

Lasioglossum bluethgeni* Ebmer, 1971 new to the Belgian fauna*(Hymenoptera: Halictidae)**Fons VERHEYDE¹ & Tim DE BLANCK²¹Aartshertoginnestraat 58/01, 8400 Ostend, Belgium (corresponding author: fonsverheyde@hotmail.com)²Wakkensteenweg 50a, 8710 Sint-Baafs-Vijve, Belgium**Abstract**

In the summer of 2019 an interesting halictid bee was caught near the French border in West-Flanders, on an old pathway north of the village of Nieuwkerke. After careful identification, it was identified as an unreported species for Belgium, *Lasioglossum bluethgeni* Ebmer, 1971. Adding two observations from the northern part of France, these records constitute the most northern observations of the species so far, which is well illustrated in this article.

Keywords: Halictid bees, solitary bees, species dispersal

Samenvatting

In de zomer van 2019 werd er een interessante groefbij gevangen nabij de Franse grens in West-Vlaanderen, op een oude buurtweg ten noorden van Nieuwkerke. Na zorgvuldige identificatie werd het dier als *Lasioglossum bluethgeni* Ebmer, 1971 gedetermineerd, een ongemelde soort voor België. Samen met twee ongepubliceerde waarnemingen uit het noorden van Frankrijk zijn dit tot dusver de drie meest noordelijke waarnemingen van deze soort, die goed geïllustreerd wordt in het artikel.

Resumé

Au cours de l'été 2019, une intéressante abeille appartenant à la famille des Halictidae a été capturée près de la frontière française en Flandre occidentale, sur un ancien chemin au nord du village de Nieuwkerke. Il s'agit de *Lasioglossum bluethgeni* Ebmer, 1971, espèce encore non signalée pour la Belgique. En ajoutant deux observations de la partie nord de la France, ces enregistrements constituent les observations les plus septentrionales de l'espèce jusqu'à présent, ce qui est bien illustré dans cet article.

Introduction

The solitary bees of Belgium have received bigger attention due to their ecological role and the increasing availability of literature. VERTOMMEN *et al.*, 2023 (2023 in prep) make notes on many unreported species and occurrences from the past few years. In their list, a total number approximately 424 solitary bee species is reached. One of those is *Lasioglossum bluethgeni* Ebmer, 1971, missing from the existing Belgian atlas on Halictidae (PAULY, 2019).

Material and methods

All specimens were caught with a sweeping net and afterwards pinned. The Belgian specimen will be deposited in the Royal Belgian Institute of Natural Sciences (RBINS). The two French specimens are preserved in the personal collection of the second author. Figure 2 was made with QGIS 3.26.3.



Fig. 1. *Lasioglossum bluethgeni* Ebmer, 1971, ♀. A, habitus, dorsolateral view. B, front wing, dorsal view. C, head, frontal view. D, hind tibia, ventral view. E, mesonotum, dorsal view. F, propodeum, dorsolateral view. G, propodeum, dorsal view. H, metasoma, dorsal view. © Tim De Blanck.

Results

Lasioglossum bluethgeni Ebmer, 1971

BELGIUM: • 1 ♀; Nieuwkerke; 50°45'05"N 2°49'21"E; 4.VIII. 2019 (13:54); F. Verheyde leg.; field observation; T. De Blanck & A. Pauly det. (ObsID: 177449641).

FRANCE: • 1 ♀; Œuilly; 49°23'42"N 3°40'56"E; 19.V.2018; T. De Blanck leg.; field observation; T. De Blanck det. • 1 ♂; Monceaux; 49°20'04"N 2°35'21"E; 27.VIII.2020; T. De Blanck leg.; field observation; T. De Blanck det.

Our Belgian specimen (Fig. 1A-H) was found on an old pathway north of the village of Nieuwkerke. It was caught foraging on a wild flower, *Sonchus* sp. The pathway is a byroad of another alley, created to connect the path to a nearby pool. This alley and most of the agricultural plot structures nearby date back to at least 1841 (Atlas der Buurtwegen; Geopunt Vlaanderen), where it is mentioned as 'Sentier N. 96'. It is situated at the height of 56 metres, being part of 'Heuvelland', in the southwestern part of Flanders. Nowadays it is an often used hiking trail, integrated in 'GroteRoutepaden'. The specific section where our specimen was found is somewhat protected from its broader environment (i.e. agricultural activities). At the sides of this part of the hiking trail there are trees, shrubs and wooden posts with barbed wire.

The specimen was originally identified by the second author, using AMIET *et al.*, 2001. Afterwards, a second opinion was asked, and Alain Pauly confirmed the identification. Important characteristics in the abovementioned key are the mesonotum (Fig. 1E): sparsely punctuated, with the diameters of the empty spaces being at maximum equal to the punctuation itself, on a shiny surface; the propodeum (Fig. 1F-G): medial field regularly striate, with again a shiny surface on the empty spaces. Furthermore, the face is no longer than broad (Fig. 1C), the mesopleuron is closely punctuated anteriorly and the propodeum is rounded at its posterior margins (AMIET *et al.*, 2001). These characteristics are similar to those mentioned in older publications such as EBMER, 2000 (where the short and bulging hind margin of the propodeum is emphasized), EBMER, 1971 (who also mentions its propodeum is shorter than its scutellum) or even BLÜTHGEN, 1923 who originally described the species as *Halictus hirtiventris*.

Discussion

Very little is known on the ecology of the species. It appears to be polylectic (WESTRICH, 2010), with flower visits on Apiaceae: *Anthriscus sylvestris* and *Daucus* sp.; Asparagaceae: *Ornithogalum pyrenaicum*; Asteraceae: *Achillea* sp., *Sonchus asper* and *Sonchus* sp. (our observation from Belgium); Brassicaceae: *Brassica napus* and *Sinapis arvensis*; Capparidaceae: *Capparis spinosa*; Euphorbiaceae: *Euphorbia serrata*; Fabaceae: *Ulex parviflorus* and *Ononis natrix*; Lamiaceae: *Phlomis* sp. and *Teucrium chamaedrys*; Ranunculaceae: *Pulsatilla grandis*; Resedaceae: *Reseda* sp.; Rubiaceae: *Galium* sp. and *Rubia peregrina*; Scrophulariaceae: *Scrophularia* sp. (unpublished data; WESTRICH, 2010; MÉSZAROS & JÓZAN, 2018; ROPARS *et al.*, 2020; BOUSTANI *et al.*, 2021)

OCKERMÜLLER and ZETTEL (2016) mention dry sandy grasslands ('Sandtrockrasen') as preferred habitat, although their specimen was caught in a nutrient roadside. EBMER *et al.*, 2018 mention the species prefers deciduous forests to live. More recently ROPARS *et al.*, 2020 demonstrated the species is in fact not at all associated with grasslands or forests, but rather with scrubland. This is probably the best match to describe the environment where our specimen was found, since the closest forests are at least 3 kilometers from our location and dry grasslands are also absent at a

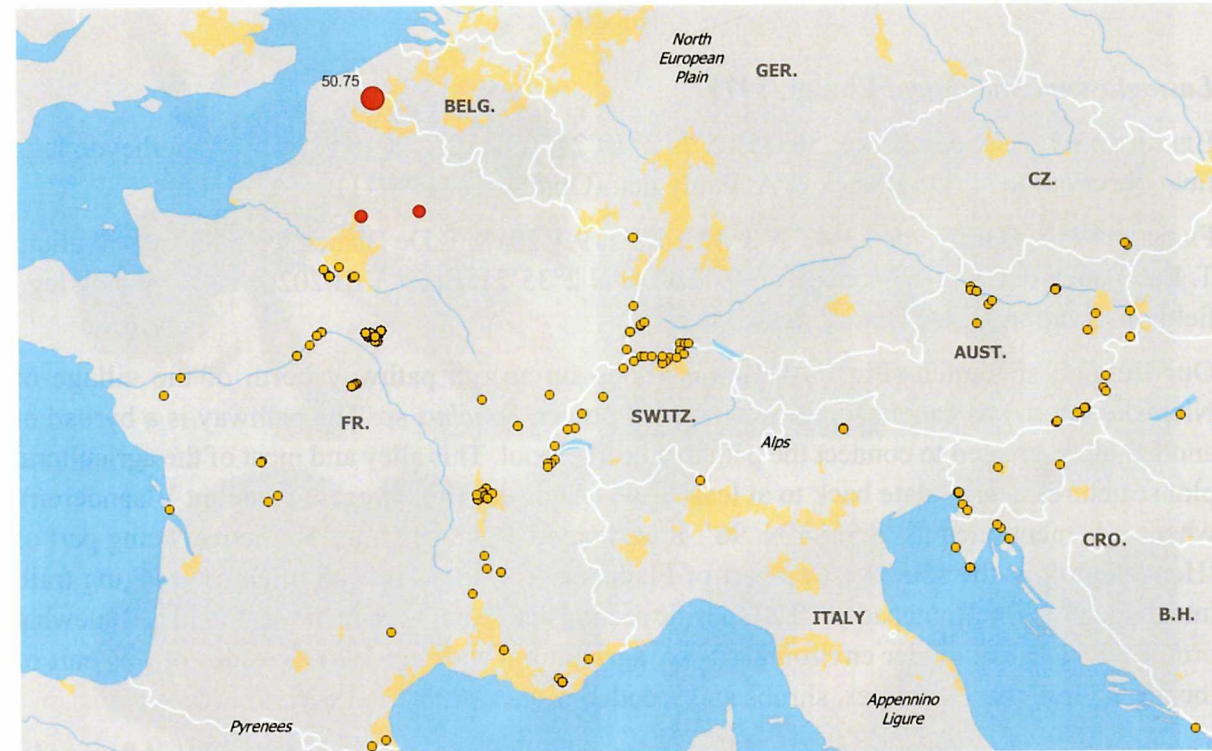


Fig. 2. Distribution of *Lasioglossum bluethgeni* Ebmer, 1971 in Western Europe; based on 437 records - from our results (red), the dataset of Alain Pauly, GBIF and EBMER, 2000.

big scale (at least in normal circumstances). EBMER *et al.*, 2018 furthermore mention the species is probably thermophilic, which could indeed explain migratory behavior.

The distribution (Fig. 2) and flying behavior of the species is remarkable and helps explaining our lack of understanding of its ecology. It flies from May to the beginning of October (AMIET *et al.*, 2001), but reports are very local, although sometimes abundant. By Ebmer it is called a 'West-Asian-East-European-Balkish steppe species' (EBMER, 2000), by Straka 'Ponto-Mediterranean' (STRAKA *et al.*, 2015). Highest densities are reached in Austria, Hungary (EBMER, 2000) and Switzerland (GBIF; Fig. 2). Within Europe there are also records from Bulgaria, Croatia, France (PAULY & BELVAL, 2017), Germany, Greece, Italy, Slovenia, Spain (ORTIZ-SANCHEZ & PAULY, 2017), The Czech Republic and Romania (EBMER, 2000). It is also reported from Libanon and Turkey (GBIF). Ignoring the results from our paper, observations with the highest latitude so far were those from Fischbach bei Dahn (Germany; 49.05 N), Kobylí (the Czech Republic; 48.96 N) and Bures-sur-Yvette (France; 48.70 N). It is possible there are more unreported records from the northern part of France.

Conclusively, our hypothesis is that this species is probably quite mobile and possibly thermophilic. This presumed mobility is probably influenced by its specific needs to nest. Species from the genus primarily nest in the soil (VAN DER MEER, 2004). As this species appears to be polylectic this suggests the connection to scrubland and higher altitudes (see above) is somehow connected to nesting behavior (i.e. soil conditions). In their turn, landscape and (old) vegetative elements in the surroundings (i.e. hedgerows, older trees and roots) could be essential drivers in an indirect way.

Acknowledgments

Alain Pauly is thanked for confirming the identifications of the second author and for providing us an additional dataset with unpublished data on flower visits and distribution. Wouter Dekoninck and Winfried Vertommen are thanked for reading previous versions of the manuscript and for providing their insights.

References

- AMIET F., HERRMANN M., MÜLLER A. & NEUMEYER R., 2001. - Apidae 3: *Halictus*, *Lasioglossum*. *Fauna Helvetica*, 6: 1-209.
- BLÜTHGEN A.V.P., 1923. - Beiträge zur Kenntnis der Bienengattung *Halictus* Latr. *Archiv für Naturgeschichte Berlin Abt. A.*, 89(5-8): 232-332.
- BOUSTANI M., RASMONT P., DATHE H. H., GHISBAIN G., KASPAREK M., MICHEZ D., MÜLLER A., PAULY A., RISCH S., STRAKA J., TERZO M., VAN ACHTER X., WOOD T. & NEMER N., 2021. - The bees of Lebanon (Hymenoptera: Apoidea: Anthophila). *Zootaxa* 4976(1): 1146. <https://doi.org/10.11646/zootaxa.4976.1.1>
- EBMER A.W., 1971. - Die Bienen des Genus *Halictus* Latr. s.l. im Grossraum von Linz (Hymenoptera, Apidae) Teil 3. *Naturkundliches Jahrbuch der Stadt Linz*, 17: 63-156.
- EBMER A.W., 2000. - Asiatische Halictidae – 9. Die Artengruppe des *Lasioglossum pauperatum* (Insecta: Hymenoptera: Apoidea: Halictidae: Halictinae). *Linzer biologische Beiträge*, 21(1): 399-453.
- EBMER A.W., OCKERMÜLLER E. & SCHWARZ M., 2018. - Neufunde und bemerkenswerte Wiederfunde an Bienen in Oberösterreich (Hymenoptera: Apoidea). *Linzer biologische Beiträge*, 50(1): 353-371.
- GBIF.org (12 December 2022) GBIF Occurrence Download <https://doi.org/10.15468/dl.j4uu2p>
- MÉSZÁROS T. & JÓZAN Z., 2018. - Pollinators of *Pulsatilla grandis* Wender in southern Bakony (Hungary). *Applied Ecology and Environmental Research*, 16(5): 7045-7062. http://dx.doi.org/10.15666/aer/1605_70457062
- OCKERMÜLLER E. & ZETTEL H., 2016. - Faunistische Erfassung der Wildbienen-Diversität (Hymenoptera: Apidae) in Ritzing (Österreich, Burgenland) mit besonderer Berücksichtigung der Wegränder. *Entomologica Austriaca*, 23: 29-62.
- ORTIZ-SÁNCHEZ F. J. & PAULY A., 2017. - Contribution à la connaissance des Halictinae d'Espagne, avec un atlas des espèces de la Péninsule Ibérique (Hymenoptera: Apoidea: Halictidae). *Belgian Journal of Entomology*, 54: 1-92.
- PAULY A., 2019. - *Abeilles de Belgique et des Régions limitrophes* (Insecta: Hymenoptera: Apoidea). *Famille Halictidae*. Faune de Belgique, 513pp.
- PAULY A. & BELVAL S., 2017. - Atlas des Halictidae de France (Hymenoptera: Apoidea). *Belgian Journal of Entomology*, 53: 1-34.
- ROPARS L., AFFRE L., SCHURR L., FLACHER F., GENOUD D., MUTILLOD C. & GESLIN B., 2020. - Land cover composition, local plant community composition and honeybee colony density affect wild bee species assemblages in a Mediterranean biodiversity hot-spot. *Acta Oecologica*, 104: 103546. <https://doi.org/10.1016/j.actao.2020.103546>
- STRAKA J., BOGUSCH P., TYRNER P., RIHA M., BENDA D., CIZEK O., HALADA M., MACHACKOVA L., MARHOUL P. & TROPEK P., 2015. - Faunistic records from The Czech Republic – 380. *Klapalekiana*, 51: 77-91.
- VAN DER MEER F., 2004. - *Lasioglossum*. In: REEMER M., VAN LOON A.J. & PEETERS T.M.J. (eds). - *De wespen en mieren van Nederland* (Hymenoptera: Aculeata). Naturalis/KNNV Uitgeverij, Leiden/Utrecht, 341-371. <http://www.bestuivers.nl/publicaties/de-wespen-en-mieren-van-nederland>
- Vertommen W., 2023. - New and confirmed records of wild bees (Hymenoptera: Apoidea: Apiformes) for the fauna of Belgium, with notes on the rediscovery of regionally extinct species. *Belgian Journal of Entomology* (in prep.)
- WESTRICH P., 2010. - Untersuchungen zum Blütenbesuch von Bienen (Hymenoptera, Apidae) an *Ornithogalum* s.l. (Milchsterne, Hyacinthaceae). *Eucera*, 3(1): 1-17.