THE REDISCOVERY OF *GONATOCERUS TREMULAE* BAKKENDORF 1934; WITH A KEY AND NOTES TO THE SPECIES OF *GONATOCERUS* NEES (*ATER*-GROUP) (HYMENOPTERA: MYMARIDAE) FOUND IN ROMANIA

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Abstract. In this paper we render the species of *Gonatocerus ater* – group that are present in Romania; we bring faunistic, morphological, and taxonomical data about three species of *Gonatocerus* NEES 1834, established in Romania: *G. intermedius* BOTOC, *G. ovicenatus* LEONARD & CROSBY, and *G. tremulae* (BAKKENDORF). A key of the taxa is proposed, *Gonatocerus ater* FÖRSTER and *G. rogersi* MATTHEWS are also included in the key. We recognize *Gonatocerus intermedius* BOTOC, 1962 as a valid species and we compare this species with *G. ater* FÖRSTER, *G. pannonicus* SOYKA and *G. rogersi* MATTHEWS. We also introduce some differential characters between them. Species descriptions and details about their morphology, taxonomy, distribution, and biology are also included. The key is provided with original data, drawings, and photos.

Keywords: *Gonatocerus ater* - species group, *G. tremulae,* distribution, taxonomy, first record, Romania.

Rezumat. Redescoperirea speciei *Gonatocerus tremulae* BAKKENDORF 1934; cu o cheie de determinare şi note asupra speciilor aparţinând genului *Gonatocerus* NEES (grupul - *ater*) întâlnite în România. În această lucrare prezentăm speciile genului *Gonatocerus* NESS 1834 (grupul - ater), identificate în Moldova şi Dobrogea (România). Specia *Gonatocerus tremulae* BAKKENDORF este nouă pentru Fauna României. Recunoaştem specia *Gonatocerus intermedius* BOTOC, 1962 ca fiind validă, comparând-o cu *Gonatocerus ater* FÖRSTER, *G. pannonicus* SOYKA şi *G. rogersi* MATTHEWS, introducând astfel noi caractere de diferenţiere între acestea. Lucrarea conţine şi o cheie originală pentru determinarea celor cinci specii ale genului *Gonatocerus* - grupul *ater: G. ater* FÖRSTER, *G. rogersi* MATTHEWS, *G. intermedius* BOTOC, *Gonatocerus tremulae* (BAKKENDORF) şi *G. ovicenatus* LEONARD & CROSBY. Cheia este însoţită de date originale, imagini fotonice şi desene originale. La aceste specii adăugam descrierea lor succintă, detalii privind corologia, biologia lor precum şi câteva date de biometrie.

Cuvinte cheie: *Gonatocerus* - speciile grupului *ater*, *G. tremulae*, distribuţie, taxonomie, prima semnalare, România.

INTRODUCTION

The genus *Gonatocerus* NEES 1834 contains more than 251 nominal species in the world, 47 of which have been recorded in the Palearctic region (HUBER, 1986; NOYES & VALENTINE, 1989; ZEYA & HAYAT, 1995, NOYES, 2003). Important papers regarding the genus *Gonatocerus* NESS – *ater* species group were published by: BAKKENDORF (1934), BAQUERO & JORDANA (2002), BOTOC (1962), DEBAUCHE (1948), DONEV (2005), FÖRSTER (1847), HELLÉN (1974), HUBER (1986), MATHOT (1969), MATTHEWS (1986), SAHAD & HIRASHIMA (1984), SOYKA (1946), TRIAPITSYN (1978), TRIAPITSYN et al., (2010), VIGGIANI (1969, 1989), ZEYA & HAYAT (1995). After MATTHEWS (1986), HUBER (1988), BAQUERO & JORDANA (2002), DONEV (2005), in Europe there are present 24 valid species of *Gonatocerus*; after PRICOP (2009, 2009a, 2010, 2010a), only 10 species occur in Romania, a total of 11 species with the addition of *Gonatocerus tremulae* BAKK., a species new to Romanian Fauna. Contributions to the study of Mymaridae Fauna from Moldova (Romania) – *Gonatocerus* species, had been made in the past and present by PRICOP (2009, 2009a, and 2010, 2010a). For the species distribution: all countries are arranged in alphabetical order (NOYES, 2003). Now important contributions about *Gonatocerus* (Cosmocomoidea HOWARD, 1908) have been published by TRIAPITSYN et al., (2010).

MATERIAL AND METHODS

This paper is a result of fauna investigation; the species have been collected with an entomological sweep-net and with yellow pan-traps in grass-land vegetation, between 1984 and 2009. The material was collected from some areas of Moldova and Dobruja (Romania). Some specimens were mounted in Faure's medium and examined with the optical microscope. We have illustrated some female antennas, wings, propodeum and habitus; the illustrations were made using a digital camera attached to the microscope. Some drawings were made with the camera lucida.

Abbreviations used: club = clava - clv.; coll. = collected; elev. = elevation; FWL/W = forewing length/wide; F1-F8 = funicle segments (articles); ovip. = ovipositor; O/T2 = ovipositor length/mid-tibia length ratio.

RESULTS AND DISCUSSIONS

Subfamily **Mymarinae**
Tribe **Ooctonini**
Genus ***Gonatocerus*** NEES 1834

Diagnosis of *Gonatocerus* NEES (*ater* species group): Back of head apparently without sutures; pronotum two –lobed; lateral lobes of pronotum always divided into two abutting lobes - medially; dorsellum of metanotum triangular to rhomboidal, usually rhomboidal, rarely almost straplike; propodeum without denticles, but almost always with 2

submedian carinae present and well developed (sometimes strongly or weakly submedial developed carinae). Forewing relatively broad, the setae behind venation is absent (fore wing microtrichia usually without setae behind venation), or if present not uniformly distributed, not as dense or as uniformly distributed as beyond venation; male radicle and scape short, radicle usually fused with scape; male funicle 11-segmented; female funicle 8-segmented. Important contributions to *Gonatocerus* NEES - *ater* species group, for Europe: MATTHEWS, 1986; HUBER, 1988; BAQUERO & JORDANA, 2002; DONEV, 2005. This species of *Gonatocerus – ater* gr. prefers moist habitats, near streams and rivers etc.

Hosts. Usually leafhoppers (Homoptera, Cicadellidae) and membracids (Homoptera, Membracidae).

Distribution. Probably cosmopolitan.

Below it is given a tentative key to the European species of *Gonatocerus* NEES - *ater* species group (females), modified and improved after MATTHEWS (1986), BAQUERO & JORDANA (2002), and DONEV (2005); a tentative key because this is made by examining and interpreting data from a small number of specimens belonging to each species. In the past, MATTHEWS (1986), BAQUERO &JORDANA (2002), and DONEV (2005) keyed and considered valid only two species belonging to *ater* group: *Gonatocerus* ovicenatus (= *G. tremulae*) and *G. ater*, but we found significant differences between some examined type material and our material.

Tentative key to European species of *Gonatocerus* NEES - *ater* species group (females) presented in this paper:

1 Ovipositor extending well beyond the apex of metasoma (Fig. 1-k; Figs. 3–k, m, o)…..……..…….....……..…**4**

- Ovipositor not or slightly extending beyond the apex of metasoma (Fig. 1-o; Fig. 3-i)…….……..…….…….....**2**

2 Forewings narrow and slightly fumate, FWL/W = 4…...……..……..……***G. rogersi****

- Forewings much broader (FWL/W = 2.6 – 3.1)…..……...…...……..……**3**

3 Ovipositor not projecting (Fig. 1–o), O/T2 = 1.1; F1 to F4 usually without sensory ridges (Fig. 1 - l); propodeal carinae not parallel, but united and reaching the dorsellum of metanotum (the carinae are present and form a rounded shape near the dorsellum) (Figs. 1 - m, p); club usually long as F1 to F4 length combined, and longer or equal as F6 to F8 combined (Fig. 1-l); body stocky, small size species – body length less than 0.9 mm .....……..*G. ater**

- Ovipositor only slightly projecting (Figs. 3-i, j), O/T2 = 1.8; F3 with one sensory ridge (Fig. 1 - a; Figs. 2 – c, d, n); propodeal carinae parallel and not reaching the dorsellum of metanotum (Fig. 1 - e, f; Fig. 2 - m; Fig. 3 - h); club length a little longer as F1 to F3 length combined but less longer that F1 to F4 combined, club length also less longer than F6 to F8 combined (Fig. 1-a; Figs. 2/-c, d); body length more than 1.2 mm ……..……..……*G. intermedius*

4 About 1/3 from the total length of the ovipositor is extending beyond the apex of metasoma (about 33% is extending) (Figs. 3-a, k, m); O/T2 = 2.9 - 3, ovipositors apex usually bent downwards; propodeal carinae usually parallel – close to each other and not reaching or reaching the dorsellum of metanotum (Figs. 1-g, h; Fig. 2-l; Figs. 3-b, c) ……...……..……...……...……*G. ovicenatus*

- Much less than 1/3 from the total length of the ovipositor is extending beyond the apex of metasoma (Fig. 1-k; Figs. 3-d, o), O/T2 ratio is lower than 3, ovipositors apex not bent downwards; propodeal carinae usually not parallel, but close to each other, usually united and reaching the dorsellum of metanotum (Figs. 1-i, j; Figs. 3-e, f) ..……..……..……...……..…… ***G. tremulae***

Note. *We have not found *G. ater* FÖRSTER and *G. rogersi* MATTHEWS in Romania, but we included this species in the key, so that we could compare and separate them from *G. intermedius* BOTOC and from other species as well. Possible phylogenetic relationships between the taxa, based on the characters discussed in this paper are presented in Fig. 4.

Alphabetical synopsis of species

Gonatocerus ater FÖRSTER 1841

(Figs. 1-l, m, o, p, r)

Probably *Gonatocerus pannonicus* SOYKA 1946 (Figs. 1-n, s) is a synonym of *G. ater* FÖRSTER.

Diagnosis. Female. Head, mesosoma, metasoma, antennal funicle and clava brown; scape and pedicel brown; legs – coxae, femur, tibia, and tarsus brown. *G. ater* is a small size species – body length less than 0.9 mm; antennal sensory ridges present on: F1(0), F2(0), F3(0), F4(0), F5(2), F6(1-2?), F7(2), F8(2), clava (8); antennal segments short and thick (Fig. 1- l); club usually long as F1 to F4 length combined, and longer or equal as F6 to F8 combined (Fig. 1 - l); Forewings very broad, FWL/W = 2.9 – 3; propodeal carinae not parallel, but united and reaching the dorsellum of metanotum (the carinae are present and form a rounded shape near the dorsellum) (Figs. 1-m, p); ovipositor not exerted beyond apex of metasoma, O/T2 = 1.1; (Figs. 1-m, p), also the dorsellum shape is characteristic to this species. We examined a male of. *G. ater* FÖRSTER – No.18 (Förster Type) in Vienna Nat. Hist. Mus., but it resembled much to *G. ovicenatus*.

Hosts. Probably Homoptera.

Distribution. Europe: England?, Germany, Austria?, Belgium?, Bulgaria?, and Greece?

Material examined. 1 female of *Gonatocerus ater* FÖRSTER 1941: Holotype female W. Germany – Aachen (slide no. 742) (Fig. 1-r) and 1 female of *G. pannonicus* SOYKA 1946: Holotype female Austria - Hundsheim (slide no. 809) (Fig. 1-s).

Taxonomical notes. It was not possible to examine the type material of *Gonatocerus schmitzi* DEBAUCHE 1948, but from the description it is taxonomically very close to *G. ater* FOERSTER and to *G. pannonicus* SOYKA.

G. pannonicus although with a sensory ridge on F3 is more close to *G. ater* than to *G. intermedius* because it is stocky - small body size and has a small ovipositor. I had the good opportunity to examine the holotype of *Gonatocerus ater* FÖRSTER and the holotype of *G. pannonicus* SOYKA deposited in the Vienna Natural History Museum, Austria, but I could not conclude that they belong to the same species. Taxonomically close to *G. ater* FÖRSTER it is *G. rogersi* MATTHEWS 1986, because both species have a short ovipositor, but this species are separated by MATTHEWS (1986) in his key taking in to consideration the FWL/W ratio (forewing X as long as broad); so in the case of *G. rogersi* - FWL/W = 4.2 (a narrow forewings) and in the case of *G. ater* - FWL/W = 2.9 (a broad forewing). It was not possible to examine the type material of *Gonatocerus rogersi*, but from MATTHEWS (1986) original description we think it is a valid species.

Gonatocerus intermedius BOTOC 1962

Lymaenon intermedius BOTOC 1962

(Figs. 1-a, e, f; Figs. 2-c, d, k, n, m, o, p; Figs. 3-g, h, i, j)

Diagnosis. Female. Head, mesosoma, metasoma, antennal funicle and clava brown to dark brown; scape and pedicel brown; legs – coxae, femur, tibiae and tarsus brown to dark brown. Body size - length in females more than 1.2 mm (1.1-1.4 mm). Ovipositor only slightly projecting (Figs. 3-i, j), O/T2 = 1.8; characteristic - F3 with one sensory ridge (Fig. 1-a; Figs. 2-c, d, n); antennal sensory ridges present on: F1(0), F2(0), F3(1) – on the dorsal side of the antennal segment, F4(0), F5(2), F6(0?-1, 2?) – usually just one, F7(2), F8(2), clava (8); spindle-shaped sensilla (sensilla type in Fig. 1-c): F1(0), F2(1), F3(1), F4(0), F5(1), F6(1), F7(1), F8(1) and clv. with three round base placodea - like sensilla (sensilla type in Fig. 1 - t); club length a little longer that F1 to F3 length combined but less longer that F1 to F4 combined, club length also less longer than F6 to F8 length combined (Fig. 1-a; Figs. 2-c,d,n). Forewings very broad, FWL/W = 2.6 – 2.7; propodeal carinae parallel, distant to each other (not close like in *G. ovicenatus*) and not reaching the dorsellum of metanotum (Figs. 1-e, f; Fig. 2-m; Fig. 3-h). Abdomen only a little longer than thorax length.

Male. Very similar to the female, head, thorax - propodeal carinae just as in the female (Fig. 2 - m), but the antennae are long and filiform, ped. - F1 to F3 not swollen or a little swollen (Fig. 2-k), F1 usually with 9, rarely 10 sensory ridges; male genitalia is not encapsulated, characteristic to the genus (Fig. 2-p).

Hosts. Eggs of *Cicadella viridis* (Homoptera, Cicadellidae).

Distribution. Europe: Romania and probably Italy.

Material examined. 3 females and 1 male coll. on September 2, 2006 from Cucorani, Botosani county; 1 female coll. on October 15, 2009 from Podu de Piatra, Iasi City – Bahlui river, Iasi county; 1 female coll. on September 18, 1984 from Uzlina, Tulcea county. *G. intermedius* is very probably widespread; in Romania, it is found in Transylvania, Moldova and Dobruja (Dobrogea).

Taxonomical notes. From the description, it is possible that *Lymaenon populi* VIGGIANI 1969 is a synonym of *Gonatocerus intermedius* BOTOC. In this case we have to accept *Gonatocerus intermedius* BOTOC, 1962 as a valid species, being described by BOTOC in 1962, before VIGGIANI. The description of BOTOC (1962) fits well to our specimens; we believe that we found *Gonatocerus intermedius* BOTOC, a species reported for the first time from Moldova (Romania). It was not possible to examine the type material of *Lymaenon populi* VIGGIANI 1969; it was not possible also to examine the type material of *Lymaenon intermedius* BOTOC because Botoc's collection is lost; our specimens of *G. intermedius* seem to have a longer ovipositor compared with Botoc's original description.

Gonatocerus ovicenatus LEONARD & CROSBY 1915

(Figs. 1-d, g, h, t; Figs. 2-f, g, h, i, j, l; Figs. 3-a, b, c, k, l, m, n, r, s)

Diagnosis. Head, mesosoma, metasoma and legs brown to dark brown, antennae brown. Body length from 1.1 mm to 1.4 mm; Antennal sensory ridges present on F1(0), F2(0), F3(0), F4(0), F5(1), F6(1), F7(2), F8(2), clava (8); spindle-shaped sensilla (sensilla type in Fig. 1-c): F1(0), F2(0), F3(1), F4(0), F5(0), F6(0), F7(1), F8(1) and clv. with two big and round base placodea-like sensilla (sensilla type in Fig. 1 – t). Forewings broad, FWL/W = 2.9 – 3.1

Ovipositor evidently exerted beyond apex of metasoma; about 1/3 from the total length of the ovipositor is extending beyond the apex of metasoma (about 33% is extending) (Figs. 3-a, k, m); O/T2 = 3, ovipositors apex is usually bent downwards and dilated; propodeal carinae usually parallel – close to each other and not reaching or reaching the dorsellum of metanotum (Figs. 1-g, h; Fig. 2-l; Figs. 3-b, c). The setae from the tip of ovipositors sheets more near the tip (apex) (Figs. 3-l, n, s). Abdomen much longer than thorax length.

Male. Very similar to the female, head, thorax - propodeal carinae as in the female (Figs. 2=i, l); but the antennae are long and filiform (Fig. 2-h), ped. - F1 to F3 a little swollen (Fig. 2-j), F1 with usually 12 and rarely 11 sensory ridges.

Hosts. Eggs of *Idiocerus populi*? and *Rhytidodus decimusquartus* (Homoptera, Cicadellidae).

Distribution. Probably Holarctica: Iran, Italy, Spain, England, Bulgaria, Romania, and the USA.

Material examined. 3 females and 2 males coll. on September 2, 2006 from Cucorani, Botosani county; 2 females coll. on September 2, 2006 from Siminicea, Suceava county; 2 females coll. on July 5, 2006 from Cucorani, Botosani county; 1 female coll. on August 28, 2004 from Ipotesti, Botosani county; 3 females coll. on September 2, 2006 from Cucorani, Botosani county**;** 2 females July 5, 2007 from Cucorani, Botosani county; 1 female coll. on September 12, 1985 from Scobalteni, Iasi County. All coll. sites are from Moldova (Romania). *G. ovicenatus* is probably the most widespread species of *Gonatocerus* NEES - *ater* species group. I had also the possibility to examine one female specimen (paralectotype?) in Vienna Nat. Hist. Mus. Austria (Figs. 3-r, s).

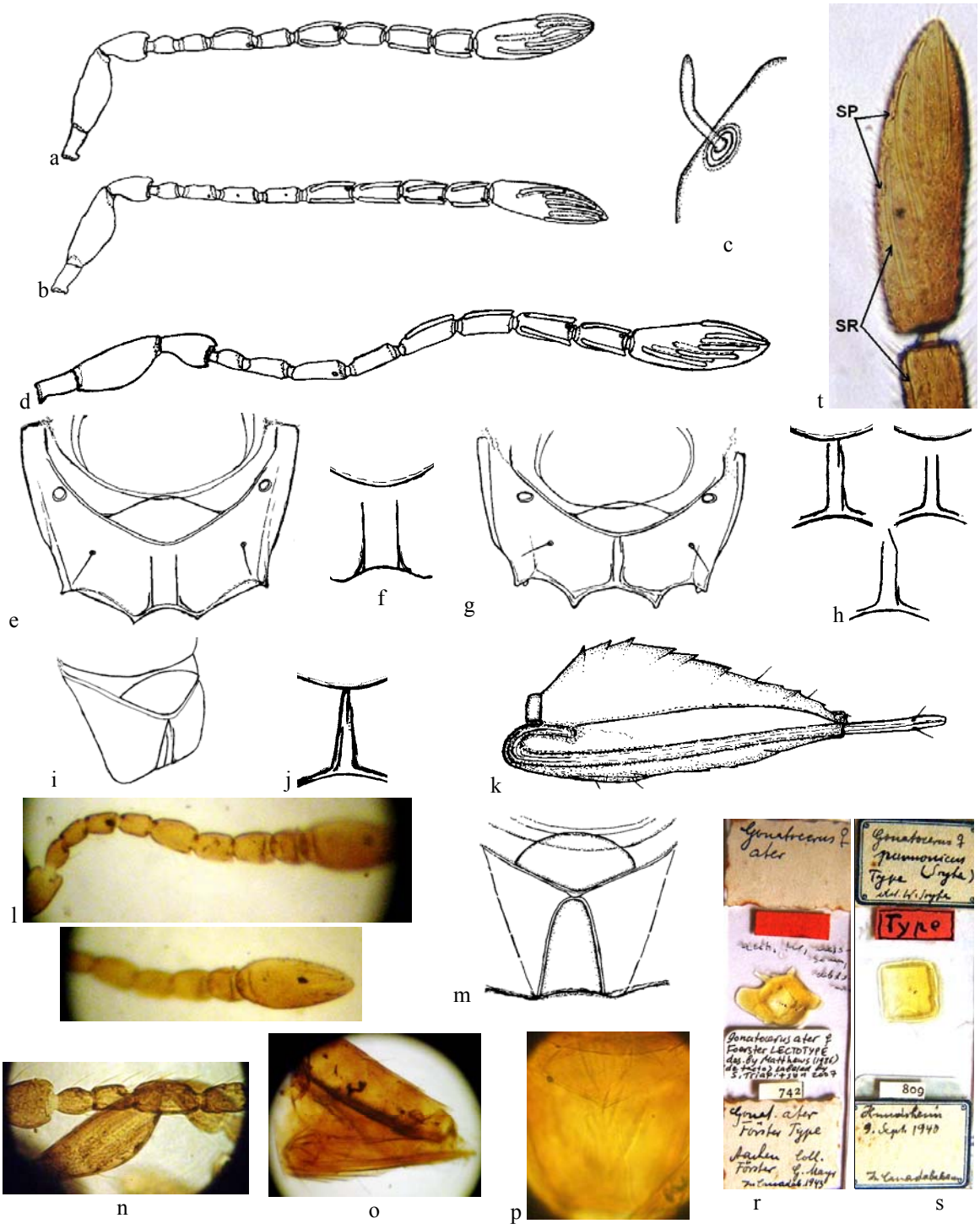

Figure 1. **Morphological features of *Gonatocerus* spp. (ater – group), antennae, thorax (post scutellum, metanotum and propodeum) and the abdomen:** a - *Gonatocerus intermedius*; b - *G. tremulae*; c - spindle-like sensilla from female antenna of *Gonatocerus* spp.; d - *G. ovicenatus*; e, f – propodeum and propodeal carinae in *G. intermedius*; g, h – propodeum and propodeal carinae variation in *G. ovicenatus*; i, j, k – propodeum, propodeal carinae and the abdomen of *G. tremulae*; l, m, o, p, r - *G. ater* type; n, s – scape, pedicellus and F1 to F4 in *G. pannonicus* type; t – F8 and club of *G. ovicenatus* (SP = round base placodea-like sensilla, SR = sensory ridge) (original).

Figura 1. **Trasături morfologice la *Gonatocerus* spp. (grupul - ater), antene, torace (post-scutelum, metanotum, propodeum) şi abdomenul:** a - *Gonatocerus intermedius*; b - *G. tremulae*; c – sensila fusiforma prezenta pe antena la *Gonatocerus* spp.; d - *G. ovicenatus*; e, f – propodeum şi carene la *G. intermedius*; g, h – propodeum şi variabilitatea carenelor la *G. ovicenatus*; i, j, k – propodeum cu carene şi abdomenul la *G. tremulae*; l, m, o, p, r - *G. ater*, specia tip; n, s – scap, pedicel şi F1 - F4 la *G. pannonicus*, specia tip; t – F8 si clava la *G. ovicenatus* (SP = sensile placoide, SR = creste senzoriale) (original).

Figure **2. Morphological features of *Gonatocerus* spp. (ater – group):** a, b – fore wing base and forewing of *G. tremulae*; c, d – female antenna of *G. intermedius*; e – ant. of *G. tremulae*; f, g – ant. of *G. ovicenatus*; h, i, j, l – male ant., habitus, ped. - F1 to F2, and propodeum of *G. ovicenatus*; k, m, p – male ped. F1 – F2, propodeum and genitalia of *G. intermedius* (AA = aedeagal apodeme; AB = aedeagal body; AGS = apodeme of the genital sternite; P = paramere) (original).

Figura **2. Trasaturi morfologice la *Gonatocerus spp.* (grupul - ater):** a, b – baza aripii si aripa anterioara la *G. remulae*; c, d – antena la femela de *G. intermedius*; e – ant. la *G. tremulae*; f, g – ant. la *G. ovicenatus*; h, i, j, l – ant., habitus, ped., F1 - F2 şi propodeum la masculul de *G. ovicenatus*; k, m, p – ped. F1 – F2, propodeum şi genitalia la masculul de *G. intermedius* (AA = apodeme aedeagus; AB = aedeagus; AGS = apodemele sternitului genital; P = paramere) (original).

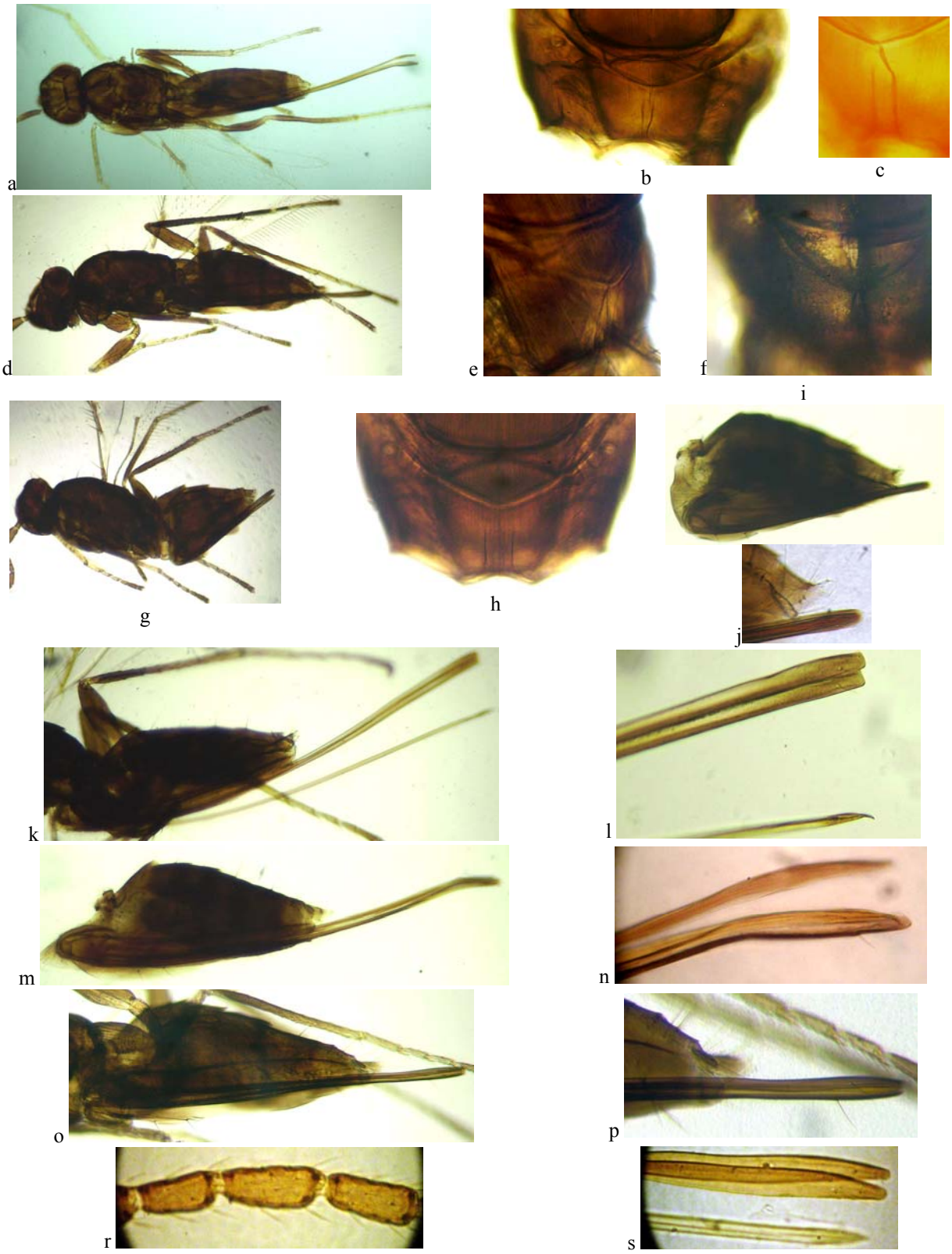

Figure 3. **Female habitus, propodeum, abdomen and ovipositor tips in *Gonatocerus* spp. – ater group**: a, b, c, k, l, m, n, r, s – *Gonatocerus ovicenatus* (r, s – F2 to F4 and ovipositor tip in a specimen of *G. ovicenatus* deposited in Vienna Nat. Hist. Museum); d, e, f, o, p - *G. tremulae*; g, h, i, j - *G. intermedius* (original).

Figura 3. **Habitus, propodeumul, abdomenul şi ovipozitorul la female de *Gonatocerus* spp. – ater group**: a, b, c, k, l, m, n, r, s – *Gonatocerus ovicenatus* (r, s – F2 pana la F4 şi varful ovipozitorului la *G. ovicenatus* depozitat în Muz. St. Nat. din Vienna); d, e, f, o, p - *G. tremulae*; g, h, i, j - *G. intermedius* (original).

Taxonomical notes. We found that the propodeal carina in *G. ovicenatus* can vary, these carinae are not always straight, sometimes one of them can be broken (Fig. 1-h; Fig. 2-l; Fig. 3-c); this propodeal carinae can or cannot reach the dorsellum of metanotum (Fig. 1-h). Although all the typical specimens of *G. ovicenatus* are characteristic by the ovipositor that is exerted beyond apex of metasoma and its apex is bent downwards and dilated, we found in some atypical specimens that these last two characters can vary, as not always the apex is bent downwards or dilated. In the bigger specimens with a long ovipositor, the ovipositor is not bent downwards and dilated, or only slightly dilated (Figs. 3-k, l); also this dilated portion of ovipositor sheets can vary in shape (Figs. 3-n, s).

Gonatocerus tremulae (BAKKENDORF 1934)

(Figs. 1-b, i, j, k; Figs. 2-a, b, e; Figs. 3-d, e, f, o, p)

Lymaenon tremulae BAKKENDORF 1934

Diagnosis. Female. Head, mesosoma, metasoma and legs brown to dark brown, antennae brown; Body length around 1.3 mm; antennal sensory ridges present on F1(0), F2(0), F3(0), F4(0), F5(2), F6(1-2), F7(2), F8(2), clava (8); spindle-shaped sensilla (sensilla type in Fig. 1 - c): F1(0), F2(1), F3(1), F4(0), F5(1), F6(0), F7(1), F8(1) and clv. with two big and round base placodea-like sensilla (sensilla type in Fig. 1-t).

Ovipositor well exerted beyond apex of metasoma. Much less than 1/3 from the total length of the ovipositor is extending beyond the apex of metasoma (about 20% is extending) (Fig. 1-k; Figs. 3-d, o), O/T2 = 2.3, ovipositors apex not bent downwards or dilated, the setae from the tip of ovipositors sheets back – not near the tip (Fig. 3-p); propodeal carinae usually not parallel, but close to each other, united and reaching the dorsellum of metanotum (Figs. 1-i, j). Forewings broad, FWL/W = 2.8 Abdomen longer than thorax length.

Hosts. Eggs of *Idiocerus populi* (Homoptera, Cicadellidae).

Distribution. England?, Denmark, Bulgaria?, new to Romania.

Material examined. 2 females coll. On September 2, 2006 from Cucorani, Botosani County – Moldova (Romania) and one female coll. on September 12, 1985 from Scobalteni, Iasi County.

Taxonomical notes. Although *G. tremulae* is very close to *G. ovicenatus,* we found that the differences between them consist in the ovipositors length. The species *G. ovicenatus* has a much longer ovipositor (the ovipositor/mid-tibia ratio between them show a significant difference), also the antennal segments of the funicle from F2 to F7 are longer in *G. ovicenatus* compared to *G. tremulae*. The distribution of the sensory ridges in the female antennae of *G. ovicenatus* and *G. tremulae* is from F5 to F8, but in *G. ovicenatus* usually F5(1), F6(1), F7(2), F8(2) compared to *G. tremulae* that usually has F5(2), F6(2), F7(2), F8(2); also few differences are found between the propodeal carinae of this two species. In this paper we treat *G. ovicenatus* and *G. tremulae* as different species, because of some major differences mentioned above; but it is a chance that this species are in fact different sub-species or at least different forms of the same species. It was not possible to examine the type material of *G. tremulae* BAKK. because it is lost, but our specimens of *G. tremulae* match well to BAKKENDORF (1934) original description.

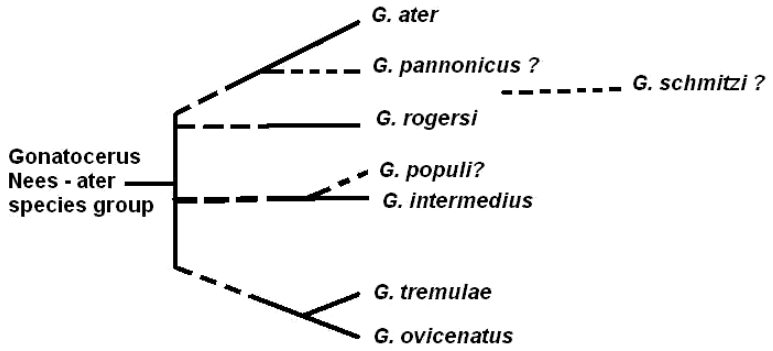

Figure 4. Possible phylogenetic relationships between the taxa from above based on the characters discussed in this paper (original).
Figura 4. Posibile relaţii filogenetice între taxonii de mai sus, în urma analizei caracterelor discutate în această lucrare (original).

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