2023	Heteropterus Revista de Entomología **Heteropterus Rev. Entomol.**	**23(2):** 199-212

ISSN: 1579-0681

New Iberian records of interesting Miridae (Hemiptera: Heteroptera) with notes on their biology. Part 4

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Abstract

New Iberian records of 7 interesting species of Miridae (Hemiptera: Heteroptera) are presented together with novel information on their taxonomy and/or morphology and/or biology. The following findings are remarkable: (1) A new synonymy is proposed: *Campylomma ochraceum* (Scott, 1872) = *Campylomma ribesi* Goula, 1986 **n. syn.**; (2) One species is recorded from Portugal for the first time: *Orthotylus* (*O.*) *siuranus* Wagner, 1964; (3) A brief redescription is provided for the Iberian endemic species *Oncotylus* (*O.*) *punctiger* Reuter, 1894 on the basis of recently collected males and females; (4) Host plants of two scarcely known species are revealed: *Carthamus lanatus* and *Centaurea ornata* (both Asteraceae), respectively for *Oncotylus* (*O.*) *nigricornis* Saunders, 1876 and *O.* (*O.*) *punctiger*.

Key words: Hemiptera, Heteroptera, Miridae, new synonymy, faunistics, biology, redescription, Iberian Peninsula.

Resumen

Nuevos registros ibéricos de interesantes Miridae (Hemiptera: Heteroptera) con anotaciones sobre su biología. Parte 4

Se presentan nuevos registros ibéricos de 7 especies de míridos interesantes (Hemiptera: Heteroptera) y se aporta información novedosa sobre su taxonomía y/o morfología y/o biología. Son destacables los siguientes hallazgos: (1) Se propone una nueva sinonimia: *Campylomma ochraceum* (Scott, 1872) = *Campylomma ribesi* Goula, 1986 **n. syn.**; (2) Una especie se registra de Portugal por primera vez: *Orthotylus* (*O.*) *siuranus* Wagner, 1964; (3) Se ofrece una breve redescripción de la especie endémica ibérica *Oncotylus* (*O.*) *punctiger* Reuter, 1894 a partir de machos y hembras recientemente recolectados; (4) Se descubren plantas hospedadoras de dos especies escasamente conocidas: *Carthamus lanatus* y *Centaurea ornata* (ambas Asteraceae), respectivamente para *Oncotylus* (*O.*) *nigricornis* Saunders, 1876 y *O.* (*O.*) *punctiger*.

Palabras clave: Hemiptera, Heteroptera, Miridae, nueva sinonimia, faunística, biología, redescripción, Península Ibérica.

Laburpena

Zenbait Miridae (Hemiptera: Heteroptera) interesgarriren aipu iberiar berriak eta haien biologiari buruzko datuak. 4. zatia

Miridoen (Hemiptera: Heteroptera) 7 espezie interesgarriren iberiar erregistro berriak aurkezten dira, informazio berriaz hornituz beren taxonomia edo/eta morfologia edo/eta biologiaren ezagutza. Nabarmentzekoak dira ondorengo aurkikuntzak: (1) Sinonimia berri bat proposatzen da: *Campylomma ochraceum* (Scott, 1872) = *Campylomma ribesi* Goula, 1986 **n. syn.**; (2) Espezie bat lehenengo aldiz aipatzen da Portugalen: *Orthotylus* (*O.*) *siuranus* Wagner, 1964; (3) Berdeskribapen labur bat eskaintzen da iberiar endemikoa den *Oncotylus* (*O.*) *punctiger* Reuter, 1894 espeziearena, duela gutxi harrapatutako ar eta emeetan oinarrituta; (4) Landare ostalari batzuk ezagutzera ematen dira gutxi ezagunak diren bi espezierentzat: *Carthamus lanatus* eta *Centaurea ornata* (bi-biak Asteraceae), hurrenez hurren *Oncotylus* (*O.*) *nigricornis* Saunders, 1876 eta *O.* (*O.*) *punctiger*entzat.

Gako-hitzak: Hemiptera, Heteroptera, Miridae, sinonimia berria, faunistika, biologia, berdeskribapena, Iberiar Penintsula.

Introduction

Following the same structure of previous works in this series (Pagola-Carte, 2015, 2018, 2022), the present contribution is a result of the ongoing research on Miridae (Hemiptera: Heteroptera) for the advance of taxonomic and faunistic knowledge on the Iberian Peninsula. Several types of original information will be provided:

(1) Faunistics. Most of the species are interesting from a faunistic point of view: new records for certain regions, rarely collected taxa, etc. Among them, *Orthotylus* (*O.*) *siuranus* Wagner, 1964 is new to Portugal.

(2) Taxonomy. A new synonymy is proposed under *Campylomma ochraceum* (Scott, 1872).

(3) Morphology. A brief redescription (males and females) is provided for an Iberian endemic species, *Oncotylus* (*O.*) *punctiger* Reuter, 1894, with no more previous records than that of the original description (only female).

(4) Biology. Most of the species were recorded together with some basic information on host plants, phenology or habitat type. Particularly interesting is the novel information on host plants for *Oncotylus* (*O.*) *nigricornis* Saunders, 1876 and *O.* (*O.*) *punctiger*, which could help improve the knowledge on their true distribution in the near future.

All the species considered are listed below accompanied by the indications «[F]» and/or «[T]» and/or «[M]» and/or «[B]» if relevant information is given on their faunistics, taxonomy, morphology and/or biology, respectively.

MIRINAE: MIRINI

Neolygus viridis (Fallén, 1807) [F] [B]

ORTHOTYLINAE: ORTHOTYLINI

Globiceps (*Kelidocoris*) *weberi* Wagner, 1969 [F]
Orthotylus (*Orthotylus*) *siuranus* Wagner, 1964 [F] [B]
Orthotylus (*Pachylops*) *empetri* Wagner, 1977 [F] [B]

PHYLINAE: PHYLINI

Campylomma ochraceum (Scott, 1872) [T]
= *Campylomma ribesi* Goula, 1986 **n. syn.**
Oncotylus (*Oncotylus*) *nigricornis* Saunders, 1876 [F] [B]
Oncotylus (*Oncotylus*) *punctiger* Reuter, 1894 [F] [M] [B]

In the «Results and discussion» section the species are arranged in the same order as above, without mention to their classification by subfamilies and tribes. Unless otherwise stated, the specimens were collected and identified by the author and they are deposited in his collection. Captures (*leg.*), determinations (*det.*) and collections (coll.) of other colleagues are explicitly mentioned if applicable. In the «Material studied» paragraph of each species, names of the provinces are written in capital letters and UTM coordinates are expressed as 10 × 10 km grid cells. Almost all records are from Spain, so it is not mentioned; one single record is from Portugal and it is explicitly written. Records are arranged chronologically for each province, and provinces alphabetically. Names of the municipalities are written just after the province names. The nomenclature and identification of plants are mainly based on Aizpuru *et al.* (1999).

Results and discussion

Neolygus viridis (Fallén, 1807)

MATERIAL STUDIED: GIPUZKOA: Errenteria: Añarbe: Aldura-Atseginsoro (Aiako Harria P.N.); 370 m; 30TWN98; 30/06/2020; 2 ♂♂; 14/07/2020; 3 ♂♂, 1 nymph.

Eurosiberian species largely distributed from Europe to eastern Asia (Kerzhner and Josifov, 1999; Aukema, 2019) and widespread and even common in central and northern Europe (see, for example: Wachmann *et al.*, 2004; Rintala and Rinne, 2011; Skipper, 2013). It seems to be rarer to the southern, Mediterranean countries. Moreover, its distribution was rather unclear until recently. For example, Ehanno (1987) considered it a «*Miride holarctique* [...] *encore fort peu connu en France*» whereas Wagner (1974) stated: «*Holarktische Art. Im Mittelmeerraum nur in Südfrankreich, Spanien und Jugoslawien*». I have not been able to find any other mention or explicit record from Spain. The noteworthy heteropterological effort made for decades in Catalonia (compilation works by Ribes *et al.* (2004, 2008)) has not arrived to find the species there. The present record is the first mention of the species for the Basque Country and probably represents the first published certainty about its presence on the Iberian Peninsula.

It is a typical member of the canopy mirid communities of broadleaved deciduous forests, having been associated to several tree genera (see, for example: Schuh, 2002-2013), particularly to *Tilia* spp. (Malvaceae) and secondarily *Corylus* (Betulaceae), *Fraxinus* (Oleaceae) or *Rhamnus* (Rhamnaceae). It shows a preference for shady (and even moist) forests with clearings and border microhabitats. The habitat in

Gipuzkoa is concordant with all that except for the host plant, *Frangula alnus* (Rhamnaceae). Anyway, a few *Tilia* trees were present very near (true host plant for the development?) and Skipper (2013) also mentions this other Rhamnaceae in Denmark. He also adds that sometimes *Neolygus viridis* is found together with *Apolygus rhamnicola* (Reuter, 1885), which is an interesting Mirini unknown from the Iberian Peninsula but of likely presence in northern and/or Pyrenean regions. The accompanying miridofauna of the present record on *Frangula alnus* consisted of *Apolygus spinolae* (Meyer-Dür, 1841), *Lygocoris pabulinus* (Linnaeus, 1761) and *Pinalitus cervinus* (Herrich-Schaeffer, 1841).

Globiceps (*Kelidocoris*) *weberi* Wagner, 1969

Material studied: NAFARROA: Erromantzatua: Isu mendatea; 670 m; 30TXN42; 23/05/2003; 1 ♂.

Described from Sierra Nevada, southern Spain (Wagner, 1969a), this species was considered as endemic to the high elevations (> 2000 m alt.) of that mountain range (see, for example: Baena, 1996, 2006; Rizzotti Vlach, 1999), until Streito and Matocq (2007) recorded it from Zamora (northwestern Spain), Massís Central (southern France) and Middle Atlas (northern Morocco). These authors consider that *G.* (*K.*) *weberi* might be a montane element passed unnoticed for long due to unknown biology and lack of adequate samplings. In addition to such a remarkable enlargement of distribution, they also contributed to the knowledge of its biology when describing the biotope for France: «*observé sur le sol très superficiel, des roches affleurantes et une végétation très rase de Thym, des Poacées et autres plantes rases*».

The third Iberian record of this enigmatic species is herein presented after study of a single male specimen collected twenty years ago in a pre-Pyrenean locality of Navarre/Nafarroa at a moderate altitude. No biological data can be added except to confirm a general similar impression about the habitat. The identification has been based on characters of external morphology but particularly on those of the male genitalia (Wagner, 1969a; Streito and Matocq, 2007). Interestingly, good illustrations of male genitalia are rather abundant in the literature: besides those works already mentioned, also Baena (1996) and Rizzotti Vlach (1999) show, in a thorough, comparative way, the minimal differences between *G.* (*K.*) *weberi* and, respectively, *G.* (*K.*) *terrai* Baena, 1996 (Douro Litoral, northern Portugal) and *G.* (*K.*) *morettii* Rizzotti Vlach, 1999 (Appennino Centrale, Italia). There is little doubt that these three nominal species are highly related, forming a group within *Kelidocoris*.

Orthotylus (*Orthotylus*) *siuranus* Wagner, 1964

Material studied: ARABA: Guardia: El Esperal (Lapuebla de Labarca); 400 m; 30TWN30; 20/05/2022; 15 ♂♂, 18 ♀♀. (Of them, 1 ♂, 1 ♀, coll. Günther, 1 ♂, 1 ♀, coll. Rieger.); 3/05/2023; 2 ♂♂. BEJA [PORTUGAL: ALENTEJO]: Odemira: Santa Clara a Velha; 10/06/1999; A. Matocq, J. Péletier et J. Péricart *leg.*; 1 ♂, 1 ♀; 3 ♂♂, 3 ♀♀, coll. Matocq. VALÈNCIA: Environs d'Ademuz; 8/06/1991; A. Matocq, J. Péletier et J. Péricart *leg.*; 3 ♂♂, 2 ♀♀, coll. Matocq.

Iberian species until now considered as endemic to the Ebro river basin and neighbouring areas. It was described from Catalonia (Wagner, 1964), subsequently found in a few other Catalan localities (Ribes *et al.*, 2004; Jiménez *et al.*, 2005), and also found in La Rioja and the peninsular Basque Country, provinces of Araba and Nafarroa (Pagola-Carte *et al.*, 2004; Pagola-Carte and Ribes, 2007; Pagola-Carte, 2011). The present record from Araba province in the gallery forest of the Ebro river does not add novel chorological information. On the contrary, those from València and Beja considerably enlarge the known distribution of the species. The record from València concerns a different river basin (Túria), also flowing into the Mediterranean Sea and not very far from the Ebro river. The record from Beja was highly unexpected because the specimens were collected on the gallery forest of the Mira river (southwestern Iberian Peninsula), which flows into the Atlantic Ocean hundreds of kilometres far from the Ebro basin. As with *Psallus* (*Psallus*) *anashanti* Pagola-Carte, 2017, described from the gallery forests of the Ebro basin and later found in central Spain (Pagola-Carte, 2022), the current distribution of *O.* (*O.*) *siuranus* could be interpreted as that of an Iberian endemic species associated to the glacial refuges provided by river depressions and their gallery forests.

This is the first record of *O.* (*O.*) *siuranus* from Portugal. In Spain, it is included in the Red List of Invertebrates under the threat category «Vulnerable» (Pagola-Carte, 2006; Pagola-Carte and Ribes, 2011).

Like most other species of the *virens* group of *Orthotylus s. str.*, it is closely associated to the willows, genus *Salix* (Salicaceae), and presumably showing a preference for narrow-leaved ones (see abovementioned references). The present captures from Araba in 2022 and 2023, instead, were made on black poplar *Populus nigra* (Salicaceae). The high density of the mirid population on those trees, including nymphs and teneral adults, as well as its virtual absence on near willows, suggest that the genus *Populus* does not represent a mere perch plant for adults, but a true host plant of this *Orthotylus*. The records from Araba are also inter-

FIGURE 1. *Orthotylus* (*Pachylops*) *empetri* Wagner, 1977: Living individuals on *Thymelaea tinctoria nivalis* (Thymelaeaceae) growing in subalpine grasslands of central Pyrenees (Astún, 2023).

esting from a phenological point of view: in 2022 a strong «peak» of adults was observed in May 20th (rather soon for this species) whereas in 2023 a few adults were detected as prematurely as May 3rd, most likely as a consequence of drought and heat of last years, and perhaps in some connection with the mentioned host plant choice.

Orthotylus (*Pachylops*) *empetri* Wagner, 1977

MATERIAL STUDIED: ARABA: Valdegovía/Gaubea: Valderejo P.N.: Ermita de San Lorenzo; 1075 m; 30TVN74; 28/06/2023; 4 ♂♂, 5 ♀♀. HUESCA: Ansó: Hoya de la Solana–Mesa de los Tres Reyes; 2090 m; 30TXN85; 18/08/2016; 1 ♂, 2 ♀♀. HUESCA: Jaca: Astún–Ibón de Escalar; 1925 m; 30TYN04; 21/07/2022; 6 ♂♂, 6 ♀♀; 2/08/2023; 3 ♂♂, 3 ♀♀.

This is a mountain species dependent on plants of the genus *Thymelaea* (Thymelaeaceae) with a distribution initially thought to be mainly Pyrenean (Wagner, 1977; Pagola-Carte and Ribes, 2008) but later revealed larger throughout northern Iberian Peninsula (Pagola-Carte, 2015). The present records include: (a) Further localities from the Pyrenees, where the species is frequent and generally abundant on *Thymelaea tinctoria nivalis* growing in subalpine grasslands (Fig. 1); (b) A locality from a new province, Araba, which represents the first mention of the species for the Basque Autonomous Community. Both the mirid and its host plant (*Thymelaea ruizii*) were less abundant there than in the Pyrenees.

As a general conclusion after several years recording the species, I present the compiling map of Fig. 2, and confirm that *O.* (*P.*) *empetri* is largely distributed in northern Iberian Peninsula and both sides of the Pyrenees. Not only is a mountain species but also its populations are, as a rule, apparently denser at higher altitudes. Attention should be paid to the province of Teruel. The species was described (Wagner, 1977) on the basis of material from Hautes-Pyrénées, France (8 ♂♂, 6 ♀♀) and Teruel, Spain (1 ♂, 5 ♀♀), the specimens from Teruel coming from two localities: Ráfales and Alcañiz. Although they are scarcely separated by about 30 km, their biogeographic and/or ecological

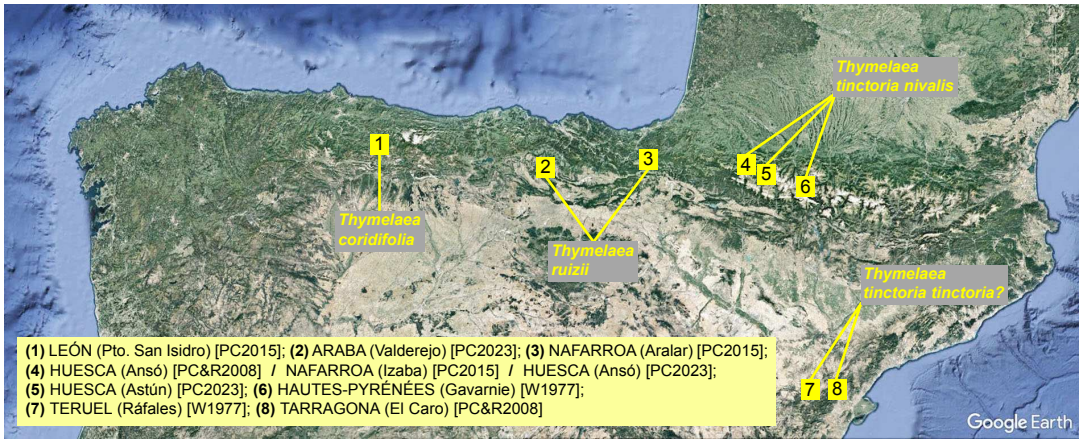

Figure 2. *Orthotylus* (*Pachylops*) *empetri* Wagner, 1977: Map showing the known distribution and host plants (Abbreviations: [W1977] = Wagner, 1977; [PC&R2008] = Pagola-Carte and Ribes, 2008; [PC2015] = Pagola-Carte, 2015; [PC2023] = Present work).

context is quite different. Having examined no other type material than that from the Pyrenees (Pagola-Carte and Ribes, 2008), in the map of Fig. 2 only Ráfales has been indicated, due to: (1) Ráfales belongs to the mountain context of Maestrat-Els Ports, where true specimens of *O.* (*P.*) *empetri* have been recorded from El Caro, province of Tarragona; (2) True specimens of *O.* (*P.*) *thymelaeae* Wagner, 1965 have been recorded from Alcañiz (Pagola-Carte and Ribes, 2008).

Campylomma ochraceum (Scott, 1872)

= *Nigrocapillocoris ochraceus* (Scott, 1872) [described in *Agalliastes*] (syn. by Konstantinov *et al.* (2015))
= *Campylomma ribesi* Goula, 1986 **n. syn.**

Material studied: ARABA: Iruraitz-Gauna: Gazeo: Laku; 585 m; 30TWN44; 11/07/2018; 2 ♂♂; 26/07/2018; 1 ♂, 1 ♀.

Campylomma ribesi Goula, 1986 has been recorded: (1) In Catalonia, from Montseny (Goula, 1986, 1993; see also: Goula and Ribes, 1995; Ribes and Goula, 1995; Ribes *et al.*, 2004) and Castelldefels (Ribes *et al.*, 2008; Gessé, 2011); (2) In the Basque Country, from the province of Araba: municipalities of Biasteri-Laguardia (Pagola-Carte and Zabalegui, 2007 [erroneously as *C. annulicorne* (Signoret, 1865)]) and Iruraitz-Gauna (Pagola-Carte, 2011). All Basque specimens being females, their specific ascription was based on characters of external morphology including comparison with Catalan material of Jordi Ribes collection (Barcelona).

Subsequent research in Iruraitz-Gauna has allowed collecting a few further specimens (the present «Material studied»), among which three males. In addition to external morphology, the examination of male genitalia, particularly their vesica, has revealed that *C. ribesi* Goula, 1986 is identical to *C. ochraceum* (Scott, 1872); consequently the above new synonymy is proposed. Crucial have been:

(1) The article by Konstantinov *et al.* (2015), in which the synonymy of *Nigrocapillocoris* Wagner, 1973 under *Campylomma* Reuter, 1878 is established including the new combination for the species *ochraceus* Scott, 1872. [This is the only previous synonymy indicated here, for the sake of clearness.] Particularly helpful are their figs. 10-11, 33-35 (external morphology) and 24, 28-32 (male genitalia).

(2) The article by Goula and Mateos (2021) and their figs. 8-9 (habitus) and 13 (vesica).

(3) The kind support by Marta Goula (Barcelona), who confirmed the new synonymy herein proposed after examining the type series of *C. ribesi*.

Once the synonymy established, all faunistic records of «*C. ribesi*» must be added to previus ones of «*N. ochraceus*» from Barcelona (Chicote, 1880; as «*Sthenarus ochraceus* Scop.») and Alt Urgell (Goula and Ribes, 1995).

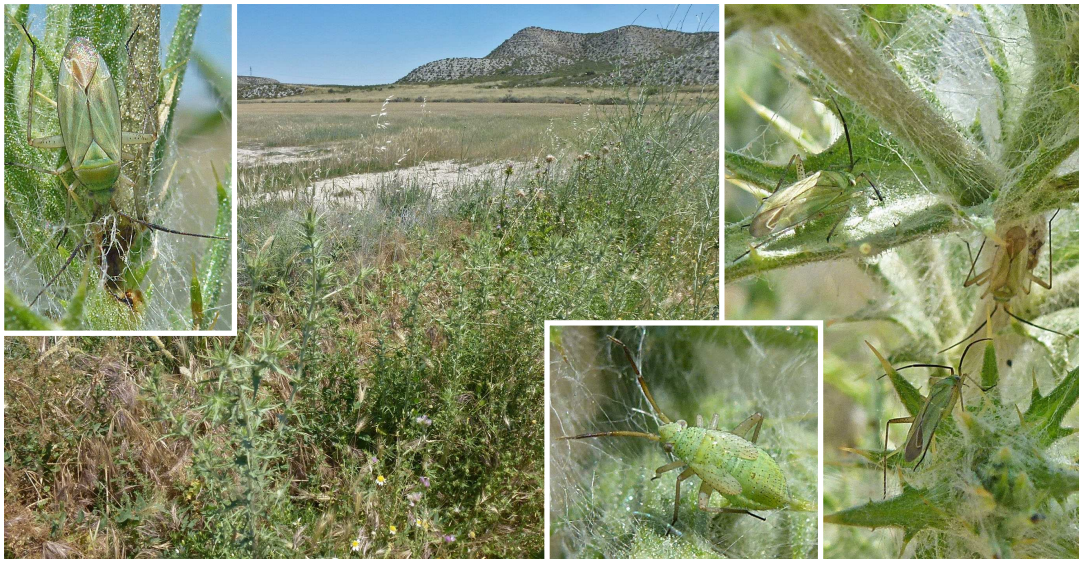

FIGURE 3. *Oncotylus* (*Oncotylus*) *nigricornis* Saunders, 1876: Living individuals on *Carthamus lanatus* (Asteraceae) in Los Monegros (2022).

Oncotylus (*Oncotylus*) *nigricornis* Saunders, 1876

MATERIAL STUDIED: ZARAGOZA: Osera de Ebro (Los Monegros); 215 m; 30TYM00; 14/06/2021; 1 ♀; 31/05/2022; 16 ♂♂, 11 ♀♀, 1 nymph.

Up to five species of the genus *Oncotylus* Fieber, 1858 occur in Spain and the Iberian Peninsula (Aukema, 2019). Belonging to both subgenera (the nominotypical plus *Cylindromelus* Fieber, 1861), they are: *O.* (*C.*) *setulosus* (Herrich-Schaeffer, 1837), *O.* (*O.*) *bolivari* Reuter, 1900, *O.* (*O.*) *nigricornis* Saunders, 1876, *O.* (*O.*) *punctiger* Reuter, 1894 and *O.* (*O.*) *viridiflavus viridiflavus* (Goeze, 1778). Interestingly, two of them (*O.* (*O.*) *bolivari* and *O.* (*O.*) *punctiger*) are endemic to Spain and rather enigmatic taxa probably linked to regions of continental climate and even steppic habitats, similarly to other Asian members of the genus. Concerning the former, see: Ribes, 1984, 1990. As to the latter, it will be treated later in the present paper.

Here we focus on *O.* (*O.*) *nigricornis*, a Holomediterranean species known from 14 circum-Mediterranean countries of Europe, North Africa and Asia (Kerzhner and Josifov, 1999; Aukema, 2019). In Spain it has been very scarcely recorded. Chicote (1880) laconically indicated «*España* (*Reuter*)» meaning that it was a record communicated to him by Reuter. Ribes and Ribes (2000) collected two males in Lleida, Catalonia (4/06/1995) and Casaseca Delgado (2003) reported one female from Valladolid, central Spain (2/07/1996). In the compilation by Ribes *et al.* (2004) the only record for Catalonia is that from Lleida, and accordingly the authors consider it as a «*espècie rara*».

Little was known about its biology (see, for example: Saunders, 1876; Wagner, 1969b, 1975) until Tamanini (1981) pointed out *Centaurea solstitialis* (Asteraceae) as a host plant in Italy and Linnavuori (1999) indicated its presence «in mountain meadows» of Greece.

The present record from Zaragoza is based on a dense population found on *Carthamus lanatus* (Asteraceae) (Fig. 3) growing along crop margins among many other species of thistles (Carduoideae). A careful examination of all those plants revealed a strong preference (both adults and nymphs) for *Carthamus lanatus*, since it was impossible to find, for several hours, any single specimen of the mirid on those other thistles. Besides the interest of the finding as the fourth Iberian record of *O.* (*O.*) *nigricornis*, it should be emphasized the usefulness of the new biological data reported. It is thus suggested that the search and examination of *Carthamus lanatus* between end May and end June should provide a rather accurate view of the (most probably large) distribution of this hitherto rare Phylinae on the Iberian Peninsula.

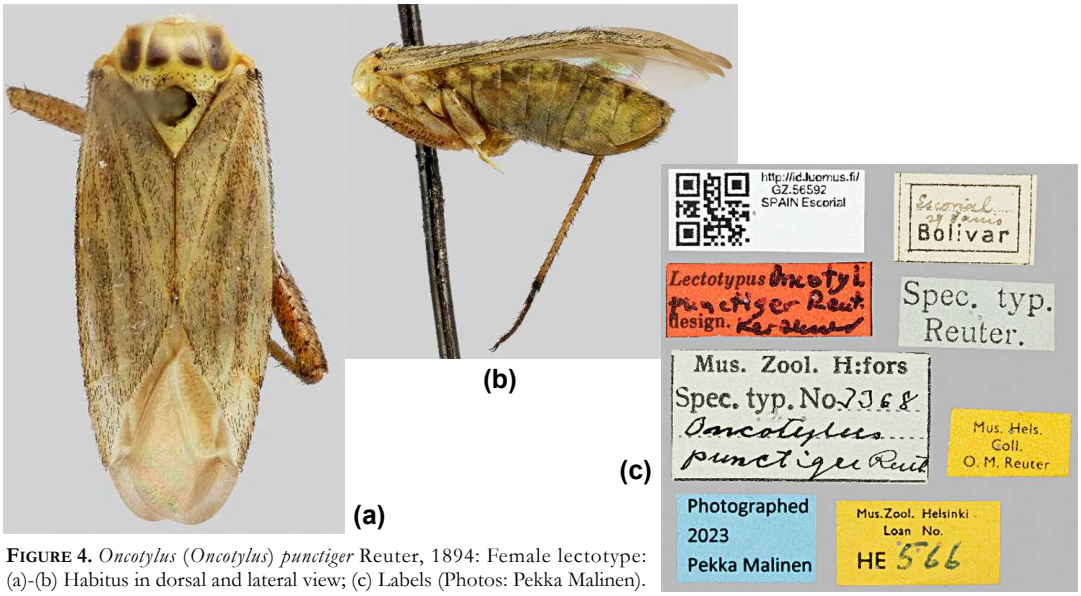

Figure 4. *Oncotylus* (*Oncotylus*) *punctiger* Reuter, 1894: Female lectotype: (a)-(b) Habitus in dorsal and lateral view; (c) Labels (Photos: Pekka Malinen).

Oncotylus (*Oncotylus*) *punctiger* Reuter, 1894

Material studied: MADRID: Miraflores de la Sierra: Los Pinarejos; 1000 m; 30TVL31; 14/06/2023; 4 ♂♂, 6 ♀♀, 1 nymph. (Of them, 2 ♂♂, 3 ♀♀, coll. Matocq.)

In the author's opinion, this is one of those species which remain enigmatic until relevant information on their biology is achieved and published. Only known from Spain (Kerzhner and Josifov, 1999; Aukema, 2019), it has never been recorded again since the original description (Reuter, 1894). Kerzhner (1997), when studying the Miridae of the Zoological Museum of Helsinki, designated a lectotype from El Escorial, province of Madrid. It is the same female (with head and pronotum missing) illustrated by Wagner (1975: fig. 801a) and which I also illustrate here in Fig. 4 (see also the public database of the Finnish Museum of Natural History (Luomus): http://id.luomus.fi/GZ.56592). As shown by its labels (Fig. 4c), it was collected by Ignacio Bolívar in June 29th. About the species, Wagner (1975) says: «*Bisher nur einmal in Spanien* (*Escorial, Pozuelo*) *gefunden*». It must be noted that, in fact, El Escorial and Pozuelo de Alarcón are two municipalities of the Community (formerly, province) of Madrid; moreover, a third one is San Lorenzo de El Escorial. All in all, all three municipalities are located to the north of Madrid city and were important collecting sites for the entomologists of XIX and XX centuries. Regarding El Escorial and San Lorenzo de El Escorial, they share with Miraflores de la Sierra (present record) similar habitats and altitude, about 1000 m, in the southern slopes of Guadarrama mountains, belonging to the Central System.

Nothing was hitherto known on the biology of *O.* (*O.*) *punctiger*. The specimens of the present record were collected on *Centaurea ornata* (Asteraceae) along a road margin. Adults and nymphs were abundant and adopted the typical positions of *Oncotylus* individuals resting on the leafs of the host plant (Fig. 5). No one was found on the surrounding plants, including several thistles and other composites.

Given that only a single female was known until now, a brief redescription of the species is given below with an emphasis put on illustrations, measurements and sexual dimorphism. It should be noted that Reuter's (1894) description is quite thorough and would allow the identification of specimens. Wagner's (1975) diagnosis is also somewhat useful. However, the absence of males and an almost complete lack of illustrations and measurements is obvious in both works. Similarly to Reuter's description, the following redescription will be partly made by comparison with *O.* (*O.*) *viridiflavus* (Goeze, 1778), which is the most similar species on the Iberian Peninsula.

FIGURE 5. *Oncotylus* (*Oncotylus*) *punctiger* Reuter, 1894: Living individuals on *Centaurea ornata* (Asteraceae) in central Spain (2023).

Concerning the external morphology, the male and female habitus is shown in Fig. 6a-b and a more amplified view of the anterior part of the body, including antennal segment I, head, pronotum and scutellum, in Fig. 6c-d. A summary of the morphometric characters measured in the whole series of specimens is presented in Table 1. The total length of the specimens, very similar between sexes, is aprox. 6.6–7.4 mm, whereas the previously known female was 7.66 or 7.7 mm (according to Reuter or Wagner, respectively), that is, comparatively a rather big specimen. As to the ocular index, Reuter pointed out that vertex was 2 × wider than eye in «his» female, while I have measured about 2.3 × (♀♀) and 1.5 × (♂♂). Reuter's description of the pattern of black spots and patches is rather accurate. They can be seen in Fig. 6: besides the distinguishing pattern on head and pronotum, all tibiae apically and all tarsi entirely are black, as well as antennal segments III and IV entirely and II partially depending on sex and interindividual variability (see below). Segment IV of rostrum is also completely black and segment III darker than previous ones.

– Differences and similarities with *O.* (*O.*) *viridiflavus* (both ♂♂ and ♀♀):

First of all, *O.* (*O.*) *viridiflavus* is more slender, in general but also concerning the thickness of appendages, particularly in females. In *O.* (*O.*) *punctiger* femora and tibiae are thicker while antennae are markedly thicker. The width of every antennal segment is greater in *O.* (*O.*) *punctiger* and three of the four segments show a considerable sexual dimorphism (see below). Antennal segment II is more or less cylindrical or slightly club-shaped and segment III is obviously subulate, with a wide base and narrowing apically (in males, up to 2 × wider basally than apically). Last-instar nymphs of both species have also been compared, concluding that their antennae are very different too, that is, considerably thicker in *O.* (*O.*) *punctiger*.

General colouration is evenly greyish green in *O.* (*O.*) *viridiflavus* while it is more contrasted in *O.* (*O.*) *punctiger*, with the head + pronotum + scutellum of a brighter green colour when alive (see Fig. 5) and turning into a brighter yellow (than *O.* (*O.*) *viridiflavus*) when dry-preserved, particularly quickly so-turned the scutellum (see Fig. 6). The dorsal pattern of spots and patches is very similar between both species but exhibiting a few distinguishing characters highly useful in identification: on the pronotum, a pair of black patches on the posterior margin is present in *O.* (*O.*) *viridiflavus* but completely lacking in *O.* (*O.*) *punctiger*. As to the scutellum, the pair of lateral dark stripes present in the former are absent or only slightly insinuated in the latter. The hemelytral membrane in *O.* (*O.*) *punctiger* is paler and with a more conspicuous dark spot posteriorly to cells, even reaching to appear as a semicircumference opened posteriad.

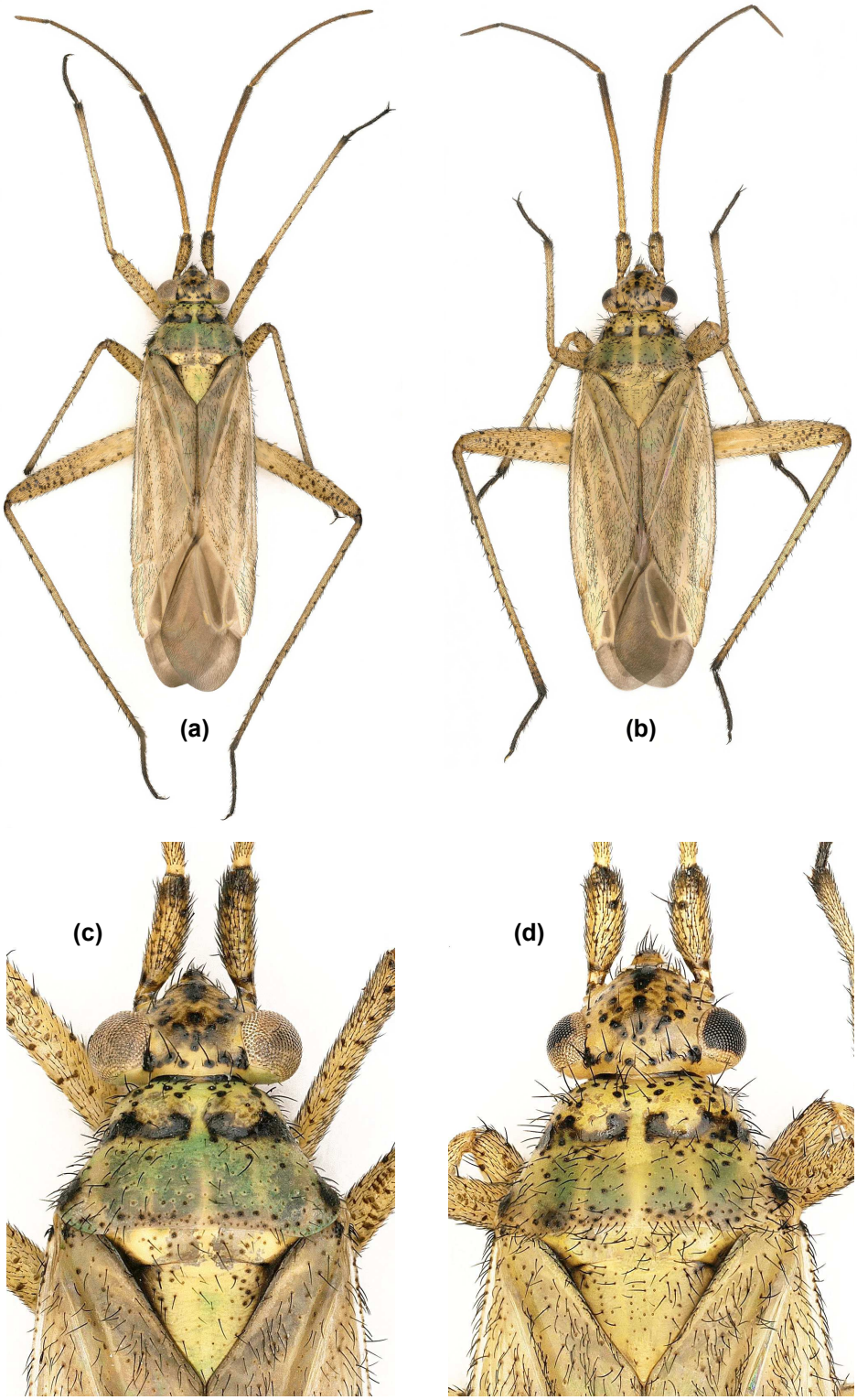

FIGURE 6. *Oncotylus* (*Oncotylus*) *punctiger* Reuter, 1894: (a)-(b) Habitus; (c)-(d) Anterior part of the body / (a), (c) Male; (b), (d) Female (Photos: Jean-Claude Streito).

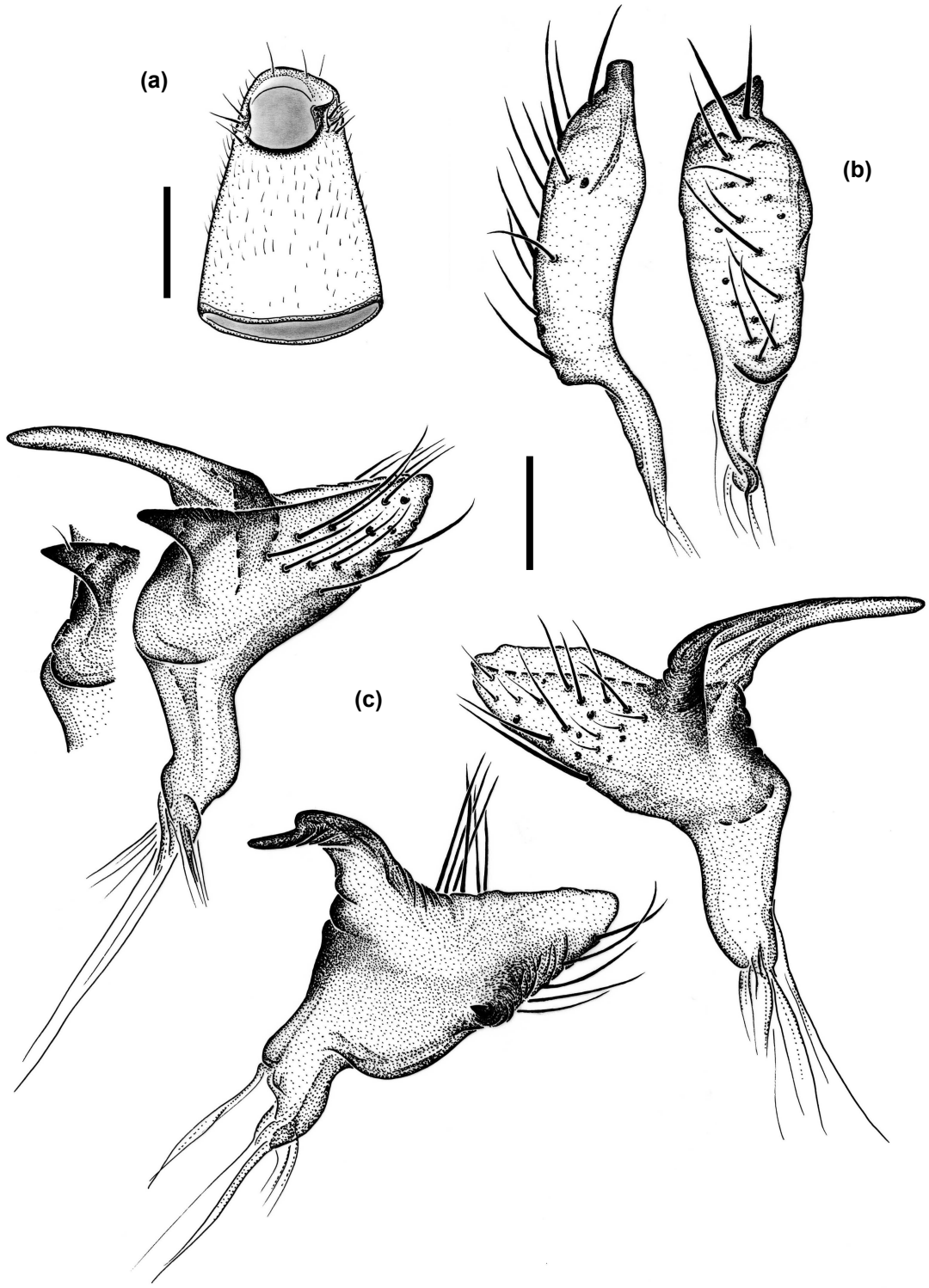

FIGURE 7. *Oncotylus* (*Oncotylus*) *punctiger* Reuter, 1894: Male genitalia: (a) Pygophore; (b) Right paramere; (c) Left paramere (in different views or specimens) (Scale bars: (a) = 0.5 mm; (b)-(c) = 0.1 mm).

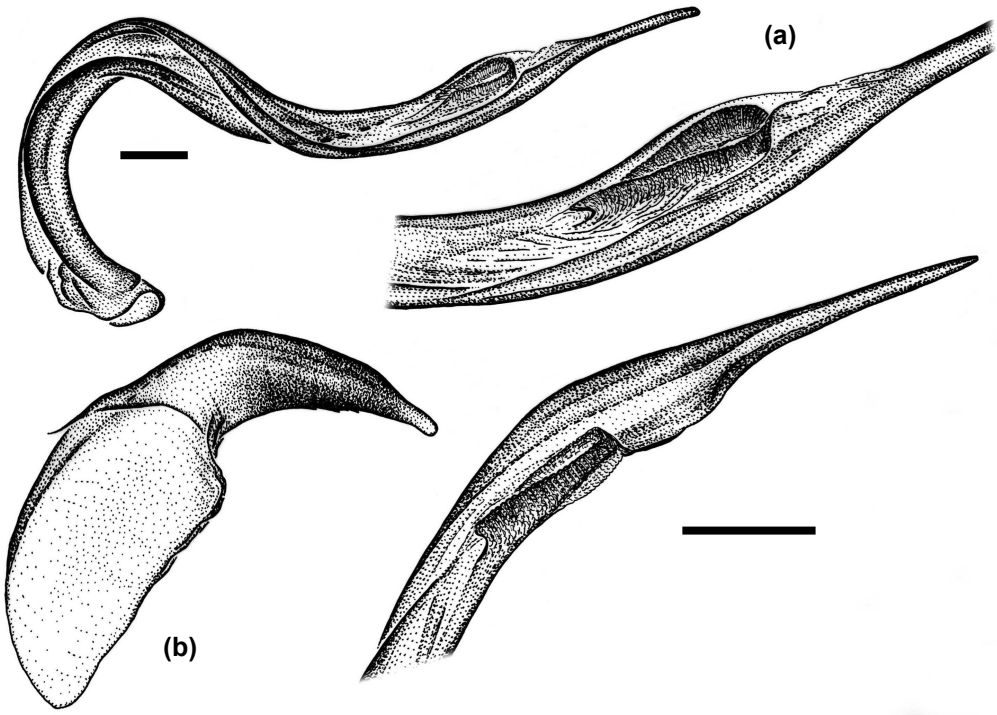

Figure 8. *Oncotylus* (*Oncotylus*) *punctiger* Reuter, 1894: Male genitalia: (a) Vesica (in different views or specimens); (b) Theca (Scale bars = 0.1 mm).

	♂♂	♀♀
Total length	6.95 (6.69–7.34)	6.95 (6.64–7.33)
Total width	**2.04 (2.00–2.13)**	**2.30 (2.13–2.50)**
Pronotum length	0.85 (0.83–0.88)	0.95 (0.90–0.98)
Pronotum width	**1.59 (1.53–1.63)**	**1.72 (1.63–1.78)**
Head width	1.15 (1.08–1.23)	1.23 (1.20–1.25)
Vertex width	0.49 (0.48–0.51)	0.66 (0.65–0.68)
Antennal segment I	0.69 (0.63–0.73)	0.68 (0.68–0.70)
Antennal segment II	2.42 (2.25–2.50)	2.49 (2.43–2.55)
Antennal segment III	**1.93 (1.88–2.00)**	**1.65 (1.63–1.70)**
Antennal segment IV	0.64 (0.63–0.68)	0.64 (0.60–0.68)
Metatibia length	4.34 (4.13–4.50)	4.19 (4.13–4.25)
Total length / Total width	**3.40 (3.34–3.48)**	**2.99 (2.81–3.20)**
Total length / Pronotum width	**4.36 (4.28–4.42)**	**4.00 (3.76–4.18)**
Ocular index	**1.49 (1.41–1.58)**	**2.34 (2.17–2.45)**
Pronotum width/length	1.87 (1.85–1.91)	1.82 (1.76–1.92)
Antennal segment II / Pronotum	1.56 (1.54–1.59)	1.45 (1.41–1.51)
Antennal segments II / III	**1.25 (1.20–1.30)**	**1.50 (1.47–1.54)**
Antennal segments II / III+IV	0.94 (0.90–0.96)	1.08 (1.05–1.11)

Table 1. *Oncotylus* (*Oncotylus*) *punctiger* Reuter, 1894: Summary of morphometric characters based on 4 males and 6 females. Measurements in mm. In bold letters highlighted the measurements and ratios denoting sexual dimorphism.

In Wagner's (1975: 250) identification keys, dichotomy 2(3) may lead to error. Whereas the second sentence (*Scutellum hell, nur mit Punkten / Scutellum oft an den Seiten schwarz*) is true, as we have just mentioned, the first sentence (*Halbdecken mit kleinen schwarzen Flecken, die Längsstreifen bilden / Halbdecken nicht mit kleinen Flecken, die Längsreihen bilden*) is misleading. In fact, the presence of dark dots on hemelytra is not distinguishing for *O.* (*O.*) *punctiger*. On the contrary, there exists a certain degree of interindividual variability for this character both in this species and in *O.* (*O.*) *viridiflavus*. Similarly, the emphasis placed by Reuter (1894) on the differences regarding those dots and the pubescence does not correspond to reality.

– Sexual dimorphism in *O.* (*O.*) *punctiger*:

Some of the measurable differences between males and females of *O.* (*O.*) *punctiger* are indicated in bold letters in Table 1. On the one hand, males are obviously more elongate than females (which are more ovate), as is also the case with *O.* (*O.*) *viridiflavus*. Total width and pronotum width are greater in females, so that the ratios between total length and those widths are significantly higher in males. In parallel, males are more slender, with legs and antennae longer, and females show all appendages thicker, particularly the antennae.

Antennal segment I is markedly thick in females, approximately as wide as the eye (compare Fig. 6c with 6d). Antennal segment II has the apical 1/4 very darkened in females, whereas it is more or less darkened in males in a more evenly way (compare Fig. 6a with 6b). Antennal segment III appears more developed in males, being proportionnally longer, curved outwards and basally provided with long setae (up to 2 × longer than segment width at this point) on the ventral side. Accordingly, the ratio antennal segments II / III is quite different between males and females (see Table 1). This is a character shared with *O.* (*O.*) *viridiflavus* and presumably having a sexual function. It is likely that, during mating, male's basal part of segment III (stout and ventrally hairy) provokes an stimulation on apical part of female's segment II («flagged» with black). Anyway, this is no more than the author's hypothesis, unsupported by empirical data.

Finally, as already mentioned, the ocular index is quite different between males and females.

Concerning the male genitalia, the Figs. 7-8 are provided with the sole purpose of illustrating them for the first time. As to *O.* (*O.*) *viridiflavus*, I have not been able to find in the literature any other illustration of its male genitalia than those by Wagner (1975: 251: fig. 801d-h) or Wagner and Weber (1964: 396: fig. 220a-e). The present paper's aim not being the revision of the genus *Oncotylus* in the Iberian Peninsula, no comparison with other species will be made here.

The pygophore (Fig. 7a) is clearly longer than wide and bears, in addition to the abundant short hairs, a few more conspicuous setae around both paramere openings. The anterior margin of the pygophore opening is strongly sclerotized. Parameres (Fig. 7b-c) bear setae of various length and thickness, some of them being markedly thick: these are rather abundant on left paramere and only scarcely present on right paramere. Right paramere as in Fig. 7b. Left paramere as in Fig. 7c, showing a great disparity concerning the sclerotization degree of different parts (darker or paler areas in drawings). Vesica as in Fig. 8a. Theca as in Fig. 8b.

Acknowledgements

I am immensely grateful to the following friends and colleagues for help and advise during the preparation of this paper. Alphabetically: Marta Goula (Barcelona) for corroborating the new synonymy in the genus *Campylomma*; Armand Matocq (Paris) for his help to my miridological studies and for allowing me the publication of *Orthotylus* (*O.*) *siuranus* from Portugal; Jean-Claude Streito (Montpellier) for the photographs of *Oncotylus* (*O.*) *punctiger* (Fig. 6); Iñigo Ugarte San Vicente (Agurain) and Patxi Heras and Marta Infante (Vitoria-Gasteiz) for the identification of *Centaurea ornata*; Heidi Viljanen and Pekka Malinen (Finnish Museum of Natural History (Luomus) = Zoological Museum, University of Helsinki, Finland (MZHF)) for the photographs of the lectotype of *Oncotylus* (*O.*) *punctiger* (Fig. 4). Last but not least, I also thank one anonymous reviewer for the critical reading of the manuscript and for his comments, which have greatly improved the final version of the paper.

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Received / Recibido / Hartua: 30/09/2023
Accepted / Aceptado / Onartua: 16/10/2023
Published / Publicado / Argitaratua: 31/12/2023