

**FIRST RECORDS OF *CHRYSIS SPLENDIDULA* ROSSI, 1790 (HYMENOPTERA: CHRYSIDIDAE), AND OTHER CORRECTIONS OF THE CUCKOO WASP CHECK-LIST OF LITHUANIAN FAUNA**

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**Introduction**

*Chrysis splendidula* Rossi, 1790 (Hymenoptera: Chrysididae) is a cleptoparasitic cuckoo wasp widespread in the Palearctic region ranging from Europe and North Africa to Southeast Asia (Linsenmaier, 1959, 1997; Курзенко, Лелей, 2007). It has been recorded in neighbouring countries, such as Latvia (Paukkunen *et al.*, 2014), Belarus, Poland (Wiśniowski, 2015), while the presence of this species in Lithuania has not yet been confirmed. Moreover, some other corrections must be made in the Lithuanian check-list of chrysidids (Orlovskytė *et al.*, 2010) due to a new species description, misidentifications, and a revised taxonomic status of some species.

The aim of this publication is to present new records of this cuckoo wasp species and to adjust the Chrysididae species check-list of Lithuania.

**Material and Methods**

The material was collected during field research using entomological net and yellow pan traps by E. Budrys (abbreviated as E.B.) and S. Orlovskytė (S.O.). It was identified according to W. Linsenmaier (1997), J. Paukkunen *et al.* (2015) and deposited in the Nature Research Centre (Vilnius, Lithuania).

Total genomic DNA of the specimen from Užuožerės Miškas f. was extracted following the "GeneJet Genome Purification Kit" (Thermo Fisher Scientific) protocol. The 675 bp long fragment of the CO1-5' gene, widely used as a "barcoding" sequence (Hebert *et al.*, 2003), was amplified with modified primers T3HYMlep-f (5'-attaacctactaaagtewachaaycayaaaratatyg-3') and T7HYMnancy-r (5'-aatacgactcactataggdaraattaraatrtaacytcwg-3') (Budrys *et al.*, 2019). The sequencing was performed in Macrogen Inc. (South Korea, Seoul).

## List of localities

Locality	Administrative district	Coordinates (LAT, LONG)
Veisiejai Nat. R.	Lazdijai distr.	54.16047, 23.63985
Užuožerės Miškas f.	Varena distr.	54.02806, 24.40527

**List of species**

## CHRYSIDIDAE

***Chrysis splendidula* Rossi, 1790**

Veisiejai Nat. R., sand quarry, 27 05 2017, 1♀ 1♂ (E.B.); Užuožerės Miškas f., forest glade, 29 07 2019, 1♀ (E.B., S.O.).

## Discussion

This study presents a cuckoo wasp species new for Lithuanian fauna and some improvements of the Lithuanian check-list of chrysidids (Orlovskytė *et al.*, 2010).

*Chrysis splendidula* is a robust species, characterized by the dark blue head, thorax, and the 3<sup>rd</sup> gastral tergite. It differs from the closest morphologically *C. rutilans* Olivier, 1791 by a broader head and gaster, coarser and denser punctuation, a distinct longitudinal keel on the 2<sup>nd</sup> tergite (Fig. 1 A), as well as by shorter black patches on the 2<sup>nd</sup> sternite (Fig. 1 B) (Linsenmaier, 1997; Paukkunen *et al.*, 2015; Wiśniowski, 2015).

The CO1-5' sequence of the studied specimen has been matched by 99.79 % to *C. splendidula splendidula* from Italy (Niehuis, Wägele, 2004) with Sample ID AJ514390 available in the BOLD barcoding index number (BIN) database ([http://www.boldsystems.org/index.php/Public\\_BarcodeIndexNumber\\_Home](http://www.boldsystems.org/index.php/Public_BarcodeIndexNumber_Home)). Among other species of local fauna, this species is closest to *C. rutilans* not only by morphological, but also by molecular characters: similarity of their CO1-5' sequence is 92.33 % in the BOLD database.

*Chrysis splendidula* is known as a cleptoparasite of *Eumenes coarctatus* (Linnaeus, 1758) (Hymenoptera: Vespidae: Eumeninae) (Martynova & Fateryga, 2015). The latter wasp species constructs nests in open habitats, such as sparsely vegetated sandy areas (Paukkunen *et al.*, 2015), psammophilic, steppic, xerophilous grasslands (Wiśniowski, 2015).

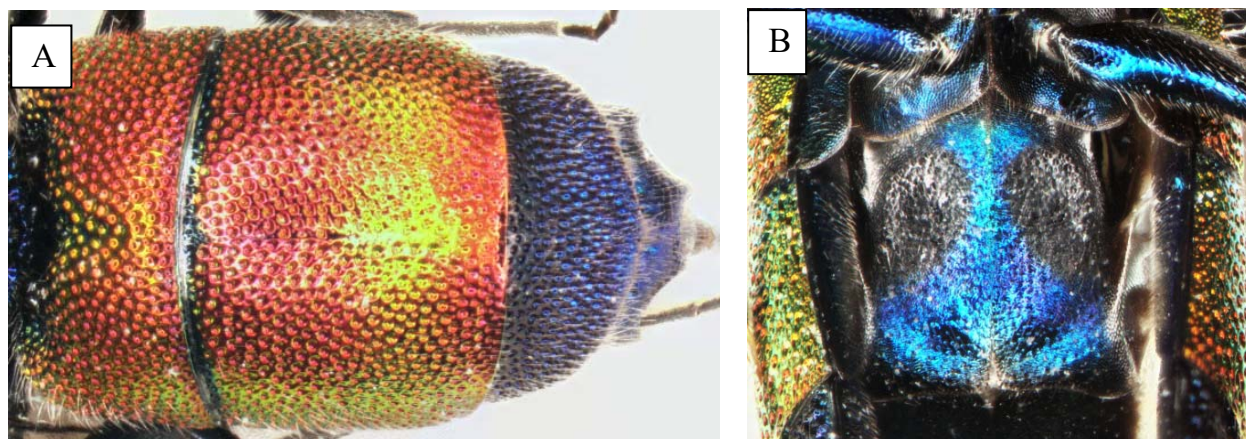


Fig. 1. Female of *Chrysis splendidula*: the gaster (A), the 2<sup>nd</sup> sternite (B).

The Lithuanian check-list of cuckoo wasps (Orlovskytė *et al.*, 2010) comprised 49 species of 12 genera. In addition to *Chrysis splendidula*, it must be supplemented by two more species: *Hedychridium zelleri* (Dahlbom, 1845), detected in Lithuania for the first time in 2016 (Paukkunen *et al.*, 2016), and a recently described *C. parietis* Budrys, 2016 (Orlovskytė *et al.*, 2016). On the other hand, nominal species *C. subcoriacea* Linsenmaier, 1959, *C. fasciata* Olivier, 1790, and *H. chloropygum* du Buysson, 1888 must be eliminated from the check-list due to misidentifications of the taxa: a re-identification in accordance to the recent review of Northern European cuckoo wasps (Paukkunen *et al.*, 2014, 2015) and the DNA barcoding revealed that the misidentified specimens belong correspondingly to *C. longula* Abeille de Perrin, 1879, *C. zetterstedti* Dahlbom, 1845, and *H. roseum* (Rossi, 1790).

Furthermore, the check-list must be adjusted due to several taxonomic changes. *Chrysis ignita* Form A sensu Linsenmaier, 1959 has been proved to have a valid name *C. terminata* Dahlbom, 1854, while *C. ignita* Form B sensu Linsenmaier, 1959 retained the name *C. ignita* (Linnaeus, 1758) (Paukkunen *et al.*, 2014). *Cleptes pallipes* Lepeletier, 1806 was synonymised with *C. semiauratus* (Linnaeus, 1761) (Rosa *et al.*, 2015). *Pseudochrysis* Semenov, 1891 has been confirmed to be a valid genus name for a group of species considered as *Pseudospinolia* Linsenmaier, 1951 (Rosa *et al.*, 2017); therefore, the name *Pseudospinolia neglecta* (Shuckard, 1836) should be replaced by *Pseudochrysis neglecta* (Shuckard, 1836).

According to these changes, the Lithuanian Chrysididae check-list includes 51 species. There is a high probability to expand it with species, such as *Chrysis sexdentata* Christ, 1791, *C. subcoriacea*, *Cleptes nitidulus* (Fabricius, 1793), *Elampus constrictus* (Förster, 1853), *Omalus biaccinctus* (du Buysson, 1892), which have not been detected in Lithuania so far, but they have been recorded in neighbouring Latvia, Belarus, and Poland (Wiśniowski, 2015).

### **Annotated check-list of Chrysididae species of Lithuanian fauna**

Order Hymenoptera

Suborder Apocrita

Superfamily Chrysoidea

Family Chrysididae

Subfamily CLEPTINAE

***Cleptes semiauratus* (Linnaeus, 1761)**

= *Cleptes pallipes* Lepeletier, 1806. Orlovskytė *et al.*, 2010.

Subfamily CHRYSIDINAE

Tribe ELAMPINI

***Elampus panzeri* (Fabricius, 1804)**. Wengris, 1962; Orlovskytė *et al.*, 2010.

***Hedychridium ardens* (Coquebert, 1801)**. Orlovskytė *et al.*, 2010.

***Hedychridium coriaceum* (Dahlbom, 1854)**. Wengris, 1962; Orlovskytė *et al.*, 2010.

***Hedychridium cupreum* (Dahlbom, 1845)**. Orlovskytė *et al.*, 2010.

***Hedychridium roseum* (Rossi, 1790)**. Wengris, 1962; Orlovskytė *et al.*, 2010.

*Hedychridium chloropygum*: Orlovskytė *et al.*, 2010.

***Hedychridium zelleri* (Dahlbom, 1845)**. Paukkunen *et al.*, 2016.

***Hedychrum chalybaeum* Dahlbom, 1854**. Wengris, 1962; Orlovskytė *et al.*, 2010.

***Hedychrum gerstaeckeri* Chevrier, 1869**. Wengris, 1962; Orlovskytė *et al.*, 2010; Paukkunen *et al.*, 2016.

***Hedychrum niemelaei* Linsenmaier, 1959**. Orlovskytė *et al.*, 2010.

***Hedychrum nobile* (Scopoli, 1763)**. Wengris, 1962; Orlovskytė *et al.*, 2010.

***Hedychrum rutilans* Dahlbom, 1854**. Orlovskytė *et al.*, 2010.

*Hedychrum intermedium*: Wengris, 1962.

***Holopyga generosa* (Förster, 1853)**. Orlovskytė *et al.*, 2010.

***Holopyga inflammata* (Förster, 1853)**. Orlovskytė *et al.*, 2010.

*Holopyga gloriosa*: Wengris, 1962.

***Omalus aeneus* (Fabricius, 1787)**. Orlovskytė *et al.*, 2010.

***Pseudomalus auratus* (Linnaeus, 1758)**. Wengris, 1962 (*Omalus*); Orlovskytė *et al.*, 2010.

*Pseudomalus pusillus* (Fabricius, 1804). Orlovskytė *et al.*, 2010.

*Pseudomalus triangulifer* (Abeille de Perrin, 1877). Orlovskytė *et al.*, 2010.

*Pseudomalus violaceus* (Scopoli, 1763). Orlovskytė *et al.*, 2010.

#### Tribe CHRYSIDINI

*Chrysis angustula* Schenck, 1856. Orlovskytė *et al.*, 2010, 2016; Soon *et al.*, 2014.

*Chrysis bicolor* Lepeletier, 1806. Orlovskytė *et al.*, 2010.

*Chrysis brevitarsis* Thomson, 1870. Orlovskytė *et al.*, 2010, 2016.

*Chrysis corusca* Valkeila, 1971. Orlovskytė *et al.*, 2010, 2016; Soon *et al.*, 2014.

*Chrysis equestris* Dahlbom, 1854. Orlovskytė *et al.*, 2010.

*Chrysis fulgida* Linnaeus, 1761. Radoszkowski, 1866; Orlovskytė *et al.*, 2010; Soon *et al.*, 2014.

*Chrysis graelsii* Guérin-Meneville, 1842. Orlovskytė *et al.*, 2010.

*Chrysis ignita* (Linnaeus, 1758). Strand, 1918; Wengris, 1962; Soon *et al.*, 2014; Orlovskytė *et al.*, 2016.

= *Chrysis ignita* (Linnaeus, 1758) Form B sensu Linsenmaier, 1959. Orlovskytė *et al.*, 2010.

*Chrysis illigeri* Wesmael, 1839. Orlovskytė *et al.*, 2010.

*Chrysis impressa* Schenck, 1856. Orlovskytė *et al.*, 2010, 2016; Soon *et al.*, 2014.

*Chrysis iris* Christ, 1791. Orlovskytė *et al.*, 2010; Soon *et al.*, 2014.

*Chrysis purpurata*: Budrys *et al.*, 2004.

*Chrysis leptomandibularis* Niehuis, 2000. Orlovskytė *et al.*, 2010, 2016; Soon *et al.*, 2014.

*Chrysis longula* Abeille de Perrin, 1879. Orlovskytė *et al.*, 2010, 2016; Soon *et al.*, 2014.

*Chrysis subcoriacea*: Orlovskytė *et al.*, 2010.

*Chrysis mediata* Linsenmaier, 1951. Orlovskytė *et al.*, 2010, 2016; Soon *et al.*, 2014.

*Chrysis parietis* Budrys, 2016. Orlovskytė *et al.*, 2016.

*Chrysis pseudobrevitarsis* Linsenmaier, 1951. Orlovskytė *et al.*, 2010, 2016; Soon, Saarma, 2011; Soon *et al.*, 2014.

*Chrysis ruddii* Shuckard, 1836. Orlovskytė *et al.*, 2010.

*Chrysis rutilans* Olivier, 1790. Orlovskytė *et al.*, 2010.

*Chrysis schencki* Linsenmaier, 1968. Orlovskytė *et al.*, 2010, 2016; Soon *et al.*, 2014.

*Chrysis scutellaris* Fabricius, 1794. Orlovskytė *et al.*, 2010; Paukkunen *et al.*, 2016.

*Chrysis solida* Haupt, 1956. Orlovskytė *et al.*, 2010, 2016; Soon *et al.*, 2014.

*Chrysis splendidula* Rossi, 1790

*Chrysis succincta* Linnaeus, 1767. Wengris, 1962; Orlovskytė *et al.*, 2010.

*Chrysis terminata* Dahlbom, 1854. Soon *et al.*, 2014; Orlovskytė *et al.*, 2016.

= *Chrysis ignita* (Linnaeus, 1758) Form A sensu Linsenmaier, 1959. Orlovskytė *et al.*, 2010.

*Chrysis viridula* Linnaeus, 1761. Orlovskytė *et al.*, 2010.

*Chrysis zetterstedti* Dahlbom, 1845

*Chrysis fasciata*: Orlovskytė *et al.*, 2010.

*Chrysura austriaca* (Fabricius, 1804). Orlovskytė *et al.*, 2010.

*Chrysura hirsuta* (Gerstaecker, 1869). Wengris, 1962; Orlovskytė *et al.*, 2010.

*Chrysura radians* (Harris, 1776). Orlovskytė *et al.*, 2010.

*Pseudochrysis neglecta* (Shuckard, 1836). Orlovskytė *et al.*, 2010 (*Pseudospinolia*).  
*Trichrysis cyanea* (Linnaeus, 1758). Orlovskytė *et al.*, 2010; Paukkunen *et al.*, 2016.

Tribe PARNOPINI

*Parnopes grandior* (Pallas, 1771). Wengris, 1962; Orlovskytė *et al.*, 2010.

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**Pirmieji *Chrysis splendidula* Rossi, 1790 (Hymenoptera: Chrysididae) stebėjimai Lietuvoje ir šalies auksavapsvių faunos rūšių sąrašo patikslinimai**

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**Santrauka**

Straipsnyje pristatoma Lietuvoje iki šiol neaptikta auksavapsvė *Chrysis splendidula* Rossi, 1790 (Hymenoptera: Chrysididae), pateikiamos jos sugavimo vietos ir datos, individų skaičius, jų lytys bei rinkikai. Taip pat pateikiami 2010 m. paskelbto Chrysididae rūšių sąrašo patikslinimai, kuriuos atlikus Lietuvos faunos auksavapsvių sąrašą sudaro 51 rūšis.

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