

## THE SPECIES OF *GONATOCERUS* NEES, 1834 (HYMENOPTERA, MIMARIDAE) IN THE BALKAN PENINSULA

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**ABSTRACT.** Faunistic data about all the species of genus *Gonatocerus* Nees, 1834, established by now in the Balkan Peninsula, are given. Key of the taxa is proposed.

**KEY WORDS.** Mymaridae, *Gonatocerus*, species, Balkan Peninsula, key.

### INTRODUCTION

The genus *Gonatocerus* Nees, 1834 contains totally 251 nominal species in the world, 47 of which have been recorded in the Palearctic realm (HUBER, 1986; NOYES and VALENTINE, 1989; ZEYA and HAYAT, 1995). After MATTHEWS (1986), HUBER (1988), BAQUERO and JORDANA (2002) in Europe the *Gonatocerus* species are 24, and after DONEV (1985, 1988, 2001, 2003) only 9 species occur the Balkan Peninsula (Serbia-3, Bulgaria-9, Greece-2, and European Turkey-7).

**Abbreviations:** **b.** – below, **m. h.** – mountain hostel, **pk.** – peak, **pl.** – place, **res.** – reserve, **rt.** – resort, **v.** - village

### Key of the species group of *Gonatocerus* in Balkan Peninsula

- 1 Lateral lobes of pronotum abutting medial; dorselum of metanotum rhomboidal; propodeum without denticles but with strongly or weakly developed carinae.....2
- Lateral lobes of pronotum widely separated by lightly sclerotised medial lobe; dorsellum of metanotum strap-like; propodeum without carinae but with fine denticles.....*litoralis* - group
- 2 Fore wing microtrichia with setae extending to base of marginal vein uniformly distributed; propodeum smooth medially or weakly developed carinae. Male radicle long, distinctly separated from scape..... *sulphuripes* - group

- Fore wing microtrichia without setae behind venation, or if present not uniformly distributed; propodeum with strongly submedial carinae. Male radicle short, usually fused with scape .....**ater** - group

***sulphuripes*** - group

Diagnosis. Pronotum two-lobed; dorselum of metanotum rhomboidal; propodeum without submedial carinae; fore wing microtrichia present behind venation. Female antenna with 8 funicular article; F 1-4 usually without sensory ridges.

Key of the to females of ***sulphuripes*** - group

1. Ovipositor about two times as long as hind-tibia; F2, F3, F4 elongated. .... ***longicornis***
  - Ovipositor less than two times as long as hind tibia; F2, F3, F4 not elongated.....2
2. Ovipositor less than 1,4 times as long as hind tibia; F6 without sensory ridges; with or without lighter basal half of gaster; body light to dark brown.....3
  - Ovipositor about 1,5 times as long as hind tibia. F6 with 1 or 2 sensory ridges.....***pictus***
3. Forewing broader with shorter marginal cilia .....***sulphuripes***
  - Forewing more elongated with longer marginal cilia.....***minor***

***Gonatocerus longicornis*** Nees, 1834

*Gonatocerus longicornis* Nees, 1834: 192

*Rachistus terebrator* Förster, 1847: 203

*Lymaenon britteni* Hincks, 1960: 211

*Lymaenon civadelidae* Nikolskaja, 1951:575-576

*Lymaenon longiventris* Botos, 1963: 96-97

Diagnosis. Female. Head , antennal funicle F2-F8 , clava, thorax and apical half of gaster dark brown; pedicel and scape lighter; legs and basal half of gaster orange brown. Antennae: sensory ridges on F5 (2), F6 (2), F 7 (2), F8 (2) and clava (8).

Distribution: Germany, United Kingdom, Austria, Bulgaria, Turkey, Greece. New to Republic of Macedonia.

Material examined.

**Bulgaria:** (DONEV, 1986: 71) Rhodopes (rt. „Pamporovo“, 03.VIII.1978, 2 females, v. Djurkovo, 17.VIII.1977, 1 female, res. „Kormisosh“, 11.VII.1991, 1 female), Stara planina ridge (v. Ribaritz, 26.VI.1996, 5 females, 1 male; Teteven, 26.VII.1997, 1 female, 1 male; pl. „Kostina“, 2 females res. „Tzarichina“, 24.VII.1997, 1 female); Northern Bulgaria: (v. Dermantzi, 20.VI.1995, 1 males; 08.VIII.1995, 1 female; v. Uglen, 18.IX.1995, 1 female); North-West Bulgaria (Berkovitz, 27.IV.2000, 1 female, 1 male; Chiprovtsi, 15.VIII. 2000, 1 male; v. Trajkovo, 29.IV.2000, 1 female, pl. „Chernila“, 10.IX.2000, 1 female; Klisurski monastery, 12.VIII.2000, 1 male; Montana, 23.VII.2000, 5 females), North-

Eastern Bulgaria (Silistra, 17.VIII.1977, 3 females), Black Sea area (Primorsko, 05.IX.1984, 1 female, 2 males).

*Republic of Macedonia*: Kavadarci, 21.V.1987, 1 female.

*Greece*: (DONEV, 1988: 188) Peloponnes (Leonidion, 11.VII.1983, 2 males; Taigetos, 1 female, 2 males); Central Greece (Provatas, 06.VII.1983, 2 females); Olympos, (m.h. „Prioni“, 07.VII.1983, 2 females; v. Ag. Dionissios, 07.VII. 1983, 1 female).

*Turkey*: (DONEV, 2001: 30) European part (Selim Pasha, 26.VII.1997, 1 female, 1 males).

***Gonatocerus sulphuripes*** (Förster, 1847)

***Rachistus sulphuripes* Förster, 1847, 195: 233**

*Gonatocerus pictosimilis* Soyka, 1946: 38

*Lymaenon alecto* Debauche, 1948: 105

*Lymaenon crassipes* Debauche, 1948: 105

*Lymaenon synaptus* Debauche, 1948: 105

Diagnosis. Female. Head, antenna, mesosoma and apical half of metasoma dark brown. Legs and basal half of metasoma light brown. Antennal segments with sensory ridges on F7 (2), F8(2) and clava (8). Forewing broad, microtrichia uniformly distributed, including behind the venation. Ovipositor slightly exerted beyond the metasomal apex. Ovipositor/ hind tibia ratio 1,1-1,2.

Distribution: United Kingdom, Spain, Belgium, Poland, Germany, Bulgaria, Turkey, Greece. New to Republic of Macedonia.

Material examined.

*Bulgaria*: (DONEV, 1986: 72, 1988: 195). Whole country, from lowlands up to 2000 m., from April till October.

*Republic of Macedonia*: (Kavadarci, 21.V.1987, 7 females).

*Greece*: (DONEV, 1988: 187). Peloponnes (Taigetos, 11.VII.1983, 3 females, 1 male); Central Greece (Levadia, 14.VII.1983, 1 female; Provatas, 10.VII.1983, 7 females, 11 males); Northern Greece (Doirani, 27.IV.1994, 1 female); Western Greece: (Joanina, 24.IV.1994, 2 females).

*Turkey*: (DONEV, 2001: 29). European part (Selim Pasha, 26.07.1997, 9 females, 1 male);

***Gonatocerus pictus*** (Haliday, 1833 )

*Ooctonus pictus* Haliday, 1833

Diagnosis. Female. Characterised by a short ovipositor and presence of a two sensory ridge on F6, F7 and F8. Head dark brown, scape, pedicel and antennal funicle F1- F3 lighter, radicle yellowish, F4 –F8 and clava dark brown. Thorax,

legs and anterior half of mesosoma yellowish, mesoscutum is darker in its medial part. Basal half of metasoma bright yellow, apical half dark brown. Ovipositor extending slightly beyond apex of metasoma. Forewing long and apically rounded, discal setae uniformly distributed from the base of marginal vein. Ovipositor/ hind tibia ratio 1,5.

Hosts unknown.

Distribution: England, Spain, Belgium, Austria, Bulgaria. New to Greece.

Material examined.

*Bulgaria* (DONEV, 1986: 72; 1988: 195). Rhodopes (v. Gugutka, 20.V.1981, 2 females; Ivajlovgrad, 11.V.1981, 2 females; v. Dolno Lukovo, 11.V.1981, 1 female; m.h. „Pashaliitsa“, 08.VIII.1979, 1 female; rt. „Pamporovo“, 03.VIII.1978, 1 female; 22.VII.1979, 2 females; v. Drjanovo, 17.VIII.1978, 1 female, 1 male; m.h. „Zdravets“, 27.V.1979, 1 female, 2 males; b. pk. Persenk, 02.VIII.1978, 1 female; res. „Kormisosh“, 04.VII.1997, 1 female, 1 male; Kardzhali, 27.IV.1981, 1 female; v. Javorovo, 11.VII.1978, 1 female; m.h. „Marziganitsa“, 19.V.1980, 1 male); South Bulgaria (Parvomai, 14.V.1984, 1 female; Assenovgrad, 07.X.1978, 1 male); South West Bulgaria (v. Novo Delshevo, 20.V.1988, 1 female), Black Sea area (Tzarevo, 03.IX.1984, 1 female, 1 male); Stara planina ridge (v. Ribaritsa, pl. „Kostina“, 26.VI.1996, 2 females, 1 male; res. „Tsaritshina“, 24.VII.1997, 1 female) Northern Bulgaria: (v. Dermantzi, 20.VI.1995, 1 female 1 males; pl. „Shulyovitsa“, 18.IX.1996, 1 female); West Bulgaria, (Chernila, 10.IX.2000, 1 female ; Montana, 04.VI.2000, 1 female, 3 males); Mt. Vitosha (v. Simeonovo, 19.V.1985, 1 female; pl. „Ridni Doll“, 1-30.VI.2000, 1 female).

*Greece*: West Greece, (Joanina, 24.IV.1994, 1 female, 2 males).

### *Gonatocerus minor* Mattheus, 1986

*Gonatocerus minor* Mattheus, 1986: 220.

Diagnosis. Female. Characterized by a relatively long ovipositor and narrow forewing with long marginal cilia, reaching to half of forewing width; Head, mesosoma and apical half of metasoma dark brown, antennae, legs and basal half of metasoma light brown. Antennae: antennal funicular segments very short with sensory ridges on F7-2, F8-2 and clava-8. Forewing very narrow, uniformly covered with microtrichia with very long marginal and stigmal vein.

Hosts unknown.

Distribution: England, Spain, Greece. New to Bulgaria.

Material examined.

*Bulgaria*. Rhodopes (pk. Snezhanka, 22.VII.1979, 4 females; pl. „Malka Syutkya“, 10.VIII.1978, 1 female; m.h. „Zdravets“, 27.V.1979, 1 female; v.

Petelovo, 17.VI.1980, 1 female; v. Gornoslav, 29.VII.1979, 1 female); Mt.Rilla (pk. Musala,1.VIII.1985, 1 female) ; Bankja, 23.V.1985, 3 females; Southern Bulgaria (v. Muldava,18.IX.1979, 1 female) Northern Bulgaria: (v. Dermantsi, 8.VIII.1995, 4 males);

Greece. (DONEV, 2003: 75) Central Greece: (Provatas, 10.VII.1983, 2 females, 6 males.) Peloponnes (Astros, 10.VII.1983, 1 male).

***litoralis*** - group

Diagnosis. Pronotum three lobed; lateral lobes of pronotum widely separated by lightly sclerotized medial lobe, dorsellum of metanotum strap shaped, dorsal surface of propodeum with two submedial grooves, medially with denticles. Forewing less dense ciliated between the marginal vein and cubital line of hairs or as densely ciliated there as over the rest of the disc.

Key of the females of *litoralis* – group

1. Clava with only 6 sensory ridges. Forewings narrow with long marginal cilia.....***chrysis***  
- Clava with 8-10 sensory ridges. Forewings wide with short marginal cilia.....2
2. Setation of forewing between marginal vein and cubital line of hairs not as dense as over the rest of the disc..... 3  
- Setation of forewing between marginal vein and cubital line of hairs as dense as over the rest of the disc. Ovipositor not exerted beyond apex of gaster.....***litoralis***
3. Sensory ridges present on F7 and F8 and other funicle segments.  
Ovipositor extending from base to apex of gaster.....***longior***  
- Sensory ridges present only on F7 and F8. Ovipositor not exerted beyond apex of gaster.....***thyrides***

***Gonatocerus chrysis*** (Debauche)

*Lymaenon chrysis* Debauche, 1948: 99.

*Gonatocerus gracilentus* Hellen, 1974:11.

Diagnosis. Female. Clava with six sensory ridges. Forewing narrow with long marginal cilia. Ovipositor about as long as foretibia. Head brown, with vertex, face and gena paler. Antenna uniformly light brown with radicle paler. Mesosoma brown with terga darker towards the middle. Legs uniformly light brown with the last tarsal segment dark. Metasomal terga light brown with the distal part darker. Ovipositor plates dark brown. Antennal sensory ridges on F5 (1), F6 (1), F7 (2) and F8 (2). Clava with six sensory ridges, four of them in the apical third, and pointed towards exterior Forewing with cubital line of microtrichia of 18-20. Density of discal microtrichia under marginal vein only a little less than beyond venation. Ovipositor not exerted beyond metasomal apex.

Hosts unknown.

Distribution: England, Spain, Belgium, Greece. New to Bulgaria.

Material examined.

*Bulgaria*: Rhodopes (v. Jasna poljana, 18.V.1981, 6 females; m.h. „Pashaliitsa“, 08.VIII.1979, 1 female; 03.VIII.1978, 1 female; 02.VII.1980, 1 female; v. Dzhurkovo, 17.VIII.1978, 1 female); Stara Planina ridge (v. Ribaritz, 22.IV.1995, 3 females, 24.VI.1996, 4 females; 22.VII.1997, 3 females, res. „Tsarichina“, 24.VII.1997p 2 females,) Northern Bulgaria: (v. Dermantzi, 8.VIII.1995, 1 female; v. Vasilyovo, 20.VII.1997, 1 female); West Bulgaria, (Chernila, 10.IX.2000, 2 females ; Klisurski monastery, 12.VIII.2000, 2 females.). Mt. Rila (pl. „Bodrost“, 14.VIII.1984, 1 female); North- Eastern Bulgaria (Silistra, 17.VIII.1977, 8 females, 2 males).

*Greece*: (DONEV, 1988: 187; 2003: 75) Peloponnes (Leonidion, 11.VII.1983, 1 female; Sparti, 11.VII.1983, 1 female; Levadia, 14.VII.1983, 4 females; Amfiklia, 14.VII.1983, 3 females) Central Greece (Provatas, 6.VII.1983, 1 female); Northern Greece, (Goumenitza, 26.IV.1994, 3 females, 2 males); Crete (Iraklio, 1-10.VII. 2000, 2 females).

### ***Gonatocerus longior* Soyka**

*Gonatocerus longior* Soyka, 1946a: 38.

Diagnosis. Female. This species is characterized by the ovipositor, slightly exerted beyond the metasomal apex. Forewing broad with less densely ciliated part a bare area behind marginal vein.

Head and mesosoma brown; The rest of body light brown to yellowish including legs and metasoma . Valves of ovipositor brown. Antennal sensory ridges on F5 (1), F7 (2), F (8) and clava (10). Forewing long with marginal cilia reaching- one quarter of forewing breadth; setae uniformly distributed from almost first third of wing.

Hosts unknown.

Distribution: Netherlands, Austria , England, Turkey. New to Greece.

Material examined.

*Greece*. Peloponnes (Sparti, 11.VII.1983, 1 female).

*Turkey*. (DONEV, 2001: 30) European part: Selim Pasha, 26.07.1997, 1 female.

### ***Gonatocerus thyrides* (Debauche, 1948)**

*Lymaenon thyrides* Debauche, 1948:101

Diagnosis. Female. Head, antennal funicle, clava, mesosoma and legs dark brown to brown, scape and pedicel dark brown but lighter on lateral surfaces, metasoma dark brown to brown but except for first valvifers lighter than thorax. Ovipositor

valves and apical tarsal segments very dark Antennal sensory ridges present on F7 (2), F8 (2), clava (10) or F7 (1), F8 (2), clava (10). Forewings broad with a bare or at least less densely ciliated patch between the marginal vein and cubital line of hairs. Ovipositor not exerted beyond metasomal apex.

Hosts unknown.

Distribution: England, Spain, Belgium, Romania, Bulgaria, Turkey. New to Bulgaria and Republic of Macedonia.

Material examined.

*Bulgaria*. Rhodopes (Kardzhali, 18.V.1981, 2 females, v. Muldava, 7.X.1978, 1 female); Northern Bulgaria: (v. Dermantsi, 8.VIII.1995, 1 female; v. Vasilyovo, 20.VII.1997, 1 female, 1 male); Stara Planina ridge (pl. „Boaza“, 26.VI.1996, 2 females);

North- Eastern Bulgaria (Silistra, 17.VIII.1977, 18 females, 10 males);

*Greece*. (DONEV, 1988: 188) Central Greece (Provatas, 6.VII.1983, 2 females,); Peloponnes (Amfiklia, 14.VII.1983, 3 females, 3 males); Northern Greece, (Goumenitza, 26.IV.1994, 4 females).

*Republic of Macedonia*. (Kavadartzi, 21.V.1987, 3 females).

*Turkey*. (DONEV, 2001: 30) European part (Selim Pasha, 26.07.1997, 2 females).

### ***Gonatocerus litoralis*** (Haliday, 1833)

*Ooctonus litoralis* Haliday, 1833: 344.

*Gonatocerus litoralis* (Haliday): Lameere, 1907: 245

Diagnosis. Female. Head, mesosoma, funicle and clava brown; scape and pedicel light brown but lighter on lateral surfaces, metasoma except first valvifers lighter brown than mesosoma. Antennal sensory ridges present on F5 (1), F6 (0), F7 (2), F8 (2), clava (10) but may reduce to F7 (1), F8 (2), clava (10) in small specimens or (rarely) increase to F5 (1), F6 (1), F7 (2), F8 (2), clava (10) in large specimens. Forewings variable in breadth with uniform microtrichia density over the disc. Ovipositor not exerted beyond apex of metasoma.

Hosts: *Cicadula* (*Homoptera*)

Distribution: England, Spain, Germany, Austria, Belgium, Romania, Bulgaria, Turkey. New to Republic of Macedonia.

Material examined.

*Bulgaria*: (DONEV, 1986: 73, 1988: 194) from the sea coast up to 2000 m, from March till November.

*Turkey*: (DONEV, 2001: 29) European part: (Selim Pasha, 26.07.1997, 2 females).

*Greece*: (DONEV, 1988: 187; 2003: 75) Central Greece (Provatas, 6.VII.1983, 2 females; Levadia 14.VII.1983, 14 females, 12 males); Olympus, (Agios Dionisios, 7.VII.1983, 5 females, 4 males; Prioni, 7.VII.1983, 2 females; Mt. Taigetos, 11.VII.1983, 12 females), Peloponnes (Amfiklia, 14.VII.1983, 5 females, 2 males; Leonidion, 11.VII.1983, 6 females, 1 male; Selassia,

10.VII.1983, 5 females; Sparti, 11.VII.1983, 3 females); Northern Greece, (Goumenitza, 26.IV.1994, 17 females, 5 males); Tassos Island (above Tassos, 27.V.1989, 3 females, 2 males), West Greece, (Joanina, 24.IV.1994, 6 females, 2 males); Crete, (Iraclio, 6.VI- 20.VIII. 2000, 18 females, 13 males.

*Republic of Macedonia*: (Kavadartzi, 18.V. 1987, 1 female, 1 male).

**ater-** group

Diagnosis. Back of head without sutures; pronotum two-lobed; dorsellum of metanotum rhomboidal; fore wing microtrichia absent behind venation; propodeum with well-developed submedial carinae.

Key of the females of **ater-** group

1. Ovipositor not or slightly extending beyond the apex of metasoma.....**ater**  
- Ovipositor extending well beyond the apex of metasoma.....**tremulae**

***Gonatocerus ater*** Förster, 1841

*Gonatocerus ater* Förster, 1841

*Gonatocerus pannonicus* Soyka, 1946

*Lymaenon schmitzi* Debauche, 1948

*Lymaenon intermedius* Botoc, 1962

*Lymaenon populi* Viggiani, 1969

Diagnosis. Female. Head, mesosoma, metasoma, antennal funicle and clava dark brown; scape and pedicel brown; legs - coxae and Femur brown to dark brown. Antennal sensory ridges present on F3 (2), F4 (0), F5 (2), F6 (0), F7 (2), F8 (2), clava (8). Forewings broad. Ovipositor not exerted beyond apex of metasoma.

Hosts: eggs of *Cicadella viridis* (*Homoptera*)

Distribution: England, Germany, Austria, Belgium, Romania. New to Bulgaria and Greece.

Material examined:

*Bulgaria*: Rhodopes (m.h. „Persenk“, 04.VIII.1979, 1 female); Mt. Rila (pl. „Bodrost“, 20.07.1983, 1 female; 21.VII.1984, 1 female); Bankya, 26.V. 1980, 2 females; Southern Bulgaria (Parvomai, 14.V.1984, 1 female; v. Muldava, 18.IX.1979, 1 female).

*Greece*: Northern Greece (Goumenitza, 26.IV.1994, 1 female).

***Gonatocerus tremulae*** (Bakkendorf, 1934)

*Lymaenon tremulae* Bakkendorf, 1934



Diagnosis. Female. Head, mesosoma, metasoma and legs dark brown, antennae brown; Antennal sensory ridges present on F5 (2), F6 (2), F7 (2), F8 (2), clava (8). Forewings broad. Ovipositor exerted beyond apex of metasoma

Hosts: eggs of *Idiocerus populi* (Homoptera)

Distribution: Denmark, New to Bulgaria.

Material examined:

*Bulgaria*: Rhodopes (Kardzhali, 18.V.1982, 1 female); Mt. Rila (pl. „Bodrost“, 21.VII.1984, 1 female).

### DISCUSSION

BAQUERO and JORDANA (2002) compare *G. ovicenatus* shares with *G. tremulae* the long ovipositor, exerted a third of its length beyond the metasomal apex and the peculiar form of the ovipositor apex. The study of relative dimensions of antennal segments, number and position of sensory ridges and wings, and density-position of microchaetae on the wings shows no differences. The measurements of *G. ovicenatus* specimens from Iran (HUBER, 1988) and *G. tremulae* (MATTHEWS, 1986; VIGGIANI, 1969) are very similar. As result, both forms are synonymized.

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