborus* Förster, 1869

Type species: *Campoplex perfidus* Gravenhorst, 1829, Ichn. Eur., **3**: 1–1097.

3. *Eriborus terebrans* (Gravenhorst, 1829), ♀

Synonyms:

1916 *Angitia gigantea* Szépligeti, Ann. Mus. Nat. Hung., **14**: 225–389.

1921 *Eugnomus pyraustae* Okamoto, Rep. Hokkaido Agr. Exp. Stn. Station, **12**: 1–85.

1923 *Angitia punctoria* Roman, Ent. Tidskr., **44**: 169–174 (Yu & Horstmann, 1997).

Material: 1 ♂, May 10, 2016, corn crop, Chilia Veche, Danube Delta, Biosphere Reserve (Tulcea county).

Length: 4 mm.

Hosts: *Ostrinia nubilalis* (Hb.) (Lep., Crambidae) (Pisică *et al.*, 1982).

Geographical distribution: Western Europe, former USSR. In Romania it is a relatively rare species, being previously reported from Turda (Cluj county); Saschiz (Mureș county); Jegălia, Fetești (Ialomița county); Hârșova, Valu lui Traian, Adamclisi, Semienii Mari and Spătaru (Constanța county).

IV. Genus *Olesicampe* Förster 1869

Type species: *Ichneumon longipes* Müller, 1776, Verh. Naturhist. Ver. Preuss. Rheinl. Westf., **25**: 135–221.

4. *Olesicampe fulcrans* (Thomson, 1887), ♀♂

Synonym:

1887 *Olesicampa fulcrans* Thomson, 1887, Opusc. Ent., **11**: 1043–1182.

Material: 1 ♀, May 10, 2016, barley crop, Pardina and 1 ♂, May 10, 2016, corn crop, Chilia Veche, Danube Delta Biosphere Reserve (Tulcea county).

Length: 6 mm.

Hosts: *Ephestia kuehniella* L. (Lep., Pyralidae), *Loxostege sticticalis* (L.) (Lep., Crambidae) and *Sitotroga cerealella* Oliv. (Lep. Gelechiidae).

Geographical distribution: Northern and Western Europe, Russia (St. Petersburg). In Romania it is a rare species, being previously reported from

Ieșelnița, Ogradena, Valea Mraconia (Mehedinți county) (Constantineanu *et al.*, 1975); Hodod (Satu Mare county), Merișani (Teleorman county); Fundulea (Călărași county); Suceava (Suceava county) (Pisică & Popescu, 2009).

V. Genus *Sinophorus* Förster 1869

Type species: *Limneria canarsiae* Ashmead, 1898, Verh. Naturhist. Ver. Preuss. Rheinl. Westfalens, **25**: 135–221.

5. *Sinophorus costalis* (Thomson, 1887), ♂

Synonym:

Limneria costalis Thomson, 1887, Opusc. Emt., **11**: 193–218.

Material: 1 ♂, May 10, 2016, corn crop, Chilia Veche, Danube Delta Biosphere Reserve (Tulcea county).

Hosts: *Depressaria daucella* (Den. et Schiff.) (Lep., Depressariidae) (Pisică & Popescu, 2009).

Geographical distribution: Sweden. In Romania it is a relatively rare species, being previously reported from Ponoare (Suceava county); Valu lui Traian (Constanța county); Retezat Mountains (Hunedoara county) and Bucium (Iași county).

6. *Sinophorus juniperinus* (Holmgren, 1856), ♂

Synonym:

1856 *Campoplex juniperinus* Holmgren, Kongl. Svenska Vet-acad. Handl., **75**: 1–104.

Material: 1 ♂, May 10, 2016, corn crop, Chilia Veche, “Danube Delta”, Biosphere Reserve (Tulcea county).

Length: 7 mm.

Hosts: *Loxostege sticticalis* L. (Lep., Crambidae).

Geographical distribution: Northern and Western Europe, Ukraine, Russia (Nijegorod, Samara). In Romania it is a rare species, being previously reported from Valea Mraconia, Ogradena (Mehedinți county); “Ponoare” Natural Reserve (Suceava county); Măcin Mountains (Tulcea county) (Pisică & Popescu, 2009).

VI. Genus *Tranosema* Förster 1869

Type species: *Tranosema arenicola* Thomson, 1887, Verh. Naturhist. Ver. Preuss. Rheinl. Westf., **25**: 135–221.

7. *Tranosema exoletum* (Thomson, 1887), ♂

Synonym:

1887 *Omorga exoleta* Thomson, Opusc. Ent., **11**: 1043–1182.

Material: 1 ♂, May 10, 2016, corn crop, Chilia Veche, the Danube Delta Biosphere Reserve (Tulcea county).

Length: 5 mm.

Hosts: *Loxostege sticticalis* L. (Lep., Crambidae), *Rhyacionia buoliana* (Den. et Schiff. (Lep., Tortricidae).

Geographical distribution: Sweden, Germany, Russia (Iakutsk, Voronej). In Romania it is a rare species, being previously reported from the “Ponoare” Natural Reserve (Suceava county); Sfântu-Gheorghe, the Danube Delta, Biosphere Reserve (Tulcea county).

Subfamily CRYPTINAE Kirby, 1837

VII. Genus *Acroricnus* Ratzeburg, 1852

Type species: *Acroricnus schaumii* Ratzeburg, 1852, Ent. Zeit. **3**: 1–272.

8. *Acroricnus seductor* (Scopoli, 1786), ♀

Synonym:

1786 *Ichneumon seductor* Scopoli, Deliciae Florae et faunae Insubricae, 86 pp.

Material: 1 ♀, May 10, 2016, barley crop, Pardina, the Danube Delta, Biosphere Reserve (Tulcea county).

Length: 22 mm.

Hosts: *Sceliphron destillatorius* (Illig.) (Hym., Sphecidae).

Geographical distribution: Western Europe, Azerbaidjan (Lankaran), former USSR. In Romania it is a relatively rare species, being previously reported from Caraorman, Crişan, Murighiol, Danube Delta Biosphere Reserve (Tulcea county); “Valea lui David” Natural Reserve (Iaşi county); Saschiz (Mureş county) and Beclean (Bistriţa-Năsăud county).

Subfamily DIPLAZONTINAE Viereck, 1918

VIII. Genus *Diplazon* Nees, 1818

Type species: *Ichneumon laetatorius* Fabricius, 1781, Nova Acta Physici Medico Acad. Caesareae Leopoldino-Carolinae NaT. Curio, **9**: 279–298.

9. *Diplazon annulatus* (Gravenhorst, 1829), 1781, ♀

Synonyms:

1829 *Bassus annulatus* Gravenhorst, 2636

1829 *Bassus multicolor* Gravenhorst, 2636

1829 *Bassus lapponicus* Zetterstedt, 8481

Material: 1 ♀, May 10, 2016, Tătaru isle, Danube Delta Biosphere Reserve (Tulcea county).

Length: 11 mm.

Hosts: *Metasyrphus luniger* Meig. (Dipt., Syrphidae) (Pisică, 2001).

Geographical distribution: It is a Palearctic species, being previously reported from England, Finland, Sweden, Germany, Ukraine, Russia (Tambov, Kursk, Riazan, Moscow, Samara). In Romania it is a very rare species, being previously reported

from Ineu (Arad county) (Kiss, 1931–1932) and Ogradena (Mehedinți county) (Constantineanu *et al.*, 1975).

Subfamily ICHNEUMONINAE Latreille, 1802

IX. Genus *Ctenichneumon* Thomson, 1894

Type species: *Ichneumon funereus* sensu Gravenhorst, 1829, Opusc., **19**: 2080–2137.

10. *Ctenichneumon messorius* (Gravenhorst 1829), ♀

Synonyms:

1820 *Ichneumon messorius* Gravenhorst, 1820, Mem. Reale Acad. Sci. Torino, **24**: 275–388.

Material: 1 ♀, May 10, 2016, Tătaru isle, Danube Delta Biosphere Reserve (Tulcea county).

Length: 14 mm.

Hosts: unknown.

Geographical distribution: Western Europe. In Romania it is a rare species, being previously reported from Codru (Bihor county) (Kiss, 1925–1926); Greci (Tulcea county) (Constantineanu & Constantineanu, 1997); Păun (Iași county) (Constantineanu, 1959).

X. Genus *Virgichneumon* Heinrich 1962

11. *Virgichneumon albilineatus* Gravenhorst 1829, ♀♂

Synonyms:

1790 *Ichneumon leucomelas* Gmelin, 2553, Caroli a Linne Syst. Nat. (ed. XIII), **1**: 2225–3020.

1804 *Ichneumon nigratorius* Panzer, Syst. Nom. üb. Weil. Herrn Dr. Jacob Christian Schäffers nat. Ausgem. Abbild. regensbürgischer Insekten, **1–3**: 1–260.

1829 *Ichneumon albilineatus*, Gravenhorst, Ichn. Eur., **1**: 450, ♂.

1835 *Ichneumon binotatus* Stephens, Illustr. Brit. Ent. Mandib. **7**: 147, ♂.

1886 *Amblyteles ludovicus* Cameron, Proc. Trans. Nat. Hist. Soc. Glasgow, **1**: 263–276.

1893 *Melanichneumon leucomelas* Thomson, Opusc. Ent., **18**: 147, ♀♂.

1925 *Pterocormus leucomelas* Gonzalo Ceballos, Him. Esp. mem. Cienc. Madrid, **31**: 70.

1926 *Melanichneumon nipponicus* Uchida, Jour. Fac. Agric. Hokkaido Imp. Univ., **18**: 43–173.

Material: 1 ♀, May 10, 2016, Tătaru isle and 1 ♂, barley crop, Pardina, Danube Delta Biosphere Reserve (Tulcea county).

Length: 9 – 12 mm.

Hosts: *Diarsia brunnea* Den. et Schiff. (Lep., Noctuidae) and *Biston betularia* L. (Lep., Geometridae) (Constantineanu, 1959).

Geographical distribution: Almost all Europe, Russia (Vladimir, Iaroslav, Viatsk, Maikop, Primorye and Sahalin island). In Romania it is a rare species, being previously reported from Ineu (Arad county), Călian forest, Dorobanți village, Nicșeni (Botoșani county), Iași (Iași county), Babadag (Tulcea county) (Constantineanu, 1959).

Subfamily ORTHOCENTRINAE Förster, 1869

XI. Genus *Orthocentrus* Gravenhorst, 1829

Type species: *Orthocentrus anomalus* Gravenhorst, 1829, Ichn. Eur., **3**: 1–1097.

12. *Orthocentrus spurius* Gravenhorst, 1829, ♀

Synonyms:

1899 *Orthocentrus protuberans* Holmgren, Kongl. Svensk. Vet. Akad. Handl., **2**: 305–394.

1899 *Atmetus insularis* Ashmead, Arthropoda of the Comander Islands. Ord. Hym., In: Jordan D.S. (ed.) "Fur Seals and Fur Seals Islands North Pacific Ocean", **4**: 336–340.

1965 *Orthocentrus cupulatus* Smith, Mem. Amer. Ent. Inst., **5**: 1–661.

Material: 1 ♂, May 10, 2016, rape crop, Chilia Veche Danube Delta Biosphere Reserve (Tulcea county).

Length: 4,5 mm.

Hosts: unknown.

Geographical distribution: Sweden, Poland, Russia (Novaia Zemlia) and USA (Alaska). In Romania it is a rare species, being previously reported from Rus (Sălaj county); Coldău, Beclean commune (Bistrița-Năsăud county) (Kiss, 1925–1926); Dubova, Valea Mraconia, Ogradena (Mehedinți county) (Constantineanu *et al.*, 1975).

XII. Genus *Plectiscus* Gravenhorst, 1829

Type species: *Plectiscus impurator* Gravenhorst, 1829, Ichn. Eur., **2**: 1–989.

13. *Plectiscus callidulus* (Holmgren, 1858), ♂

Synonyms:

1858 *Orthocentrus callidulus* Holmgren, Kongl. Svensk. Vet.-Akad. Handl., **1** (2): 395–394.

1858 *Orthocentrus morio* Holmgren, 1858 Holmgren, Kongl. Svensk. Vet. Akad. Handl., **1** (2): 395–394.

1858 *Orthocentrus morionellus* Holmgren, Kongl. Svensk. Vet. Akad. Handl., **1** (2): 395–394.

Material: 1 ♂, May 10, 2016, barley crop, Pardina, Danube Delta Biosphere Reserve (Tulcea county).

♂. Head not widened behind. Propodeum smooth, with nonobvious carinae, radial cell terminal region is slightly arched. Abdomen narrow, laterally compressed to the apex. Tergite 1 with obvious longitudinal carinae, and at the apex with two glimmae. Tergite 2 more long or less squarish, behind with two lateral gastroceli. Brown-darkened. Palpi, antennae on ventral side, face, frons, pronotum and legs are yellow. Wings colorless, stigma is yellow. Hind legs are yellow-reddish, sometimes hind coxae, often and hind femorae darkened. Hind femorae, rarely are yellow-reddish and hind coxae, rarely are darkened.

Length: 3,5 mm.

Hosts: unknown.

Geographical distribution: Sweden (Lapland) and Russia (St. Petersburg, Iaroslav, Perm) (Atanasov *et al.*, 1981; Yu & Horstmann, 1997).

New species for the Romanian fauna.

14. *Plectiscus impurator* Gravenhorst, 1829, ♂

Synonyms:

1858 *Orthocentrus ventralis* Holmgren, Kongl. Svensk. Vet.-Akad. Handl., **1** (2): 395–394.

1858 *Orthocentrus vittatus* Holmgren, Kongl. Svensk. Vet.-Akad. Handl., **1** (2): 395–394.

Material: 1 ♂, barley crop, Pardina, Danube Delta Biosphere Reserve (Tulcea county).

Length: 3,25 mm

Hosts: unknown.

Geographical distribution: England, Sweden, Germany, Poland, Russia (St. Petersburg, Cerepoveţ). In Romania it is a very rare species, being reported only from the Bucegi Mountains (Strobl, 1900–1901).

XIII. Genus *Stenomacrus* Förster, 1869

Type species: *Orthocentrus silvaticus* Holmgren, 1858, Verh. Naturhist. Ver. Preuss. Rheinl. Westfalens, **25**: 135–221.

15. *Stenomacrus laricis* (Haliday, 1839), ♂

Synonyms:

1858 *Orthocentrus concinnus* Holmgren, Kongl. Svensk. Vet. Akad. Handl., **2**: 305–394.

1897 *Orthocentrus fortipes* Thomson, Opusc. Ent., **22**: 2419–2450.

Material: 1 ♂, May10, 2016, barley crop, Pardina, Danube Delta Biosphere Reserve (Tulcea county).

Length: 2,5 mm.

Hosts: unknown.

Geographical distribution: Center and Northern Europe. In Romania it is a very rare species, being previously reported only from Spermezeu (Bistrița-Năsăud county) (Kiss, 1929–1930).

Subfamily PIMPLINAE Wesmael, 1845

XIV. Genus *Perithous* Holmgren, 1859

Type species: *Ephialtes albicinctus* Gravenhorst, 1829, 3410

16. *Perithous speculator* Haupt, 1954, ♀

Synonyms:

1968 *Perithous transsylvanicus* Constantineanu & Constantineanu, Zool. Anz., **180** (3–4): 228–258.

Material: 1 ♀, Tătaru isle, Danube Delta Biosphere Reserve (Tulcea county).
Length: 14 mm.

Hosts: unknown.

Geographical distribution: Western Europe, Russia (Primorsk) (Atanasov *et al.*, 1981). In Romania it is a rare species, being reported from Baia Mare (Maramureș county); Ogradena (Mehedinți county); Moldovița and Poiana Stampei Natural Reserve (Suceava county); Deleni (Vaslui county) (Pisică & Popescu, 2009).

CONCLUSIONS

The authors present 16 ichneumonid species of 14 genera, belonging to the subfamilies Banchinae, Campopleginae, Cryptinae, Diplazontinae, Ichneumoninae, Orthocentrinae and Tryphoninae, collected in 2016 from Chilia Veche, Pardina and Tătaru isle, from Danube Delta Biosphere Reserve, Tulcea county.

Plectiscus callidulus (Holmgren) is mentioned for the first time in Romania.

The other 15 species are rare or very rare for the Romanian fauna: *Exetastes atrator* (Först.), *Bathyplectes anurus* (Thoms.), *Eriborus terebrans* (Grav.), *Olesicampe fulcrans* (Thoms.), *Sinophorus costalis* (Thoms.), *Sinophorus juniperinus* (Holmgr.), *Tranosema exoletum* (Thoms.), *Acroricnus seductor* (Scop.), *Diplazon annulatus* (Grav.), *Ctenichneumon messorius* (Grav.), *Virgichneumon albilineatus* Grav., *Orthocentrus spurius* Grav., *Plectiscus impurator* Grav., *Stenomacrus laricis* (Haliday) and *Perithous speculator* Haupt.

REFERENCES

- ATANASOV A. *et al.*, 1981, *Opredeleteli nasekomâh evropeiskoi ciasti SSSR* **3** (129): 1–688, Leningrad.
CONSTANTINEANU M.I., 1959, *Familia Ichneumonidae, Subfamilia Ichneumoninae, Tribul Ichneumoninae Stenopneusticae*. Fauna R.P.R., Insecta, **9** (4): 1–1248, Edit. Acad. Rom., București.
CONSTANTINEANU M. I., CONSTANTINEANU R. M., 1968, *Ord. Hymenoptera (Fam. Ichneumonidae)*. In: *L'Entomofaune de l'île de Letea (Delta du Danube)*. Trav. Mus. Hist. Nat. "Grigore Antipa", București, **9**: 149–183.

- CONSTANTINEANU M., PISICĂ I., PETCU I., MUSTAȚĂ GH., CONSTANTINEANU R., V. CIOCHIA, 1975, *Insecta: Hymenoptera – Ichneumonidae*, pp.: 112–155. În: *Fauna. Grupul de cercetări complexe “Porțile de Fier” – Seria monografică*. Edit. Academiei Române, 316 pp.
- CONSTANTINEANU M., VOICU M., 1980, *Gelinoidae (Hym., Ichneum.) din rezervațiile naturale “Ponoare” și “Frumoasa”, jud. Suceava*. Ocrot. Nat. Mold., Acad. Rom., Filiala Iași, pp.: 146–154.
- CONSTANTINEANU M.I., 1959, *Familia Ichneumonidae, Subfamilia Ichneumoninae, Tribul Ichneumoninae Stenopneusticae*. Fauna R.P.R., Insecta, **9** (4): 1–1248, Edit. Acad. Rom., București.
- CONSTANTINEANU M.I., VOICU M., 1982, *Ichneumonide (Hym., Ichneum.) obținute prin culturi de insecte dăunătoare fânețelor din rezervațiile naturale “Ponoare” și “Frumoasa”, jud. Suceava (IV)*. Stud. Cercet. Biol., Ser. Biol. Anim., **34** (1): 12–17, București.
- CONSTANTINEANU R., CONSTANTINEANU I., 1997, *Contributions to the knowledge of the ichneumonidae from Măcin Mountains*. Entomologica Romanica, **16** (2): 109–112, Cluj-Napoca.
- KISS A., 1925–1926, *Zweiter Beitrag zur Kenntnis der ungarischen und Siebenbürgischen Ichneumoniden (Schlupfwespen) Fauna*. Verh. Mitt. Sieb. Ver. Naturwiss., Hermannstadt, **75–76**: 74–120.
- KISS A., 1929–1930, *Dritter Beitrag zur siebenbürgischen Ichneumoniden – Schlupfwespen Fauna*. Verh. Mitt. Sieb. Ver. Naturwiss., Hermannstadt, **79–80**: 89–144.
- KISS A., 1931–1932, *Vierter Beitrag zur Kenntnis der ungarischen und Siebenbürgischen Ichneumoniden (Schlupfwespen)*. Fauna, Verh. Und Mitt. Sieb. Ver. Naturw., **1–82**: 43–65, Hermannstadt.
- PISICĂ C., 2001, *Ichneumonidele (Hymenoptera, Insecta) din România și gazdele lor*. Catalog. Edit. Univ. “Al. I. Cuza”, Iași, 406 pp.
- PISICĂ C., POPESCU I., 2009, *Le catalogue des ichneumonides (Hymenoptera: Ichneumonidae) de Roumanie*. Edit. PIM, Iași, 354 pp.
- PISICĂ C., CIURDĂRESCU G., MATEIAȘ M.C., 1982, *Ichneumonid parasitoids of the species Ostrinia nubilalis Hbn. (Pyralidae)*. Biol. Anim., **34**: 92–93.
- STROBL G., 1900–1901, *Hymenoptera aus Ungarn und Siebenbürgen*, Verh. Mitt. Sieb. Ver. Naturwiss. Ver. Hermanstadt, **50**: 43 – 79.
- YU D.S., HORSTMANN K., 1997, *A Catalogue of World Ichneumonidae Hymenoptera*. Mem. Amer. Ent. Inst., **58** (1–2): 1–1558, Gainesville.

Received October 25, 2016

Biological Research Institute of Iași,
47 Lascăr Catargi Street
700107, Iași
e-mail: camilul@yahoo.com