

## MYMARID WASPS (HYMENOPTERA, CHALCIDOIDEA, FAM. MYMARIDAE) ASSOCIATED WITH *MEDICAGO SATIVA* L. (FIRST NOTE)

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### INTRODUCTION

The *Mymaridae* species like other chalcid families (*Eulophidae*, *Trichogrammatidae*) are the most commonly encountered parasitoids of pest species and have potential as biological control agents against different pests belonging to *Cicadellidae*, *Miridae*, *Membracidae* and *Chrysomelidae* families in different crops or in their natural environment (Noyes, 2003).

This parasitoids attacks different eggs in a variety of habitats and crops, but its efficacy appears to vary with host plant species (Graham et al., 1986). Field studies in Arizona showed that only *Anaphes iole* successfully parasitized *Lygus* eggs in various plant species sampled, and rates of parasitism ranged from 0-100% (Jackson and Graham, 1983; Graham et al., 1986).

Weekly releases of *A. iole* in strawberry fields in California resulted in nearly 80% parasitism of *L. hesperus* eggs, and nymphs were suppressed by 43-64% (Norton et al., 1992; Udayagiri et al., 2000).

In addition, *A. iole* attacks eggs of other *Miridae* and *Membracidae*, all of which are embedded in plant tissue (Stoner and Surber, 1969; Huber and Rajakulendran, 1988).

*A. iole* successfully parasitized also eggs of *Nabis americanoferus* Carayon and *N. alternatus* Parshley in the laboratory conditions (Manrique, 2003).

Many studies reveal the importance of this parasitic wasps, the host management, the fight against this pest species and biology aspects in general, regarding this matter we have to mention the studies of Sahad (1982), Virla (2001), Macgill (1934), Miura (1979), Anderson and Paschke (1968), Conti et al. (1996), De Moraes and Mescher (1999), Douth (1959).

The Family *Mymaridae* was studied in Romania by: Radu and Botoc (1958, 1960); Botoc (1959, 1962, 1963, 1964, 1965, 1972, 1974, 1975);

Andriescu (1993, 1996); Dimitriu (2001), Pricop (2007, 2008). All the *Mymaridae*, are exclusively egg parasitoids (Huber, 1986).

### MATERIAL AND METHODS

The species were collected with an entomological sweep-net and pan traps in *Medicago sativa* L. fields, between 2004 and 2007, from some areas of the North-East of Romania, county's - Bacău - **BC**, Botosani - **BT** and Suceava - **SV**.

The material, collected in the sweep-net, was examined with a stereomicroscope, we also use the insect potter (aspirator) to collect in the field the insects from the sweep-net, we have collected insects with pan traps as well, methods recommended by Noyes, (2003).

The specimens were mounted in *Faure's medium*, or pointed on cardboards (*dry mounted*) and examined with the stereomicroscope and an optical microscope.

We have illustrated the morphology of the specimens utilizing microphotography's obtained with a camera attached to the stereomicroscope or the optical microscope (Fig. 1, 2).

For the identification we had use keys published by Bakkendorf (1934), Baquero and Jordana (1999), Chiappini (1989), Debauche (1948), Donev (1998), Hincks (1959), Huber (1992), Noyes (2003), Pricop (2007, 2008), Triapitsyn (2003).

### RESULTS AND DISCUSSIONS

The aim of our investigation was to identify the species of *Mymaridae* which are present in the *Medicago sativa* fields.

In this first note we reveal the distribution of the identified species.

The collected data is presented in table 1 and table 2.

Table 1. The data regarding the identified species and number of specimens,  
Fam. *Mymaridae*/localities

1. <i>Alaptus pallidornis</i> Forster, 1856 - 1♀, 17.06.2006, Siminicea, SV; 1♀, 6.08.2006, Cucorani, BT; 1♀, 30.07.2004, Ipotesti, BT.
2. <i>Anagrus atomus</i> (Linnaeus, 1767) - 4♀, 6.08.2006, Cucorani, BT; 6♀, 6.08.2006, Ipotesti, BT; 2♀, 2.07.2006, Dumbraveni, BT; 1♀ and 1♂, 3.07.2006, Vorona, BT; 1♀, 17.06.2006, Bucecea, BT; 1♀, 14.08.2006, Vorona, BT; 1♀, 6.08.2006, Dumbraveni, BT; 4♀, 6.08.2006, Siminicea, SV; 1♀, 17.06.2006, Bucecea, BT; 1♀, 6.08.2006, Bucecea, BT; 2♀, 6.08.2006, Siminicea, SV; 1♀, 14.08.2006, Vorona, BT; 1♀, 6.08.2006, Dumbraveni, SV; 6♀, 6.08.2006, Ipotesti, BT; 1♀ and 1♂, 3.07.2006, Vorona, BT.
3. <i>Anagrus affinis atomus</i> (Linnaeus, 1767) - 1♀, 30.04.2006, Bucecea, BT
4. <i>Anagrus breviphragma</i> Soyka, 1955 - 2♀, 2.09.2006, Ipotesti, BT; 3♀, 8.10.2006, Bucecea, BT; 1♀, 2.09.2006, Cucorani, BT; 1♀ and 1♂, 2.07.2006, Dumbraveni, BT; 1♀, 8.10.2006, Siminicea, SV; 2♀, 8.10.2006, Dumbraveni, BT; 1♀, 2.09.2006, Bucecea, BT; 1♀, 8.10.2006, Bucecea, BT; 1♀, 8.10.2006, Dumbraveni, SV; 4♀, 6.08.2006, Cucorani, BT; 2♀, 2.09.2006, Ipotesti, BT; 2♀, 2.10.2006, Bucecea, BT; 1♀, 2.09.2006, Cucorani, BT; 1♀, 2.10.2006, Siminicea, SV.
5. <i>Anagrus similis</i> Soyka, 1955 1♀, 8.10.2006, Siminicea, SV; 1♀, 2.10.2006, Siminicea, SV.
6. <i>Anagrus affinis similis</i> Soyka, 1955 - 1♀, 2.09.2006, Siminicea, SV; 1♀, 3.07.2006, Vorona, Bt.; 1♀, 2.09.2006, Siminicea, SV.
7. <i>Anaphes (P.) diana</i> (Girault, 1911) - 3♀, 1.06.2006, Vorona, BT; 2♀, 6.08.2006, Ipotesti, BT; 2♀, 2.07.2006, Dumbraveni, BT; 1♀, 8.10.2006, Siminicea, SV; 3♀, 3.07.2006, Vorona, BT; 2♀, 8.10.2006, Cucorani, BT; 2♀, 31.05.2006, Dumbraveni, SV; 1♀, 28.09.2004, Cucorani, BT; 2♀, 5.07.2006, Cucorani, BT; 1♀, 5.07.2006, Ipotesti, BT; 2♀, 17.06.2006, Ipotesti, BT; 1♀, 6.08.2006, Bucecea, BT; 1♂, 28.08.2004, Ipotesti, BT; 1♀, 30.04.2007, Ipotesti, BT; 1♀, 5.07.2006, Bucecea, BT; 1♂, 28.10.2004, Ipotesti, BT; 4♀ and 2♂, 17.06.2006, Cucorani, BT; 3♀, 8.10.2006, Dumbraveni, BT; 4♀, 19.06.2006, Vorona, BT; 3♀, 14.08.2006, Vorona, BT; 2♀, 6.08.2006, Dumbraveni, BT; 5♀, 6.08.2006, Siminicea, SV; 3♀, 1.06.2006, Vorona, BT; 2♀, 6.08.2006, Ipotesti, BT; 2♀, 2.07.2008, Siminicea, SV; 1♀, 2.10.2006, Siminicea, SV; 3♂, 3.07.2006, Vorona, BT; 2♀, 8.10.2006, Cucorani, BT; 2♀, 31.05.2006, Dumbraveni, BT; 1♀, 28.09.2004, Cucorani, BT; 2♀, 5.07.2007, Cucorani, BT; 1♀, 30.07.2004, Ipotesti, BT; 1♀, 5.07.2006, Ipotesti, BT; 2♀, 17.06.2006, Ipotesti, BT.
8. <i>Anaphes (P.) affinis euryale</i> (Debauche, 1948) - 1♀, 29.04.2006, Siminicea, SV; 1♀, 2.07.2006, Siminicea, SV; 1♀ and 2♂, 17.06.2006, Cucorani, BT; 1♀, 6.08.2006, Dumbraveni, BT; 1♀, 29.04.2006, Siminicea, SV.
9. <i>Anaphes fuscipennis</i> Hal. sensu Debauche, 1948 - 2♀, 6.08.2006, Cucorani, BT; 4♀, 6.08.2006, Ipotesti, BT; 1♀, 2.09.2006, Ipotesti, BT; 1♀, 8.10.2006, Bucecea, BT; 1♀ and 1♂, 3.07.2006, Vorona, BT; 1♀, 17.06.2006, Siminicea, SV; 1♀, 5.07.2006, Ipotesti, BT; 1♀, 6.08.2006, Bucecea, BT; 1♀, 17.06.2006, Bucecea, BT; 1♀ and 1♂, 2.09.2006, Bucecea, BT; 7♀, 6.08.2006, Siminicea, SV; 1♂, 16.09.2004, Vadul Moldovei, SV; 2♀, 6.08.2006, Cucorani, BT; 4♀, 6.08.2006, Ipotesti, BT; 1♀, 2.09.2006, Ipotesti, BT; 1♂, 2.10.2006, Bucecea, BT; 1♀ and 1♂, 3.07.2006, Vorona, BT; 1♀, 30.07.2004, Ipotesti, BT; 1♀, 5.07.2006, Ipotesti, BT.
10. <i>Erythmelus lygivorus</i> Viggiani & Jesu 1985 - 1♀, 5.07.2006, Cucorani, BT; 1♀, 5.07.2007, Cucorani, BT
11. <i>Gonatocerus chrysis</i> (Debauche, 1948) - 1♀, 2.09.2006, Cucorani, BT; 1♀, 6.08.2006, Bucecea, BT; 1♀, 17.06.2006, Bucecea, BT; 1♀, 2.09.2006, Cucorani, BT.
12. <i>Gonatocerus litoralis</i> (Haliday, 1833) - 1♀, 14.08.2006, Vorona, BT; 1♀, 22.7.2004, Vadul Moldovei, SV; 1♂, 27.07.2004, Vadul Moldovei, SV; 1♂, 12.08.2004, Vadul Moldovei, SV.
13. <i>Gonatocerus longicornis</i> Nees, 1834 - 2♀, 6.08.2006, Cucorani, BT; 2♂, 6.08.2006, Ipotesti, BT; 1♀, 2.09.2006, Ipotesti, BT; 1♀, 2.09.2006, Cucorani, BT; 1♀, 3.07.2006, Vorona, BT; 1♀ and 2♂, 6.08.2006, Bucecea, BT; 1♀, 2.07.2006, Siminicea, SV; 2♂, 22.07.2004, Blagesti, BC; 1♀ and 1♂, 2.09.2006, Bucecea, BT; 1♀ and 1♂, 14.08.2006, Vorona, BT; 1♀, 6.08.2006, Dumbraveni, BT; 2♀, 6.08.2006, Cucorani, BT; 2♂, 6.08.2006, Ipotesti, BT; 1♀, 2.09.2006, Ipotesti, BT; 1♀, 2.09.2006, Cucorani, BT; 1♀, 3.07.2006, Vorona, BT.
14. <i>Gonatocerus ovicentatus</i> Leonard & Crosby 1915 - 3♀, 2.09.2006, Cucorani, BT; 1♀, 2.09.2006, Siminicea, SV; 2♀, 5.07.2006, Cucorani, BT; 1♀, 28.08.2004, Ipotesti, BT; 3♀, 2.09.2006, Cucorani, BT; 1♀, 2.09.2006, Siminicea, SV; 2♀, 5.07.2007, Cucorani, BT.
15. <i>Gonatocerus pictus</i> (Haliday, 1833) - 1♀, 14.08.2006, Vorona, BT.
16. <i>Gonatocerus sulphuripes</i> (Förster, 1847) - 1♀, 6.08.2006, Cucorani, BT; 1♀, 1.06.2006, Vorona, BT; 1♀, 8.10.2006, Bucecea, BT; 1♀, 2.09.2006, Siminicea, SV; 1♀, 8.10.2006, Siminicea, SV; 2♂, 30.07.2004, Ipotesti, BT; 1♀, 5.07.2006, Ipotesti, BT; 1♂, 30.04.2007, Ipotesti, BT; 2♀, 2.09.2006, Bucecea, BT; 1♀, 12.08.2004, Cristesti, BT; 1♀, 6.08.2006, Siminicea, SV; 1♀, 6.08.2006, Cucorani, BT; 1♀, 2.10.2006, Bucecea, BT; 1♀, 2.09.2006, Siminicea, SV; 1♀, 2.10.2006, Siminicea, SV; 2♂, 30.07.2004, Ipotesti, BT; 1♀, 5.07.2006, Ipotesti, BT.
17. <i>Mymar pulchellum</i> Curtis, 1832 - 1♀, 6.08.2006, Cucorani, BT.
18. <i>Ooconus flaviventris</i> Donev, 1990 - 1♀, 9.10.2006, Vorona, BT.
19. <i>Stephanodes similis</i> (Förster, 1847) - 1♀ and 3♂, 6.08.2006, Cucorani, BT; 2♀, 6.08.2006, Ipotesti, BT; 1♀ and 1♂, 2.09.2006, Siminicea, SV; 2♀, 6.08.2006, Bucecea, BT; 2♀ and 2♂, 5.07.2006, Bucecea, BT; 2♀, 22.07.2004, Blagesti, BC; 5♀, 8.10.2006, Dumbraveni, BT; 1♀, 19.06.2006, Vorona, BT; 3♀, 14.08.2006, Vorona, BT; 1♀ and 1♂, 6.08.2006, Siminicea, SV; 1♀, 22.7.2004, Vadul Moldovei, SV; 1♀, 8.10.2006, Cucorani, BT; 1♀ and 1♂, 6.08.2006, Cucorani, BT; 2♀, 6.08.2006, Ipotesti, BT; 1♀ and 1♂, 2.09.2006, Siminicea, SV.
20. <i>Stethynium triclavatum</i> Enock 1909 - 1♀, 12.08.2004, Cristesti, BT.

Table 2. The distribution table of the *Mymaridae* species in the studied areas/localities

No	Species	Blagești	Bucecea	Cristești	Cucorani	Dumbraveni	Ipotesti	Siminicea	Vadul Moldovei	Vorona
1	<i>Alaptus pallidornis</i>	-	-	-	+	-	+	+	-	-
2	<i>Anagrus atomus</i>	-	+	-	+	+	+	+	-	+
3	<i>Anagrus affinis atomus</i>	-	+	-	-	-	-	-	-	-
4	<i>Anagrus breviphragma</i>	-	+	-	+	+	+	+	-	-
5	<i>Anagrus similis</i>	-	-	-	-	-	-	+	-	-
6	<i>Anagrus affinis similis</i>	-	-	-	-	-	-	+	-	-
7	<i>Anaphes diana</i>	-	+	-	+	+	+	+	-	+
8	<i>Anaphes affinis. euryale</i>	-	-	-	+	+	-	+	-	-
9	<i>Anaphes fuscipennis</i> Hal. <i>sensu</i> Deb.	-	+	-	+	-	+	+	+	+
10	<i>Erythmelus lygivorus</i>	-	-	-	+	-	-	-	-	-
11	<i>Gonatocerus chrysis</i>	-	+	-	+	-	-	-	-	-
12	<i>Gonatocerus litoralis</i>	-	-	-	-	-	-	-	+	+
13	<i>Gonatocerus longicornis</i>	+	+	-	+	+	+	+	-	+
14	<i>Gonatocerus ovicenatus</i>	-	-	-	+	-	+	+	-	-
15	<i>Gonatocerus pictus</i>	-	-	-	-	-	-	-	-	+
16	<i>Gonatocerus sulphuripes</i>	-	+	+	+	-	+	+	-	+
17	<i>Mymar pulchellum</i>	-	-	-	+	-	-	-	-	-
18	<i>Ooetonus flaviventris</i>	-	-	-	-	-	-	-	-	+
19	<i>Stephanodes similis</i>	+	+	-	+	+	+	+	+	+
20	<i>Stethynium triclavatum</i>	-	-	+	-	-	-	-	-	-

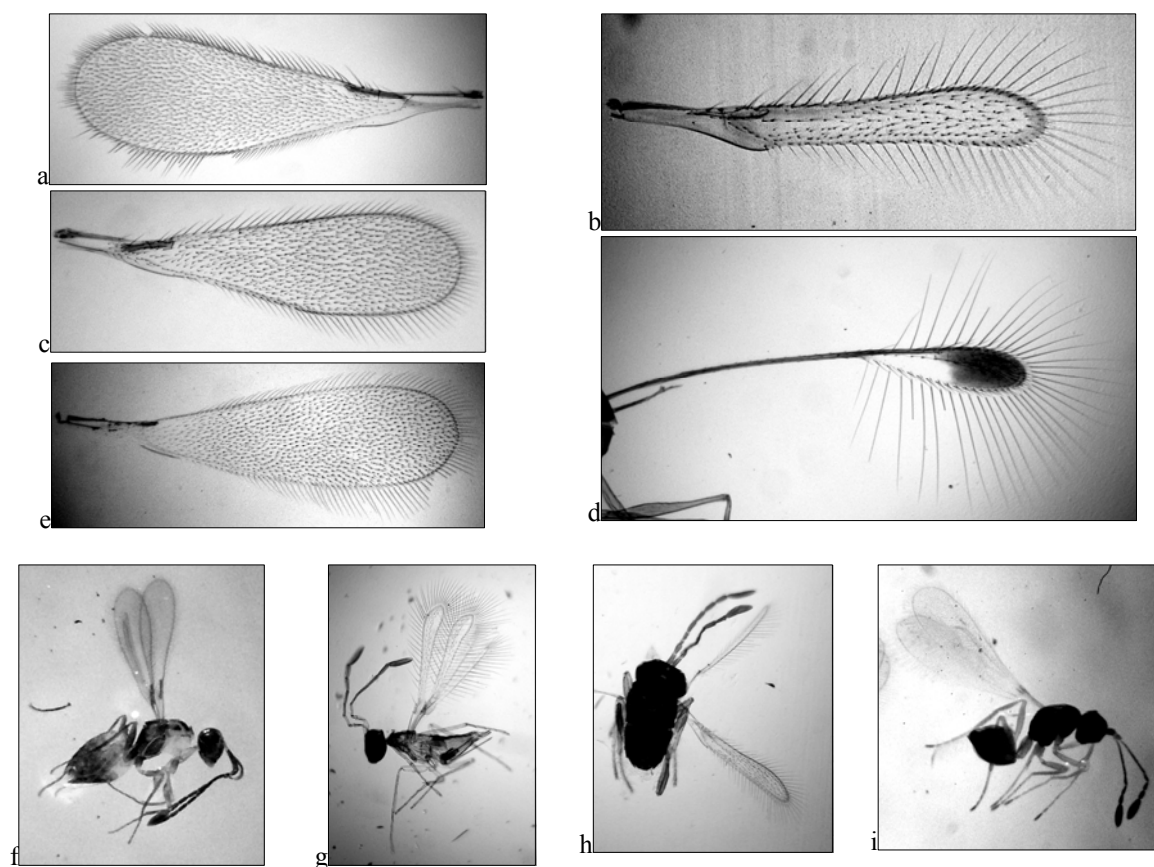


Fig. 1. Morphological characters: forewings of femeles (a-e): a - *Gonatocerus longicornis*, b - *Anaphes* (P.) *diana*, c - *Gonatocerus litoralis*, d - *Mymar pulchellum*, e - *Stephanodes similis*; femeles habitus (f-i): f - *G. litoralis*, g - *Anagrus atomus*, h - *A. (P.) diana*, I - *S. similis* (original)

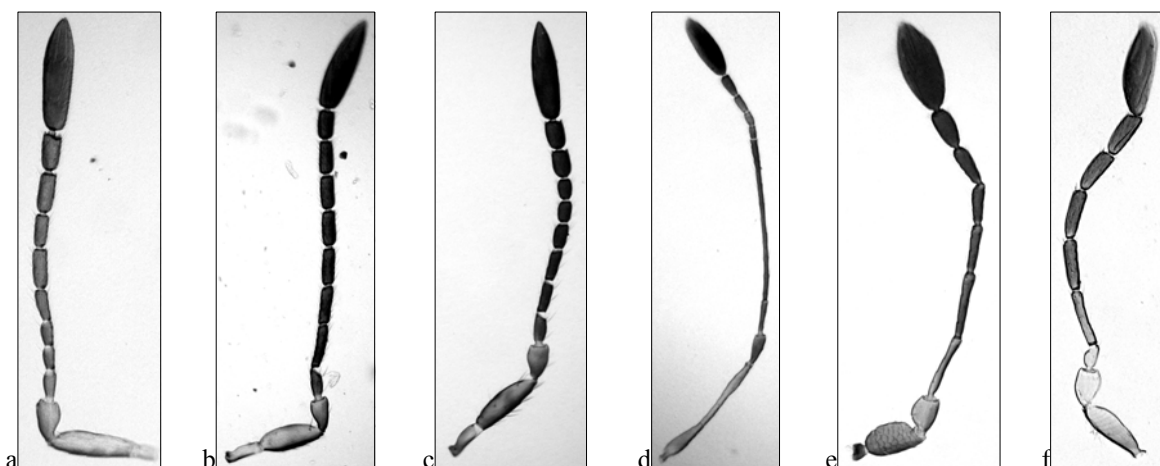


Fig. 2. Female antenna: a - *Gonatocerus litoralis*, b - *Gonatocerus longicornis*, c - *Gonatocerus sulphuripes*, d - *Mymar pulchellum*, e - *Stephanodes similis*, f - *Anagrus similis* (original)

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### ABSTRACT

In this paper we present the *Mymaridae* species, which had been collected and identified from *Medicago sativa* fields in Bacau (BC), Botosani (BT) and Suceava (SV) county, Romania. *M. sativa* is known as a medicinal and meliferous plant species (Ciurdărescu et al., 1972; Lisenchi Murariu, 2006). In this first note we present a total of 20 identified species: *Alaptus pallidornis*, *Anagrus atomus*, *Anagrus affinis atomus*, *Anagrus breviphragma*, *Anagrus similis*, *Anagrus affinis similis*, *Anaphes diana*, *Anaphes affinis euryale*, *Anaphes fuscipennis* Hal. *sensu* Deb., *Erythmelus lygivorus*, *Gonatocerus chrysis*, *Gonatocerus litoralis*, *Gonatocerus longicornis*, *Gonatocerus ovicenatus*, *Gonatocerus pictus*, *Gonatocerus sulphuripes*, *Mymar pulchellum*, *Ooconus flaviventris*, *Stephanodes similis* and *Stethynium triclavatum* (affinis = near).

### REFERENCES

1. ANDERSON R.C., PASCHKE J.D., 1968 - The biology and ecology of *Anaphes flavipes*, an exotic egg parasite of the cereal leaf beetle. *Ann. Entomol. Soc. Amer.* 61: 1-5
2. ANDRIESCU I., 1993 - Contribuții la studiul calcidoidelor (Hym. Chalcidoidea) din Rezervația Biosferei Delta Dunării. *Anal. Științ. Institut. Delta Dunării*: 49-57
3. BAKKENDORF O., 1934 - Biological investigations on some Danish hymenopterous egg-parasites, especially in homopterous and heteropterous eggs, with taxonomic remarks and descriptions of new species. *Entomologiske Meddelelser* 19:34
4. BAQUERO E., JORDANA R., 1999 - Species of *Anagrus* Haliday, 1833 (Hymenoptera, Chalcidoidea, Mymaridae) in Navarra (Spain). *Miscel-lània Zoològica* 22(2): 39-50
5. BOȚOC M., 1962 - Noi contribuții la studiul calcidoidelor din R.P.R. (VII). *Studia Univ. Babeș-Boyai, s. Biol.*, VII(1): 107-115
6. BOȚOC M., 1963 - Noi contribuții la studiul calcidoidelor din R.P.R. (VIII). *Studia Univ. Babeș-Boyai, s. Biol.*, VIII(1): 95-109
7. BOȚOC M., 1964 - Noi contribuții la studiul calcidoidelor din R.P.R. *Studia Univ. Babeș-Boyai, s. Biol.*, IX(1): 79-85
8. BOȚOC M., 1965 - Studiul sistematic și ecologic al calcidoidelor din Transilvania. PhD dissertation (autoreferat), Universitatea Babeș-Boyai Cluj-Napoca
9. BOȚOC M., 1975 - Fauna. Grupul de cercetări complexe „Porțile de Fier”. Editura Academiei. R.S.R., p. 179-180
10. CHIAPPINI E., 1989 - Review of the European species of the genus *Anagrus* Haliday (Hymenoptera Chalcidoidea). *Bollettino di Zoologia Agraria e Bachicoltura, Milano* (2): 85-119
11. CIURDARESCU G., POPOVICI D. & BRUDEA V., 1972 - Entomofauna polenizatoare a lucernei din podisul Sucevei. *Cerc. Agron. Moldova* 5: 87-91
12. CONTI E., JONES W.A., BIN F., AND VINSON S.B., 1996 - Physical and chemical factors involved in host recognition behavior of *Anaphes iole* Girault, an egg parasitoid of *Lygus hesperus* Knight (Hymenoptera: Mymaridae; Heteroptera: Miridae). *Biol. Control* 7:10-16

13. DE MORAES C.M., MESCHER M.C., 1999. Interactions in entomology: Plantparasitoid interactions in tritrophic systems. *J. Entomol. Sci.* 34:31-39
14. DEBAUCHE H.R., 1948 - Étude sur les Mymarommidae et les Mymaridae de la Belgique (Hym., Chalcidoidea). *Mémoires du Musée Royal d'Histoire Naturelle de Belgique*, 108:119
15. DIMITRIU D.I., 2001 - Speciile genului *Gonatocerus* Nees (Hym. Chalc. Mymaridae) noi pentru Fauna României. *S.J. aniv. 30 ani Form. Rez. Codrii*: 25
16. DONEV A.D., 1998 - Distributional data about the species of genus *Anagrus* Haliday (Hymenoptera, Mymaridae) in the Balkan peninsula with description of a new species. *Acta Zoologica Bulgarica* 50(1):71-78
17. DOUTT R.L., 1959 - The biology of parasitic hymenopteran. *Annu. Rev. Entomol.* 4:161-182
18. GRAHAM H.M., JACKSON C.G., AND DEBOLT W.J., 1986 - *Lygus* spp. (Hemiptera: Miridae) and their parasites in agricultural areas of southern Arizona. *Environ. Entomol.* 15:132-142
19. HINCKS D.W., 1959 - The British species of the genus *Alaptus* Haliday in Walker (Hym. Mymaridae). *Trans. Soc. Brit. Ent.* 13(8): 137-148
20. HUBER J.T., 1986 - Systematics, biology, and hosts of the Mymaridae and Mymarommatidae (Insecta: Hymenoptera): 1758-1984. *Entomography: An Annual Review for Biosystematics* 4:185-243
21. HUBER J.T., 1992 - The subgenera, species groups and synonyms of *Anaphes* (Hymenoptera: Mymaridae) with a review of the described Nearctic species of the fuscipennis group of *Anaphes* s.s. and the described species of *Anaphes* (Yungaburra). *Proceedings of the Entomological Society of Ontario* 123, 23-110
22. HUBER J.T., RAJAKULENDRAN V.K., 1988 - Redescription of and host-induced antennal variation in *Anaphes iole* Girault (Hymenoptera: Mymaridae), an egg parasite of Miridae (Hemiptera) in North America. *Can. Entomol.* 120:893-901
23. JACKSON C.G., GRAHAM H.M., 1983 - Parasitism of four species of *Lygus* (Hemiptera: Miridae) by *Anaphes ovijentatus* (Hymenoptera: Mymaridae) and an evaluation of other possible hosts. *Ann. Entomol. Soc. Am.* 76:772-775
24. LIENCHI MURARIU, C., 2006 - Observații asupra coccinelidelor (Coleoptera, Coccinellidae) în unele culturi de lucernă din nordul Moldovei (România). *Lucr. Șt. USAMV „Ion Ionescu de la Brad”*, Iași, seria Horticultură, I (49): 1115 – 1118
25. MACGILL E., 1934 - On the biology of *Anagrus atomus* (L.) Hal.: an egg parasite of the leafhopper *Erythroneura pallidifrons* Edwards. *Parasitology* 26: 57-63
26. MANRIQUE V., 2003 - Host Habitat Location Mediated by Olfactory Stimuli in *Anaphes iole* (Hymenoptera: Mymaridae), an Egg Parasitoid of *Lygus hesperus* (Hemiptera: Miridae), Thesis Submitted to the Office of Graduate Studies of Texas A&M University in partial fulfillment of the requirements for the degree of - MASTER OF SCIENCE (December 2003), pag. 65
27. MIURA T., 1979 - On the longevity and parasitic activity of adult *Gonatocerus* sp. (Hymenoptera: Mymaridae). *Bull. Fac. Agric. Shimane Univ.* 13: 156-162
28. NORTON A.P., WELTER S.C., FLEXNER J.L., JACKSON C.G., DEBOLT W.J., AND PICKEL C., 1992 - Parasitism of *Lygus hesperus* (Miridae) by *Anaphes iole* (Mymaridae) and *Leiophron uniformis* (Braconidae) in California strawberries. *Biol. control* 2:131-137
29. NOYES J.S., 2003 - Universal Chalcidoidea Database. World Wide Web electronic publication. <http://www.nhm.ac.uk/entomology/chalcidoids/index.html> (accessed 10-OCT-2008)
30. PRICOP E., 2007 - Mymaride (Insecta – Hymenoptera – Chalcidoidea, Fam. Mymaridae) identificate, din unele zone ale județelor Iași și Neamț în perioada 2005-2006. Graduation dissertation, Facultatea de Biologie, Universitatea „Al. I. Cuza” Iași - Romania, pag. 1-145
31. PRICOP E., 2008 - Mymarid wasps (Hymenoptera, Chalcidoidea, Mymaridae) new for Romanian's Fauna, *Analele Științifice ale Universității „Al. I. Cuza” Iași*, s. Biologie animală, Tom LIV, 35-48
32. PRICOP E., 2008 - A Faunistic Review of the Romanian Mymaridae and Mymarommatidae (Hymenoptera, Chalcidoidea and Mymarommatoidea), Univ. „Al.I.Cuza” Iași, Facultatea de Biologie, Catedra de Zoologie-Ecologie, A III-a Conferință Națională „Entomofagii și rolul lor în păstrarea echilibrului natural”, Agigea-Constanța, 6-8 Iun. 2008, communication, (in press)
33. RADU, V. V., BOȚOC, M., 1958 - Calcidide și proctotrupide din împrejurimile orașului Cluj. *Com. Acad. Rep. Pop. Rom.*, VIII(1): 61-69
34. RADU V.V., BOȚOC, M., 1960 - Noi contribuții la studiul calcidoidelor din jurul Clujului. *Com Acad. Rep. Pop. Rom*, X(4): 321-329

35. SAHAD K.A., 1982 - Biology and morphology of *Gonatocems* sp. (Hymenoptera, Mymaridae), an egg parasitoid of the green rice leafhopper, *Nephotettix cinctice* & Uhler (Homoptera, Deltocephalidae). I. Biology. Kontyz, Tokyo, 50 : 246-260
36. STONER A., SURBER D. E., 1969 - Notes on the biology and rearing of *Anaphes ovijentatus*, a new parasite of *Lygus hesperus* in Arizona. J. Econ. Entomol. 62:501-502
37. TRIAPITSYN S.V., 2003 - Review of the Mymaridae (Hymenoptera, Chalcidoidea) of Primorskii Krai: genus *Erythmelus* Enock with taxonomic notes on some extralimital species. Far Eastern Entomologist 126: 29
38. UDAYAGIRI S., WELTER C.S, NORTON A.P., 2000, Biological control of *Lygus hesperus* with inundative releases of *Anaphes* iole in a high cash value crop. Southwest. Entomol. 23:27-38
39. VIRLA E., 2001 - Notes on the biology of *Anagrus breviphragma* (Hymenoptera: Mymaridae), natural enemy of the corn leafhopper *Dalbulus maidis* (Hemiptera: Cicadellidae) and other plant diseases vectors in South America. Bol. Sanidad Veg. "Plagas" 27(2): 239-247

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