

**FIRST RECORDS OF *MIMUMESA WUESTNEII* (FAESTER, 1951) AND OTHER RARE APOID WASPS IN LITHUANIA (HYMENOPTERA: PSENIDAE, CRABRONIDAE, BEMBICIDAE)**

EDUARDAS BUDRYS<sup>1</sup>, SVETLANA ORLOVSKYTĖ<sup>1</sup>, ANDRIUS PETRAŠIŪNAS<sup>2</sup>, ANNA BUDRIENĖ<sup>1</sup>

<sup>1</sup>Nature Research Centre, Akademijos 2, LT-08412 Vilnius, Lithuania.

<sup>2</sup>Vilnius University Life Sciences Center, Institute of Biosciences, Saulėtekio av. 7, LT-10257 Vilnius, Lithuania.

E-mail: eduardas.budrys@gamtc.lt

**Introduction**

First records of Lithuanian apoid wasps (Ampulicidae, Astatidae, Bembicidae, Crabronidae, Mellinidae, Pemphredonidae, Philanthidae, Psenidae and Sphecidae) have been published by S. B. Gorski (1852), E. Strand (1918), and J. Wengris (1962). The species list of these wasps has been updated several times (Budrys, 1992; 2001; 2004; 2006; 2007; 2010; 2016; Budrys, Orlovskytė, 2017) and currently includes 173 species.

The aim of this publication is presentation of data on another four species of apoid wasps that have been recently recorded in Lithuania for the first time.

**Material and Methods**

The material was collected using an entomological net, Malaise trap and yellow pan traps. The collectors were E. Budrys (abbreviated as E. B.), J. Liemke (J. L.), K. Lingytė (K. L.), S. Orlovskytė (S. O.), and A. Petrašiūnas (A. P.). The species were identified using keys in *Faune de France*, volumes 79 (Bitsch & Leclercq, 1993), 82 (Bitsch & Barbier, 1997) and 86 (Antropov, 2001; Dollfuss & Bitsch, 2001). The identification of *Mimumesa wuestneii* (Faester, 1951) was confirmed using DNA barcoding: 674 bp long CO1-5' sequence was amplified with primers T3HYMlep-f and T7HYMnancy-r (Budrys *et al.*, 2019); the sequencing was performed in Macrogen Inc. (South Korea, Seoul). For comparison with the sequence of *M. wuestneii*, the CO1-5' sequences of *M. littoralis* (Bondroit, 1934), *M. unicolor* (Vander Linden, 1829) and *M. spooneri* (Richards, 1948) were obtained from the Barcode of Life Data System ([www.boldsystems.org](http://www.boldsystems.org)) Barcode Index Number (BIN) database (Ratnasingham & Hebert, 2013). The specimens are preserved in the collection of the Nature Research Centre (Vilnius, Lithuania).

## List of localities

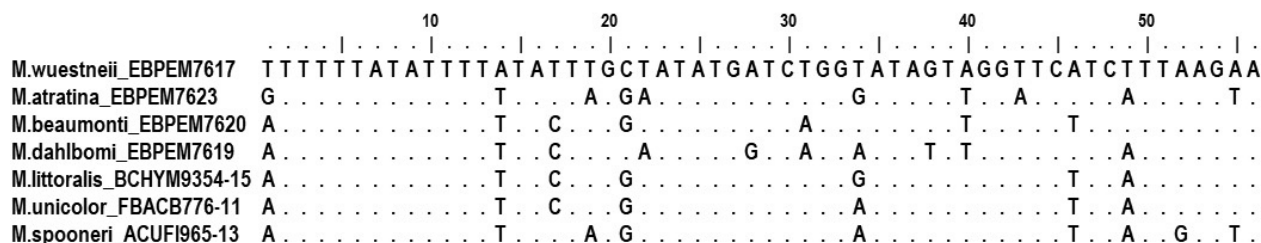
Locality	Administrative district	Coordinates (LAT, LONG)
Bilšiai	Molėtai distr.	55.1341, 25.2707
Dubininkas	Varėna distr.	54.0941, 24.2874
Grybaulios Miškas f.	Varėna distr.	54.0053, 24.4142
Mančiagirė, 2.58 km S	Varėna distr.	54.1109, 24.4432
Nagėnai, 1 km S	Ignalina distr.	55.5024, 26.4619
Varnasalis f.	Varėna distr.	54.0554, 24.5008

## List of species

## PSENIDAE

*Mimumesa wuestneii* (Faester, 1951) (Figs. 1–5)

Nagėnai, 1 km S, mixed reed-bed, Malaise trap, 26 07–01 08 2018, 1 ♀, voucher spec. No EBPEM7617 (A. P., J. L., K. L.).



**Fig. 1.** The 5' end of the CO1 barcoding sequence of *Mimumesa wuestneii*, compared to the other European *Mimumesa* species. Dots – identical nucleotides.

## CRABRONIDAE

*Trypoxylon fronticorne* Gussakovskij, 1936 (Figs. 6–7)

Grybaulios Miškas f., 29 07 2019, 2 ♀; Mančiagirė, 2.58 km S, 29 07 2019, 2 ♀; Varnasalis f., 29 07 2019, 3 ♀, all: yellow pan traps, (E. B., S. O.).

*Crabro ingricus* (F. Morawitz, 1888) (Fig. 8)

Dubininkas, Skroblus river valley, 26 05 2017, 1 ♀ (E. B.).

## BEMBICIDAE

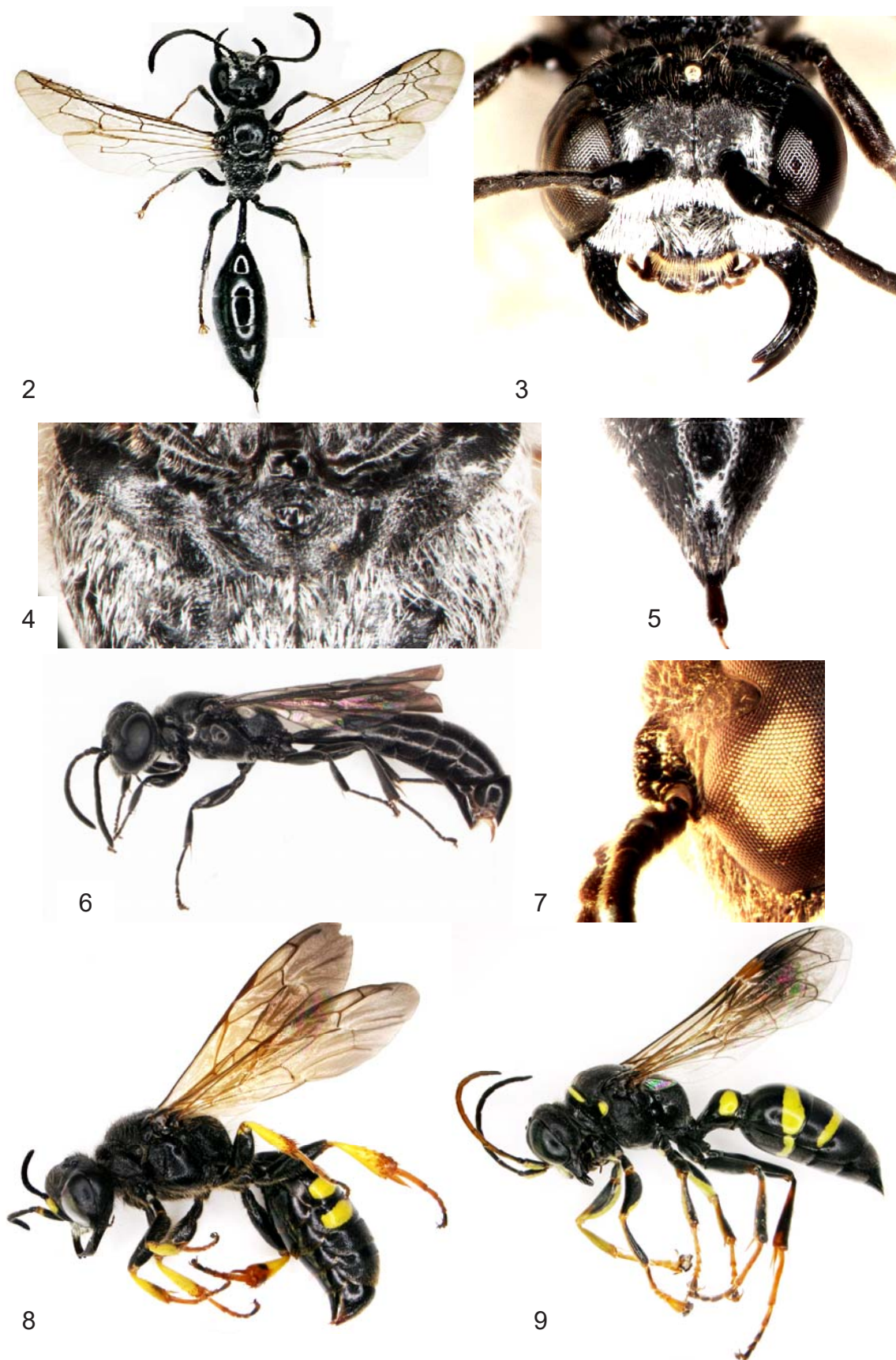
*Lestiphorus bicinctus* (Rossi, 1794) (Fig. 9)

Bilšiai, on honeydew, 19 07 2019, 1 ♀ (E. B.).

## Discussion

*Mimumesa wuestneii* is an extremely rare species that has been described from Austria and once recorded in Romania (Pulawski, 2003; Barbier, 2013). The male can be separated from the other European species of *Mimumesa* Malloch, 1933 by extremely long, curved mandibles (Dollfuss & Bitsch, 2001); both sexes have small lateral tubercles on the lower edge of clypeus (Fig. 3), weak, ventrally incomplete epicnemial carina and deep acetabular depression, not delimited laterally by carina (Fig. 4); females have comparatively short carinae delimiting pygidial area (Fig. 5). The barcoding CO1-5' sequence of *M. wuestneii*, described here for the first time, is different from the other European *Mimumesa* (Fig. 1), being closest to *M. littoralis* (uncorrected p-distance 8.48%) and *M. unicolor* (9.55%).

*Trypoxylon fronticorne* is a Palearctic species, distributed from Spain in the west to Kazakhstan and China in the east and from Italy and Greece in the south (Pulawski, 2003; Barbier, 2013) to Lithuania in the north. In Poland, it has been recorded in 2002 for the first time (Wiśniowski, 2004); there are also multiple records from Belarus (Шляхтенюк, 2013). The species has not been recorded in Northern Europe, including Latvia, Estonia, Fennoscandia and Denmark; it is lacking from the Netherlands and British Isles. *T. fronticorne* can be recognised by a high supra-antennal tubercle (Fig. 7). In Lithuania, the species was collected using yellow pan traps on a sandy ground in dry pine forests, together with a more abundant similar species *T. minus* Beaumont, 1945.



**Figs. 2–9.** 2–5 – *Mimumesa wuestneii* ♀: dorsal view (2), face (3), mesothorax anteroventrally (4), pygidial plate (5); 6–7 – *Trypoxylon fronticorne* ♀: lateral view (6), supra-antennal tubercle laterally (7); 8 – *Crabro ingricus* ♀, lateral view; 9 – *Lestiphorus bicinctus* ♀, lateral view.

*Crabro ingricus* is a widely distributed Palaearctic, probably boreo-montane species, described from Karelia and recorded in Finland (Paukkunen *et al.*, 2009), Estonia (eElurikkus, 2015), the mountains of Alps, Carpathians, Ural, Altai, and in the Kamchatka peninsula (Pulawski, 2003). It has been recorded once in Poland (Wiśniowski, 2004), but not found in Belarus so far (Шляхтенюк, 2013). Despite its wide distribution area, *C. ingricus* is considered an extremely rare species; it has been included in the red list of Finland as critically endangered (cat. CR) (Laji.fi, 2019). In Lithuania, this wasp was collected in flight near small road, surrounded by pine forests, in Skroblus rivulet valley.

*Lestiphorus bicinctus* is widely distributed across the western, central and southern parts of Europe (Pulawski, 2003; Wiśniowski, 2004; Barbier, 2013); it has been recorded in Belarus (Шляхтенюк, 2013) and recently in Sweden (Artfacta, 2015). The species is everywhere considered as uncommon or rare (Bitsch & Barbier, 1997). In Lithuania, it has been collected on leaves of *Syringa vulgaris* shrub, feeding on honeydew, in vicinity of abandoned agricultural fields and extensively managed meadows.

*Mimumesa wuestneii* and *Crabro ingricus* are worldwide rare species, therefore, their populations in Lithuania represent particular interest. The abundance and distribution of these populations need investigation for assessment of their conservation status according to the IUCN criteria. At least, these two species deserve to be included in the national red list as vulnerable due to restricted area of occupancy or number of locations (VU D2).

## Acknowledgements

Parts of this study were supported by the projects LIFEMagniDucatusAcrola (LIFE15 NAT/LT/001024) and NATURALIT (LIFE16 IPE/LT/000016). The research was carried out using the Open Access to research infrastructure of the Nature Research Centre under Lithuanian open access network initiative.

## References

- Antropov A. V. 2001. Trypoxylini. *Faune de France 86. Hyménoptères Sphecidae d'Europe Occidentale. Volume 3*. Paris, 347–384.
- Artfacta, 2015. Artfakta från ArtDatabanken. Available from <https://artfakta.se/om> (Accessed November 14, 2019).
- Barbier Y. 2013. Fauna Europaea: Crabronidae. In: Mitroiu M. -D. (2013) Hymenoptera. Fauna Europaea version 2017.06. Available from <https://fauna-eu.org> (Accessed November 14, 2019).
- Bitsch J., Barbier Y. 1997. Gorytini. *Faune de France 82. Hyménoptères Sphecidae d'Europe Occidentale. Volume 2*. Paris, 174–243.
- Bitsch J., Leclercq J. 1993. Generalites – Crabroninae. *Faune de France 79. Hyménoptères Sphecidae d'Europe Occidentale. Volume 1*. Paris.
- Budrys E. 1992. Digger wasps (Hymenoptera, Sphecidae) of Lithuania: check-list of species. In Jonaitis V. (ed.) *New and rare for Lithuania insect species. Records and descriptions of 1992*. Vilnius, 20–39.
- Budrys E. 2001. Five new for Lithuanian fauna species of Sphecidae and Crabronidae (Hymenoptera, Apoidea). *Acta Zoologica Lituanica* 11 (4): 388–390.

- Budrys E. 2004. Three new for Lithuania crabronid wasp species (Hymenoptera: Apoidea: Crabronidae). *New and Rare for Lithuania Insect Species* 16: 51–52.
- Budrys E. 2006. Five new for Lithuanian fauna crabronid wasp species (Hymenoptera: Apoidea: Crabronidae). *New and Rare for Lithuania Insect Species* 17: 80–82.
- Budrys E. 2007. Records of three new for the Lithuanian fauna and four rare wasp species (Hymenoptera: Apoidea: Ampulicidae & Crabronidae). *New and Rare for Lithuania Insect Species* 19: 63–66.
- Budrys E. 2010. Ten Crabroninae wasp species new to the Lithuanian fauna (Hymenoptera: Crabronidae). *New and Rare for Lithuania Insect Species* 22: 137–139.
- Budrys E. 2016. First record of alien mud dauber wasp *Sceliphron curvatum* in Lithuania (Hymenoptera: Sphecidae). *New and Rare for Lithuania Insect Species* 28: 94–96.
- Budrys E., Budrienė A., Orlovskytė S., Soon V. 2019. Two new species of *Diodontus* (Hymenoptera: Pemphredonidae) from Western Mediterranean and their phylogenetic relationships. *The Canadian Entomologist* 151 (5): 558–583.
- Budrys E., Orlovskytė S. 2017. Unexpected record of *Diodontus brevilabris* (Hymenoptera: Crabronidae) in Lithuania. *Bulletin of the Lithuanian Entomological Society* 1 (29): 121–123.
- Dollfuss H., Bitsch J. 2001. Psenini. *Faune de France* 86. *Hyménoptères Sphecidae d'Europe Occidentale*. Volume 3. Paris, 14–55.
- eElurikkus, 2015. eBiodiversity is a portal for the taxa found in Estonia. Available from <https://elurikkus.ee> (Accessed November 14, 2019).
- Gorski S. B. 1852. *Analecta ad entomographiam provinciarum occidentali-meridionalium Imperii Rossici*. Berlin.
- Laji.fi 2019. Finnish Biodiversity Information Facility. Available from <https://laji.fi/en> (Accessed November 14, 2019).
- Paukkunen J., Söderman G., Leinonen R., Pöyry J., Raekunnas M., Teräs I., Viitasaari M., Vikberg V. 2009. Records of new and redlisted aculeate wasps, ants, bees and sawflies from Finland. *Sahlbergia* 15 (1): 2–20.
- Pulawski W.J. 2003. Catalog of Sphecidae sensu lato. Available from <https://www.calacademy.org/scientists/projects/catalog-of-sphecidae> (accessed November 15, 2019).
- Ratnasingham S., Hebert P.D.N. 2013. A DNA-based registry for all animal species: the barcode index number (BIN) system. *Public Library of Science One* 8: e66213.
- Strand E. 1918. Über W. Horns litauische entomologische Kriegsausbeute 1916 (besonders Trichoptera, Lepidoptera und Hymenoptera). Hymenoptera. *Entomologische Mitteilungen* 7 (1/3): 30–32.
- Wengris J. 1962. Materiały do fauny błonkoskrzydłych (Hymenoptera) najbliższych okolic Wilna. *Studia societatis scientiarum Torunensis. Sectio E (Zoologia)* 6 (10): 1–19.
- Wiśniowski B. 2004. Annotated checklist of the Polish digger wasps (Hymenoptera: Sphecidae). *Polish Journal of Entomology* 73: 33–63.
- Шляхтенюк А. С. 2013. *Аннотированный каталог ос (Hymenoptera, Apocrita, Aculeata) Беларуси*. Минск.

**Pirmieji *Mimumesa wuestneii* (Faester, 1951) ir kitų retų vapsvų (Hymenoptera: Psenidae, Crabronidae, Bembicidae) stebėjimai Lietuvoje**

*E. BUDRYS, S. ORLOVSKYTĖ, A. PETRAŠIŪNAS, A. BUDRIENĖ*

**Santrauka**

Straipsnyje pristatomos pirmą kartą Lietuvoje aptiktos 4 vapsvų rūšys iš Psenidae, Crabronidae ir Bembicidae (Hymenoptera: Apoidea) šeimų. Kiekvienai jų pateikiamos sugavimo vietos ir datos, individų skaičius, jų lytis ir rinkikai. Dvi iš šių rūšių, *Mimumesa wuestneii* (Faester, 1951) ir *Crabro ingricus* (F. Morawitz, 1888), yra labai retos visame jų paplitimo areale; *C. ingricus* įtraukta į Suomijos raudonąjį sąrašą. Siūloma atlikti šių rūšių populiacijų gausumo ir paplitimo tyrimus, siekiant jas įtraukti į Lietuvos raudonąją knygą.

*Received: 19 November, 2019*