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Lasioglossum ankoui n. sp. (Hymenoptera: Halictidae), a new species described from France

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Summary. Thanks to renewed interest in wild bees in metropolitan France, knowledge of their diversity has steadily increased over the past 20 years. Among the groups of particular concern is the taxonomically complex and highly diverse genus *Lasioglossum* Curtis, 1833. Building on the most recent national checklist and newly collected material, we describe *Lasioglossum ankoui* Flaminio & Pauly, **n. sp.**, discovered in Loire-Atlantique and Charente-Maritime, and possibly endemic to metropolitan France (in the present work, to be intended as continental France excluding Corsica and overseas territories). Its distinctiveness is demonstrated through morphological comparisons with related species and confirmed by DNA barcoding. This discovery further refines the taxonomy of *Lasioglossum* and its faunistic inventory at the national and western Palaearctic scale. It underlines the importance of pursuing field surveys and taxonomic revisions.

Résumé. *Lasioglossum ankoui* n. sp. (Hymenoptera : Halictidae), une espèce nouvelle décrite de France. En raison d'un intérêt croissant pour les abeilles sauvages en France métropolitaine, l'état des connaissances faunistiques y a significativement progressé au cours des 20 dernières années. Parmi les groupes principalement concernés se trouve le genre *Lasioglossum* Curtis, 1833, complexe sur le plan taxonomique et très riche en espèces. Sur la base de la liste nationale d'espèces récemment publiée, de méthodes de taxonomie intégrative et de récentes collectes de matériel, nous décrivons dans cet article *Lasioglossum ankoui* Flaminio & Pauly, **n. sp.**, découvert en Loire-Atlantique et Charente-Maritime, et probablement endémique de France métropolitaine. La comparaison morphologique avec des espèces apparentées, alliée au *barcoding*, supportent sa validité taxonomique. Cette nouvelle contribution améliore la connaissance faunistique des *Lasioglossum* et leurs inventaires à l'échelle nationale française et à celle du domaine ouest-paléarctique. Elle souligne une nouvelle fois l'importance de poursuivre les études de terrain et les travaux taxonomiques.

https://zoobank.org/References/6F9A6DF5-A566-4AA0-B02C-E03572F9194D

Keywords: Europe; taxonomy; diversity; morphology; DNA barcoding

A national checklist has recently been published to update the inventory of wild bees of metropolitan France (Ropars et al. 2025), marking a significant step toward a clearer understanding of the country's Apoidea Anthophila fauna. This synthesis builds upon earlier foundational works (Rasmont et al. 1995, 2017; Le Divelec 2021) and incorporates the most recent additions to the French fauna (e.g. Dufrêne et al. 2014; Pauly & Belval 2017; Ghisbain et al. 2018; Le Divelec 2020; Aubert & Leclercq 2024), the latest taxonomic revisions (e.g. Pauly et al. 2019; Litman et al. 2022; Praz et al. 2022) and newly described species (e.g. Dufrêne 2021; Le Divelec 2024; Flaminio et al. 2024; Rasmont & Wood 2024). Among the Halictidae, the genus *Lasioglossum* Curtis, 1833 is particularly diverse and taxonomically challenging, with nearly 103 species recorded in France (Flaminio et al. 2025; Ropars et al. 2025). The high degree of morphological similarity among closely related species, combined with historically limited sampling in certain regions, has likely led to an underestimation of species richness. In this context, we describe *Lasioglossum ankoui* Flaminio & Pauly, **n. sp.**, discovered in the Loire-Atlantique and Charente-Maritime departments.

Material and methods

Distribution

Label data of all examined specimens were recorded. Coordinates refer to WGS84 and are presented with four decimal places. The

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distribution map was generated using QGIS version 3.40.2 (QGIS.org 2024). Habitat assignment was obtained by intersecting species occurrence points with the CORINE Land Cover map of metropolitan France (2018 edition, EPSG 2154) in QGIS. Occurrence coordinates were imported as a point layer and overlaid with CORINE polygons after projection harmonisation. The spatial intersection transferred the land cover code of each polygon to all points within its extent. The resulting table was used to calculate the frequency of habitat categories represented among the records.

Photography

Photographs were taken using Keyence VHX-970F.

Abbreviations

Morphological terminology follows Michener (2007). The abbreviations T and S are used for metasomal terga and metasomal sterna, respectively. Surface sculpture definition follows Harris (1979).

Genetic analysis

DNA extraction, PCR amplification, and sequencing were conducted by the Canadian Centre for DNA Barcoding (CCDB), Guelph, using standardised high-throughput protocols (http://ccdb.ca/resources; Hebert et al. 2004). The results were submitted to the Barcode of Life Data System (BOLD), a cloud-based data storage and analysis platform developed by CCDB (https://boldsystems.org; Ratnasingham & Hebert 2024). For DNA analysis, we barcoded two specimens of *L. ankoui*, two specimens of *L. pygmaeum* (Schenck 1853) and one specimen of *L. pseudoplanulum* (Blüthgen, 1924) (Table 1). The tree also includes additional sequences retrieved from the Barcode of Life Data System and published sources (e.g. Wood et al. 2024).

DNA sequences were aligned using the MUSCLE algorithm implemented in MEGA11 software (Tamura et al. 2021). Phylogenetic analysis was conducted using the maximum likelihood method in MEGA (Kumar et al. 2018). Bootstrap values were calculated based on 1000 replicates, employing the Tamura 3-parameter (T92) model, which was selected due to its lowest Bayesian information criterion (BIC) scores, indicating it best represents the substitution pattern. *Lasioglossum* (*Leuchalictus*) *discus* (Smith, 1853) was chosen as the outgroup to root the phylogenetic tree. Pairwise genetic distances were calculated in MEGA11 (Kumar et al. 2018) using the Kimura 2-parameter (K2P) substitution model. Distances were computed from the final COI alignment used for the phylogenetic analyses, and pairwise mean between-group distances were extracted for *Lasioglossum ankoui* **n. sp.**, and the species recovered as its closest relatives in the tree.

Acronyms

The specimens examined in this study originate from the following institutions and private collections (acronyms below). All material, including the holotype and selected paratypes of *Lasioglossum ankoui* **n. sp.**, will be deposited as indicated in the examined material section.

BHPC Baptiste Hubert Private Collection, Rennes, France; **MAPC** Matthieu Aubert Private Collection, Pégairolles-de-Buèges, France; **MNHN** Muséum national d'Histoire naturelle, Paris, France; **OÖLM** Oberösterreichisches Landesmuseum, Linz, Austria; **SFPC** Simone Flaminio Personal Collection, Mons, Belgium; **GRETIAPC** GRoupe d'ÉTude des Invertébrés Armoricains Private Collection, Rennes, France.

Results

Lasioglossum (*Hemihalictus*) *ankoui* Flaminio & Pauly, n. sp.

Type material

Holotype. ♀, France, Saint-Philbert-de-Grand-Lieu (F-44), Réserve Naturelle Nationale du lac de Grand-Lieu, 47.1023°N, 1.7129°W, 13–28.V.2019 (Malaise trap), Rupaud G., Herbrecht F., Gilliers J.-M. & Parret A. lgt (MNHN).

Paratypes. 17♀, 3♂: 1♀, France, Saint-Philbert-de-Grand-Lieu (F-44), Réserve Naturelle Nationale du lac de Grand-Lieu, 47.1023°N, 1.7129°W, 13–28.V.2019 (Malaise trap), Rupaud G., Herbrecht F., Gilliers J.-M. & Parret A. lgt (BHPC); 1♀, same information except for the dates:

Table 1. Specimens included in the phylogenetic analysis.

Taxon	Locality	Collector/identifier	Voucher code	BOLD
Lasioglossum ankoui **n. sp.**	France: Saint-Philbert-de-Grand-Lieu	Hubert B./Flaminio S.	HASARD-048	HASARD-048-24
Lasioglossum ankoui **n. sp.**	France: Saint-Philbert-de-Grand-Lieu	Hubert B./Flaminio S.	HASARD-049	HASARD-049-24
Lasioglossum discus	Italy: Campania, Agropoli	Flaminio S./Flaminio S.	HASARD-003	HASARD-003-24
Lasioglossum pygmaeum	Lebanon: Beqaa, Rachaiya	Wood T./S. Flaminio	WPATW1479	WPATW1479-23
Lasioglossum pygmaeum	Greece: Eastern Macedonia and Thrace, Kavala	Flaminio S./Flaminio S.	WPATW1471	WPATW1471-23
Lasioglossum pseudoplanulum	Italy: Sicily, Pantelleria	Selis M./Flaminio S.	ORBIT017	ORBIT017-23

Note: The scientific names are provided in the first column. Each specimen is marked with a label displaying a voucher code. Data are accessible on BOLD.

28.V–12.VI.2019 (GRETIAPC); 1♀, same information except for the dates: 12–25.VI.2019 (GRETIAPC); 1♀, France, Saint-Philbert-de-Grand-Lieu (F-44), Réserve Naturelle Nationale du lac de Grand-Lieu, 47.1330°N, 1.6824°W, 21.VI–5.VII.2019 ("cornet" trap), Rupaud G., Herbrecht F., Gilliers J.-M. & Parret A. lgt (BHPC); 2♀, same information except for the dates: 28.V–7.VI.2019 (GRETIAPC); 3♀, France, Saint-Philbert-de-Grand-Lieu (F-44), Réserve Naturelle Nationale du lac de Grand-Lieu, 47.1334°N, 1.6832°W, 28.V–7.VI.2019 (Malaise trap), Rupaud G., Herbrecht F., Gilliers J.-M. & Parret A. lgt (GRETIAPC); 1♀, France, Saint-Philbert-de-Grand-Lieu (F-44), Réserve Naturelle Nationale du lac de Grand-Lieu, 47.1023°N, 1.7130°W, 22.VII–5.VIII.2019 ("cornet" trap), Rupaud G., Herbrecht F., Gilliers J.-M. & Parret A. lgt (BHPC); 1♂, France, Saint-Philbert-de-Grand-Lieu (F-44), Réserve Naturelle Nationale du lac de Grand-Lieu, 47.0838°N, 1.6508°W, 18.VIII–2.IX.2019 (Malaise trap), Rupaud G., Herbrecht F., Gilliers J.-M. & Parret A. lgt (MNHN); 1♀, France, Montoir-de-Bretagne (F-44), Le Lévrier, 47.3219°N, 2.11203°W, 3–5.VII.2023 (yellow pan-trap), Herbrecht F. & Hubert B. lgt (SFPC); 2♀, France, Donges (F-44), prés de la Belle Fille, 47.3052°N, 2.0320,03°W, 5.VII.2023 (yellow pan-trap), Herbrecht F. & Hubert B. lgt (OÖLM, GRETIAPC); 1♀, same information except for the coordinates: 47.3085°N, 2.0239°W (BHPC); 1♀, same information except for the coordinates: 47.30566°N, 2.0314°W (SFPC); 1♀, France, Yves (F-17), Réserve Naturelle Nationale du marais d'Yves, 46.0547° N, 1.0595°W, 9.IX.2024, Aubert M. lgt. (MAPC); 1♀, same information except for the date: 25.IV.2025 (MAPC); 2♂, France, Fouras (F-17), Réserve Naturelle Nationale du marais d'Yves, 45.9917°N, 1.0617°W, 28.VI.2025, Aubert M. lgt. (SFPC, MAPC).

Description of female

Body length. 6 mm.

Habitus. Figure 1A.

Head. Head (Figure 1B) slightly wider than long (length/width ratio = 0.92). Clypeus coarsely and densely punctate, shagreened and more densely punctate basally (interspaces 0.5–0.7× puncture diameter); tegument shiny in the lower two-thirds, with comparatively sparser punctation (interspaces of several puncture diameters). Supraclypeal area densely punctate (interspaces 0.5× puncture diameter), except medioapically where interspaces are wider (1–1.5× puncture diameter); interspaces matt. Frons densely and finely punctate; interspaces matt. Vertex short, finely striate, and nearly impunctate.

Mesosoma. Scutum and scutellum densely punctate, with interspaces 0.7–1.2× puncture diameter (Figure 1C); anterior third of surface strongly shagreened, the two posterior-thirds lightly shagreened. Propodeum not carinate (Figure 1D); horizontal surface shorter than scutellum (propodeum/scutellum length ratio = 0.56), with parallel longitudinal rugae; tegument shiny. Mesopleura indistinctly punctate, underlying surface matt. Legs black; hind tibial spur bearing 4–5 short, rounded teeth (Figure 1E).

Metasoma. Marginal zone of terga translucent and brownish (Figure 1A). T1 nearly impunctate on the convex part, disc polished with minute and scattered punctation becoming slightly denser close to the marginal zone, the latter shagreened and almost impunctate (Figure 3A). Following terga lightly shagreened and sparsely punctate on the disc (interspaces >2× puncture diameter); marginal zone with scattered punctures (interspaces several times puncture diameter), its tegument more strongly shagreened. T1 with short, white hairs laterally on disc; following terga with short whitish to yellowish hairs on both disc and marginal zone.

Description of male

Body length. 5.5 mm.

Habitus. Figure 2A.

Head. Head (Figure 2B) as long as wide (length/width ratio = 1). Clypeus densely and coarsely punctate basally (interspaces >1× puncture diameter), punctures sparse to scattered apically, yellow in the apical third. Labrum yellow; mandibles yellowish medially. Frons densely and finely punctate; vertex short and shiny. Antennae moderately long; flagellomeres as long as wide (length/width = 1), ochraceous ventrally; scape and pedicel black.

Mesosoma. Scutum and scutellum (Figure 2C) densely punctate (interspaces 0.5–2× puncture diameter); interspaces shiny and polished. Propodeum not carinate (Figure 2D); horizontal part distinctly shorter than scutellum (propodeum/scutellum length ratio = 0.74); surface with parallel longitudinal rugae; tegument shiny (Figure 2D). Mesopleura densely punctate (interspaces <1× puncture diameter), interspaces polished and shiny. Basitarsi and following tarsomeres yellowish; basal and apical parts of tibiae yellowish.

Metasoma. Marginal zone of terga slightly translucent and brownish (Figure 2E). T1 shiny, sparsely punctate on disc (Figure 2E); apical margin impunctate, interspaces polished. Following terga more densely and uniformly punctate (interspaces >2× puncture diameter), shagreened basally; marginal zone impunctate and transversely

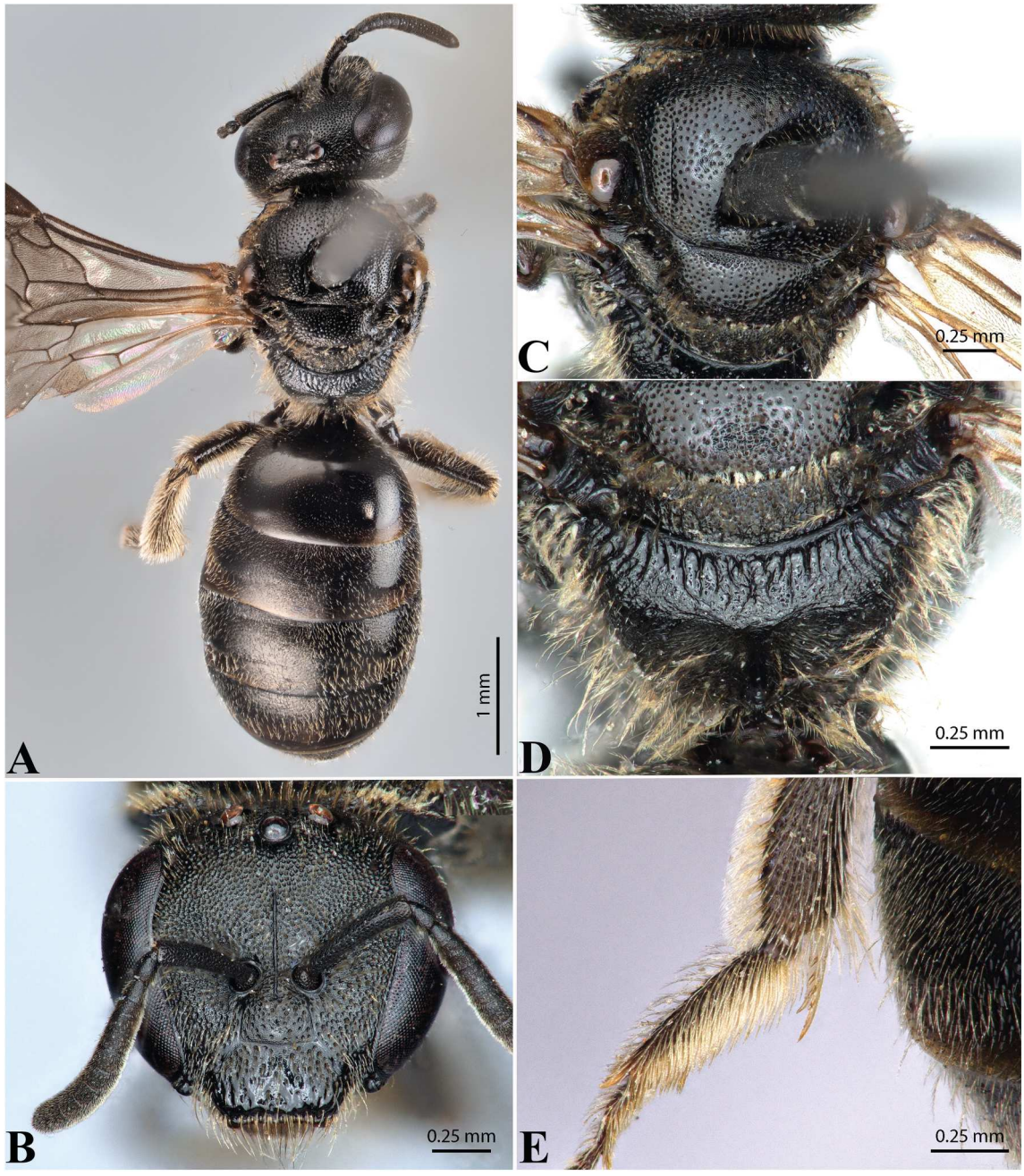


Figure 1. *Lasioglossum ankoui* **n. sp.**, female holotype. **A,** Habitus, dorsal view. **B,** Head, frontal view. **C,** Scutum, dorsal view. **D,** Propodeum, dorsal view. **E,** Hind leg spurs, posterior view.

shagreened. Gonostylus digitiform and 2.2× longer than wide, directed laterally; membranous lobe of the gonocoxite almost as long as wide, with a broadly rounded (obtuse) apex. (Figure 4A, B).

Diagnosis

Lasioglossum ankoui **n. sp.** can be assigned to the subgenus *Hemihalictus* Cockerell, 1897, based on the non-carinate propodeum, of which the basal part does not slope directly into the vertical surface, and the entirely black integument, without metallic reflections. It is important to note that the subgeneric classification adopted by Ghisbain et al. (2023), based on Gibbs et al. (2013) and followed herein, is not universally accepted among *Lasioglossum* Curtis, 1833 workers (e.g. Pesenko 2007; Ebmer et al. 2019; Pauly et al. 2020; Ockermüller & Ebmer 2023).

Considering its geographic distribution, species most likely to be confused with *L. ankoui* are *L. pygmaeum*

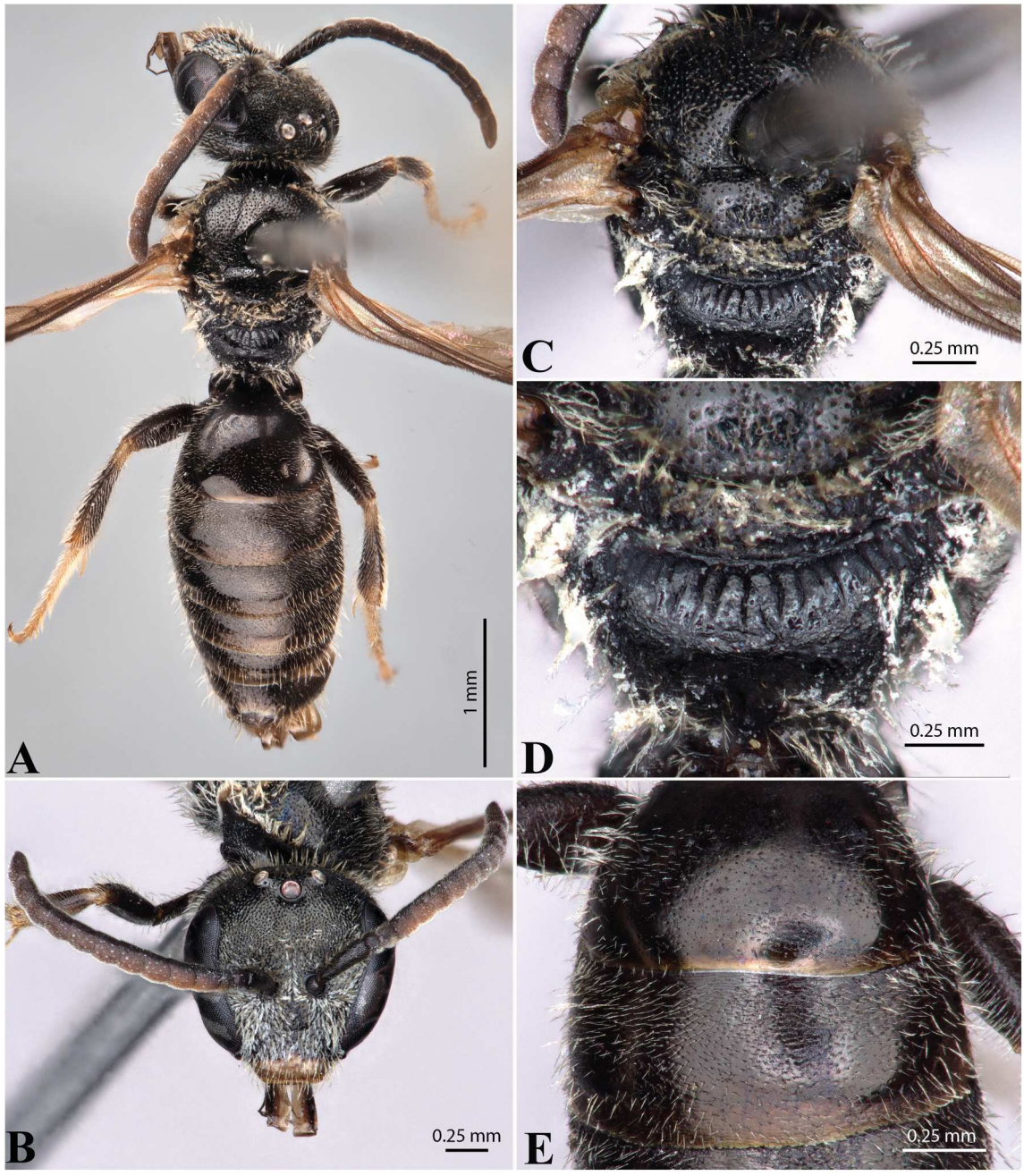


Figure 2. *Lasioglossum ankoui* **n. sp.**, male. **A,** Habitus, dorsal view. **B,** Head, frontal view. **C,** Scutum, dorsal view. **D,** Propodeum, dorsal view. **E,** T1–T2, dorsal view.

(Schenck, 1853), *L. pseudoplanulum* (Blüthgen, 1924), and *L. pauperatum* (Brullé, 1832). In females, *L. pauperatum* can be readily distinguished from *L. ankoui* by the apical margin of T1, which is densely punctate in *L. pauperatum* (Figure 3B) but impunctate in *L. ankoui* (Figure 3A). Both *L. pygmaeum* (Figure 3D) and *L. pseudoplanulum* (Figure 3C) differ from *L. ankoui* in the shape and relative length of the basal part of the propodeum, which is distinctly shorter in *L. ankoui* (Figure 1D), in addition to the posterior margin of T1, sparsely punctate in *L. pseudoplanulum* and *L. pygmaeum*. Additionally, the disc of T2–4 in *L. ankoui* is densely punctate and matt, whereas it is more sparsely punctate and shinier in the aforementioned species (Figure 3A). The habitus of both the male and female, as well as the shape of the male gonostylus, resembles those of some species of the *L. semilucens* species group (Ebmer 2000). Accordingly, a diagnosis is also provided in comparison with other species within this group. In the female sex, the species of the *L. semilucens* group, such as *L. intermedium* (Schenck,

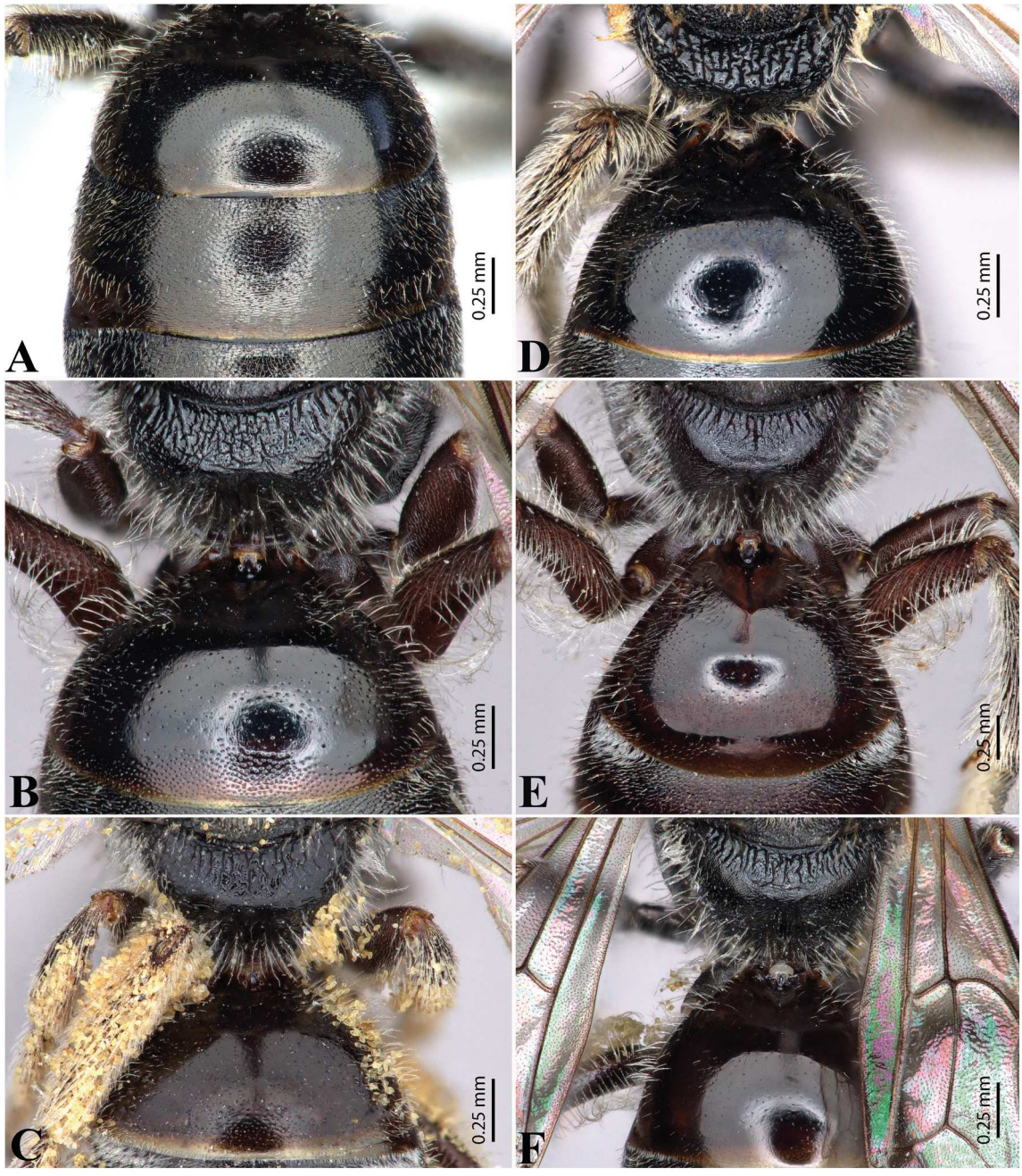


Figure 3. *Lasioglossum* spp. **A,** *L. ankoui* **n. sp.**, T1–2 of female, dorsal view. **B–F,** Propodeum and T1 of female, dorsal view: **B,** *L. pauperatum*; **C,** *L. pseudoplanulum*; **D,** *L. pygmaeum*; **E,** *L. intermedium*; **F,** *L. pressithorax*.

1870), *L. pressithorax* Ebmer, 1974, *L. semilucens* (Alfken, 1914), and *L. tarsatum* (Schenck, 1868), differ from *L. ankoui* by the impunctate or almost impunctate T1 (Figure 3E, F), which is finely and sparsely punctate in *L. ankoui*. *Lasioglossum pressithorax* can be distinguished from *L. ankoui* also by its coarser but sparser facial punctation with smooth interspaces of 0.5–1 puncture diameter (punctation contiguous to subcontiguous with shagreened interspaces in *L. ankoui*) and comparatively coarser punctures on scutum punctation, as well as by the serrate hind tibial spur (with four distinct teeth in *L. ankoui*).

The male of *L. ankoui* can be readily separated from that of *L. pygmaeum*, *L. pseudoplanulum* and *L. pauperatum* by the short and obtuse membranous lobe of the gonocoxite (Figure 4B), which is narrower, elongated ventrally and acute in *L. pygmaeum*, *L. pseudoplanulum* and *L. pauperatum* (Ebmer 2000) (Figure 4C, D) and the other species of the group not distributed in Europe (Ebmer 2000; Pesenko 2007). *Lasioglossum intermedium*,

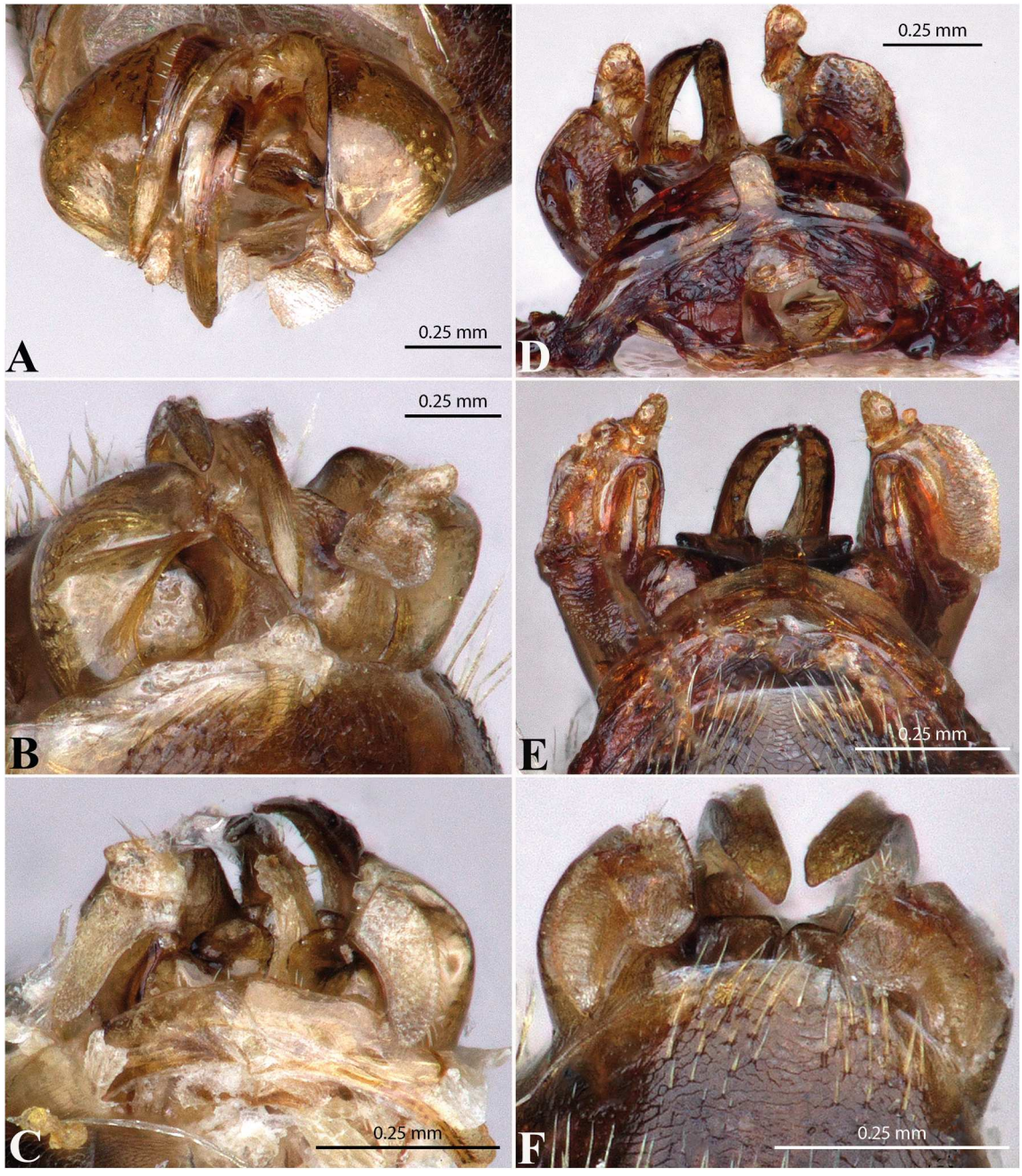


Figure 4. *Lasioglossum* spp. **A,** *L. ankoui* **n. sp.**, genital capsule of male, posterior view. **B–F,** Genital capsule of male, ventral view: **B,** *L. ankoui* **n. sp.**; **C,** *L. pauperatum*; **D,** *L. pygmaeum*; **E,** *L. intermedium*; **F,** *L. semilucens*.

L. semilucens and *L. tarsatum* differ by the shape of the basal part of the propodeum and by the form of the membranous lobe of the gonocoxite (Figure 4E, F), never obtuse in shape (Ockermüller & Ebmer 2023), and the same can be applied to *L. pressithorax* (Ebmer 1974). Finally, *L. pressithorax* can also be distinguished by the comparatively coarser punctures on scutum punctation and by the gonostyli, which in *L. ankoui* are apically directed outward (Figure 4A). The main characters to distinguish *L. ankoui* from the closely related species are summarised in Table 2.

Distribution and habitat

Lasioglossum ankoui is currently only known from northwestern Western France (Figures 5–8). In Loire-Atlantique, specimens were collected between May and September 2019 and again in July 2023 at several localities. All

Table 2. Determination table summarising the main morphological character to separate *Lasioglossum ankoui* **n. sp.** and the closely related species.

Character	*L. ankoui*	*L. intermedium*	*L. pauperatum*	*L. pygmaeum*	*L. pseudoplanulum*	*L. tarsatum*	*L. semilucens*	*L. pressithorax*
T1 (♀)	Finely and sparsely punctate	Almost impunctate	Posterior margin densely punctate	Posterior margin sparsely punctate	Posterior margin sparsely punctate	Almost impunctate	Almost impunctate	Almost impunctate
T1 (♂)	Interspace > 4–5 punctures	Almost impunctate	Interspace < 2–3 punctures	Interspace < 2–3 punctures	Interspace < 2–3 punctures	Interspace < 2–3 punctures	Interspace > 3–4 punctures	Interspace > 4–5 punctures
T2–T5 (♀)	Densely punctate, interspaces matt	Sparsely punctate, interspaces shiny	Sparsely punctate, interspaces shiny	Sparsely punctate, interspaces shiny	Sparsely punctate, interspaces shiny	Sparsely punctate, interspaces shiny	Sparsely punctate, interspaces shiny	Sparsely punctate, interspaces shiny
Membranous lobe (♂)	Almost as long as wide, apically obtuse	> 2.5 times longer than wide, apically acute	> 2.5 times longer than wide, apically acute	> 2.5 times longer than wide, apically acute	> 2.5 times longer than wide, apically acute	> 2.5 times longer than wide, apically acute	> 2.5 times longer than wide, apically acute	> 2.5 times longer than wide, apically acute

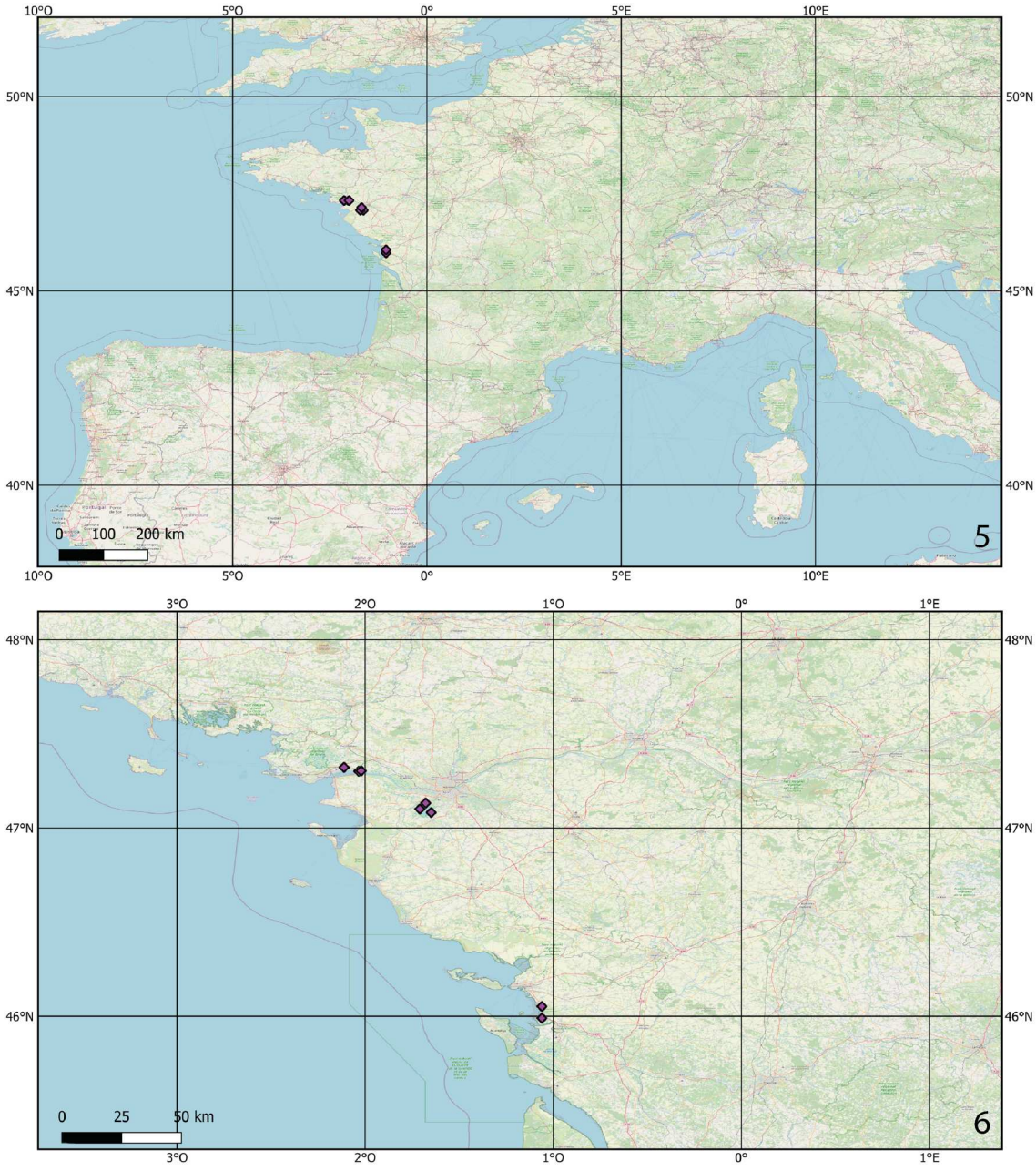
the collecting localities are part of the lake of Grand-Lieu and the Loire estuary, located close to the Brière wetland complexes. These landscapes are characterised by marshes, wet meadows, reed beds, sedge meadows and alluvial woodland, which are shaped by seasonal hydrology and agricultural mosaics (Eybert et al. 1998). At a finer scale, the species was recorded in contrasting habitats within these wetland landscapes, ranging from dry siliceous grasslands on sandy soils undergoing scrub encroachment to extensive wooded reed beds and floodplain meadows grazed seasonally. This diversity of settings points to a flexible use of both open and more structurally complex environments, in line with observations of other *Lasioglossum* associated with sandy substrates, such as *L. tarsatum*, *L. mandibulare* (Morawitz, 1866) or *L. orihuelicum* (Blüthgen, 1924), with the latter two reported to be linked to salt marsh habitats (Ebmer 1988; Pauly 2015). Additional material (two females and two males) was collected in September 2024 and June 2025 in the Réserve Naturelle Nationale du marais d'Yves (Charente-Maritime), a coastal marshland of high ecological value. One female was collected on a sandy substrate on a dyke, and two males were collected in a former salt marsh. Taken together, these records suggest that *L. ankoui* is closely associated with wetland and riparian environments of the Atlantic lowlands, possibly favouring ecotones between herbaceous meadows and humid habitats.

Molecular analysis

High-quality DNA sequences were obtained from two female specimens (accession numbers HASARD-048-24 and HASARD-049-24). In Figure 9, a maximum-likelihood tree illustrates the genetic relationships between *Lasioglossum ankoui* and related species within the subgenus *Hemihalictus*. Bootstrap support values are shown at the nodes. The molecular evidence underscores the pronounced distinctiveness of the new species, which, within the current sampling, does not cluster as the sister to any other included species. Genetic divergence between *Lasioglossum ankoui* **n. sp.** and its closest congeners ranges from 9.4% with *L. intermedium* to 16.2% with *L. tarsatum*. The new species also differs by 10.8% from *L. pauperatum*, 12.6% from *L. pseudoplanulatum*, 10.9% from *L. pygmaeum*, and 11.2% from *L. semilucens*. These levels of divergence, consistently exceeding 9%, support the recognition of *L. ankoui* **n. sp.** as a distinct evolutionary lineage.

Derivatio nominis

The species epithet "Ankou" refers to a figure from Breton folklore, traditionally considered the personification of death or a collector of souls. Ankou is often depicted as a gaunt figure in a cloak, driving a cart to collect the

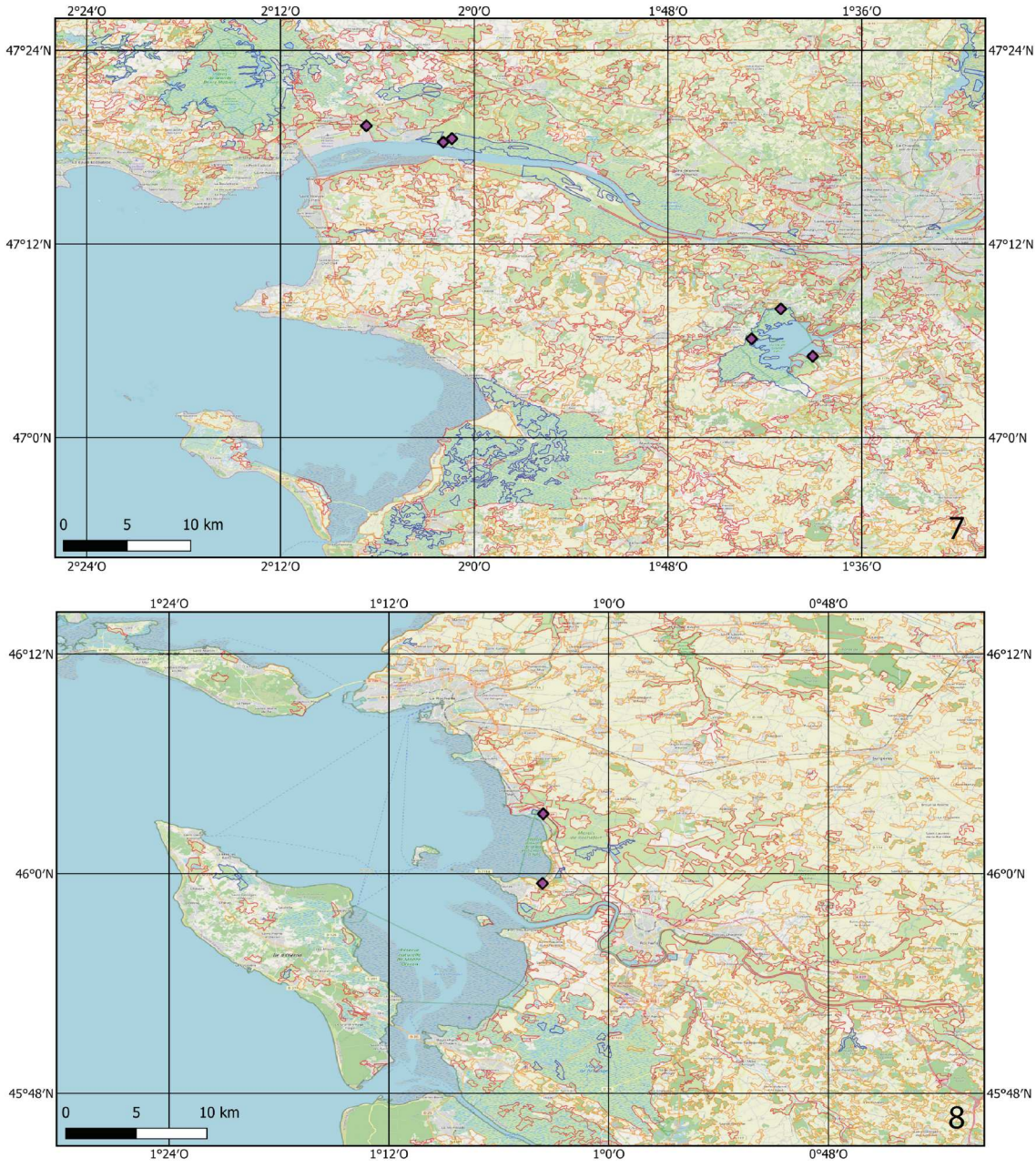


Figures 5, 6. Maps showing the recorded localities of *Lasioglossum ankoui* **n. sp.** Map QGIS version 3.40.2.

dead. The name evokes both the mysterious appearance and the elusive nature of the species, discovered in the marshy and mist-laden wetlands of western France, a region culturally connected to the Breton mythos.

Discussion

The discovery of *Lasioglossum ankoui* is a substantial addition to the French Halictidae and highlights the current gaps in our understanding of wild bee fauna in western France. The distribution is quite unusual for bees (Michez et al. 2025), even though some bee species, such as *Colletes halophilus* Verhoeff, 1944 and *Lasioglossum smeathmanellum* (Kirby, 1802), show a significant portion of their distribution restricted to the Atlantic region (Kuhlmann 2025; Flaminio et al. 2025). Some plant species are restricted to, or show a strong biogeographical affinity with, the Atlantic coast of France, where salt-laden winds, sandy soils and episodic inundation create highly specialised ecological niches (Loidi et al. 2010). Typical elements of this flora include *Sedum anglicum* Huds. (Crassulaceae), *Cochlearia anglica* L. (Brassicaceae), *Limonium normannicum* Ingr. (Plumbaginaceae), *Spergula*



Figures 7, 8. Maps showing the association between CORINE land cover 411 (bordered in blue), 211 (bordered in orange), and 231 (bordered in red) and the records of *Lasioglossum ankoui* **n. sp. 7,** Recorded localities in Loire-Atlantique department. **8,** Recorded localities in Charente-Maritime department.

rupicola (Lebel ex Le Jol.) G.López (Caryophyllaceae) and the strictly coastal fern *Asplenium marinum* L. (Bioret et al. 2011). While many of these taxa characterise exposed rocky shores and dune systems, others are more closely associated with the transiently wet, sandy depressions that punctuate the coastal plain. In the Charente-Maritime region, these micro-wetlands support halophilous and oligotrophic species like *Eryngium viviparum* J. Gay (Asteraceae).

Most occurrence points of *Lasioglossum ankoui* fall within CORINE category 4.1.1 (European Environment Agency 2020) ($n = 13$), corresponding to Inland Marshes, and within category 2.3.1 ($n = 8$), corresponding to pastures, meadows, and other permanent grasslands under agricultural use. Only two records ($n = 2$) fall within category 2.1.1, corresponding to “Non irrigated arable land”. The prevailing association with category 4.1.1, defined as “Low lying land usually flooded in winter and

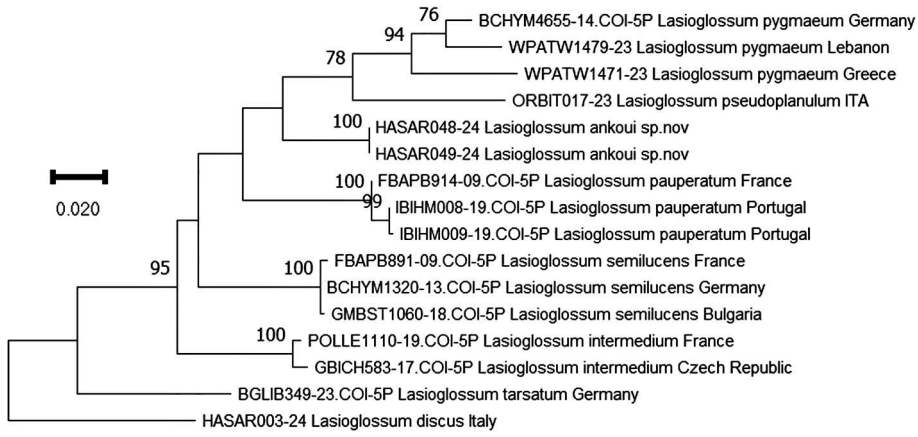


Figure 9. Maximum-likelihood tree, showing the relationships between *Lasioglossum ankoui* **n. sp.** and other related species of *Lasioglossum* (*Hemihalictus*). The percentage of replicate trees in which the associated taxa clustered together in the bootstrap test (1000 replicates) are shown above the branches. Values <70 are omitted. The evolutionary distances were computed using the maximum composite likelihood method. *Lasioglossum* (*Leuchalictus*) *discus* (Smith, 1853) was chosen as the outgroup to root the phylogenetic tree.

with ground more or less saturated by fresh water all year round" (European Environment Agency 2020), together with the proximity of the remaining records to semi-coastal or wet areas, appears to confirm a preference of *L. ankoui* for this type of habitat. The apparent restriction of the species to wetland and riparian habitats indicates a certain degree of ecological specialisation, which may account for its previous absence from regional surveys. Wetland-associated bees are comparatively rare, with only a limited number of species known to exploit such habitats, like *Lasioglossum pleurospeculum* Herrmann, 2001, *L. orihuelicum* (Blüthgen 1924), *Macropis* Panzer, 1809 and *Hylaeus nigrifacies* Bramson, 1879 (Westrich 1989; Herrmann 2001; Michez & Patiny 2005; Pauly 2015; Radchenko et al. 2025). *Epeoloides coecutiens* (Fabricius, 1775), a brood parasite associated with *Macropis*, was found in the site of lake Grand Lieu (Herbrecht et al. 2021). Molecular data confirm its distinctiveness from closely related taxa, supporting the morphological diagnosis and reinforcing the utility of combining DNA barcoding with traditional taxonomy (e.g. Praz et al. 2022). The increasing number of new bee species described and discovered from France in recent years (see introduction) indicates that national faunal inventories remain incomplete and that under-sampled habitats may hold further undiscovered taxa.

Conclusion

The description of *Lasioglossum ankoui* as a morphologically and genetically distinct species endemic to the Atlantic lowlands of western France expands current knowledge of the French Halictidae fauna. Despite recent advances, wild bee diversity in metropolitan France remains insufficiently documented. Continued field surveys and revisionary taxonomic work are therefore crucial to achieve a more complete understanding of the regional fauna and to provide a basis for conservation strategies. The occurrence of *L. ankoui* in wetland and riparian ecosystems further emphasises the ecological value of these habitats for sustaining wild bee diversity. This study contributes to clarifying the taxonomy and biogeography of French and European Halictidae, while highlighting the need for further surveys in similar Atlantic habitats across both France and the wider European Atlantic region. Furthermore, the unusual combination of *L. ankoui* being both associated with highly specialised habitats and a relatively narrow known distribution makes it an interesting biogeographical case that warrants further investigation.

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References

Aubert M, Leclercq V. 2024. *Melitta seitzi* Alfken, 1927, une nouvelle mélitte pour la faune française (Hymenoptera, Melittidae). Bulletin de la Société entomologique de France. 129(4):369–379. doi:10.32475/bsef_2366.

Bioret F, Lazare JJ, Géhu JM. 2011. Évaluation patrimoniale et vulnérabilité des associations végétales du littoral atlantique français. Le Journal de Botanique. 56:39–67. doi:10.3406/jobot.2011.1136.

Dufrêne É. 2021. Description d'une nouvelle espèce de *Nomada* Scopoli, 1770, de France (Corse) (Hymenoptera, Apidae). Bulletin de la Société entomologique de France. 126(4):437–443. doi:10.32475/bsef_2184.

Dufrêne É, Schwarz M, Smit J. 2014. Le genre *Nomada* Scopoli en France continentale et en Corse citation de 15 espèces nouvelles pour la faune de France et mise à jour de la liste taxonomique des espèces (Hymenoptera, Apoidea, Anthophila). Linzer biologische Beiträge. 46(2):1479–1490.

Ebmer AW. 1988. Kritische Liste der nicht parasitischen Halictidae Österreichs mit Berücksichtigung aller mitteleuropäischen Arten (Insecta, Hymenoptera, Apoidea, Halictidae). Linzer biologische Beiträge. 20(2):527–711.

Ebmer AW. 2000. Asiatische Halictidae 9 Die Artengruppe des *Lasioglossum pauperatum* (Insecta, Hymenoptera, Apoidea, Halictidae, Halictinae). Linzer biologische Beiträge. 32(2):399–453.

Ebmer AW, Kratschmer SA, Pachinger B. 2019. *Lasioglossum (Evylaeus) pressithorax* Ebmer, 1974 (Hymenoptera, Apidae), eine sehr seltene ostmediterran asiatische Halictidae, neu für Österreich und Mitteleuropa. Linzer biologische Beiträge. 51(1):43–53.

Eybert MC, Bernard JY, Constant P, Feunteun E, Hédin J, Questiau S. 1998. Réhabilitation des prairies inondables dans les marais briérons. Evolution de la flore, des poissons et des oiseaux. Gibier Faune Sauvage. 15(hors série tome 3):999–1016.

European Environment Agency. 2020. CORINE land cover inventory. Copenhagen, Denmark: European Environment Agency. [Accessed 4.XII.2025] https://land.copernicus.eu

Flaminio S et al. 2025. The IUCN red list of threatened species 2025 *Lasioglossum smeathmanellum* (Europe assessment), e.T19199944A222137858. doi:10.2305/IUCN.UK.2025-2.RLTS.T19199944A222137858.en.

Flaminio S, Pauly A, Cilia G, Cornuel Willermoz A, Bortolotti L, Quaranta M. 2024. *Lasioglossum inexpectatum*, a new species from Sardinia and Corsica (Hymenoptera, Apoidea, Halictidae). Osmia. 12:23–32. doi:10.47446/OSMIA12.4.

Flaminio S, Aubert M, Pauly A, Michez D. 2025. *Lasioglossum vergilianum* (Pérez, 1903), a new bee species for the fauna of France (Hymenoptera, Anthophila, Halictidae). Specimen. 46. doi:10.56222/28166531.2025.46.

Ghisbain G, Radchenko VG, Michez D. 2018. *Dasypoda morawitzi* Radchenko, 2016 (Apoidea, Melittidae, Dasypodaini), une espèce nouvelle pour la faune de France. Osmia. 7:10–13. doi:10.47446/OSMIA7.2.

Ghisbain G et al. 2023. The new annotated checklist of the wild bees of Europe (Hymenoptera, Anthophila). Zootaxa. 5327(1):1–147. doi:10.11646/zootaxa.5327.1.1.

Gibbs J, Packer L, Dumesh S, Danforth B. 2013. Revision and reclassification of *Lasioglossum (Evylaeus), L. (Hemihalictus)* and *L. (Sphecodogastra)* in eastern North America (Hymenoptera, Apoidea, Halictidae). Zootaxa. 3672:1–117. doi:10.11646/zootaxa.3672.1.1.

Harris RA. 1979. A glossary of surface sculpturing. Occasional Papers in Entomology, State of California Department of Food and Agriculture. 28:1–31.

Hebert PDN, Ratnasingham S, deWaard JR. 2004. Barcoding animal life cytochrome c oxidase subunit 1 divergences among closely related species. Proceedings of the Royal Society B Biological Sciences. 270(Suppl. 1):S96–S99. doi:10.1098/rsbl.2003.0025.

Herbrecht F, Devogel P, Garrin M, Langlois D, Mongin F, Parret A, Quindroit C, Racine A, Tissot B. 2021. Etude des hyménoptères et des diptères des réserves naturelles du lac de Grand Lieu. Rapport d'étude du GRETIA pour la Société Nationale de Protection de la Nature et la Fédération départementale des Chasseurs de Loire Atlantique. 100 p.

Herrmann MK. 2001. *Lasioglossum (Evylaeus) pleurospeculum* spec. nov. (Hymenoptera, Halictidae). Linzer biologische Beiträge. 33(2):709–721.

Kuhlmann M. 2025. The IUCN red list of threatened species 2025 *Colletes halophilus*, e.T13306686A222224564. doi:10.2305/IUCN.UK.2025-2.RLTS.T13306686A222224564.en.

Kumar S, Stecher G, Li M, Knyaz C, Tamura K. 2018. MEGA X Molecular Evolutionary Genetics Analysis across Computing Platforms. Molecular Biology and Evolution. 35(6):1547–1549. doi:10.1093/molbev/msy096.

Le Divelec R. 2020. Sur la présence en France d'*Andrena confinis* Stöckert, 1930, et d'*Osmia bidentata* Morawitz, 1876 (Hymenoptera, Andrenidae, Megachilidae). Bulletin de la

Société entomologique de France. 125(4):427–431. doi:10.32475/bsef_2176.

Le Divelec R. 2021. Sur la présence en France de certaines espèces d'Apoïdes (Hymenoptera, Andrenidae, Colletidae, Megachilidae, Psenidae). Bulletin de la Société entomologique de France. 126(1):103–122. doi:10.32475/bsef_2176.

Le Divelec R. 2024. Four new species of Megachilidae from Corsica and Sardinia (Hymenoptera, Apoidea). Annales de la Société entomologique de France (N.S.). 60(6):601–624. doi:10.1080/00379271.2024.2419083.

Litman J, Fateryga AV, Griswold TL, Aubert M, Proshchalykin MY, Le Divelec R, Burrows S, Praz C. 2022. Paraphyly and low levels of genetic divergence in morphologically distinct taxa revision of the *Pseudoanthidium scapulare* complex of carder bees (Apoidea, Megachilidae, Anthidiini). Zoological Journal of the Linnean Society. 195(4):1287–1337. doi:10.1093/zoolinnean/zlab062.

Loidi J, Biurrun I, Campos JA, García Mijangos I, Herrera M. 2010. A biogeographical analysis of the European Atlantic lowland heathlands. Journal of Vegetation Science. 21(5):832–842. doi:10.1111/j.1654-1103.2010.01204.x.

Michener CD. 2007. The Bees of the World. The Johns Hopkins University Press.

Michez D, Patiny S. 2005. World revision of the oil collecting bee genus *Macropis* Panzer 1809 (Hymenoptera, Apoidea, Melittidae) with a description of a new species from Laos. Annales de la Société entomologique de France (N.S.). 41(1):15–28. doi:10.1080/00379271.2005.10697439.

Michez D, Rasmont P, Benrezkallah J, Reverté S, de Manincor N, Sentil A, Ghisbain G. 2025. Biogeography of European bees. 120–135. In: Cilia G, Ranalli R, Zavatta L, Flaminio S, editor. Hidden and Wild An Integrated Study of European Wild Bees. Cham, Switzerland: Springer Nature; p 119–135. doi:10.1007/978-3-031-76742-5_4.

Ockermüller E, Ebmer AW. 2023. Zur Verbreitung und Bestimmung von *Lasioglossum tarsatum* (Schenck, 1868) in Österreich sowie Beschreibung des Männchens von *L. ashabadiense* (Blüthgen, 1923). Linzer biologische Beiträge. 54(2):577–599.

Pauly A. 2015. Révision de deux abeilles ouest méditerranéennes rares *Lasioglossum (Dialictus) orihuelicum* (Blüthgen, 1924) et *Lasioglossum (Dialictus) musculoides* Ebmer, 1974 (Hymenoptera, Apoidea, Halictidae). Belgian Journal of Entomology. 29:1–11.

Pauly A, Belval S. 2017. Atlas des Halictidae de France (Hymenoptera, Apoidea). Belgian Journal of Entomology. 53:1–34.

Pauly A, Noël G, Sonet G, Notton DG, Boevé JL. 2019. Integrative taxonomy resuscitates two species in the *Lasioglossum villosulum* complex (Kirby, 1802) (Hymenoptera, Apoidea, Halictidae). European Journal of Taxonomy. 541:1–43. doi:10.5852/ejt.2019.541.

Pauly A, Levy K, Noel G, Sonet G, Boevé JL. 2020. *Lasioglossum dorchini* (Hymenoptera, Apoidea, Halictidae), a new species of bee from Israel. Belgian Journal of Entomology. 105:1–24.

Pesenko YA. 2007. Subgeneric classification of the Palaearctic bees of the genus *Evylaeus* Robertson (Hymenoptera, Halictidae). Zootaxa. 1500(1):1–54. doi:10.11646/zootaxa.1500.1.1.

Praz C, Genoud D, Vaucher K, Bénon D, Monks J, Wood TJ. 2022. Unexpected levels of cryptic diversity in European bees of the genus *Andrena* subgenus *Taeniandrena* (Hymenoptera, Andrenidae) implications for conservation. Journal of Hymenoptera Research. 91:375–428. doi:10.3897/jhr.91.82761.

Radchenko VG, Chausov MG, Likhanov AF, Honchar HY, Michez D. 2025. Structural and functional co adaptation of plants of the genus *Lysimachia* L. (Primulaceae) and pollinating insects of the genus *Macropis* Panzer (Hymenoptera, Melittidae). Ecology and Evolution. 15(12):e72544. doi:10.1002/ece3.72544.

Rasmont P, Ebmer AW, Banaszak J, Van der Zanden G. 1995. Hymenoptera Apoidea Gallica. Liste taxonomique des abeilles de France, de Belgique, de Suisse et du Grand Duché de Luxembourg. Bulletin de la Société entomologique de France. 100(hors série):1–98.

Rasmont P, Genoud D, Gadoum S, Aubert M, Dufrêne É, Le Goff G, Mahé G, Michez D, Pauly A. 2017. Hymenoptera Apoidea Gallica liste des abeilles sauvages de Belgique, France, Luxembourg et Suisse. Mons Laboratoire de Zoologie Université de Mons. 15 pp.

Rasmont P, Wood T. 2024. An enigmatic Anthophorine bee from the south of France revealed as a new species *Anthophora (Paramegilla) ahlamae* n. sp. (Hymenoptera, Apidae). Annales de la Société entomologique de France (N.S.). 60(2):151–165. doi:10.1080/00379271.2024.2325688.

Ratnasingham S, Hebert PDN. 2024. BOLD the Barcode of life data system. [Accessed 2026 Feb 06]. https://www.boldsystems.org

Ropars L et al. 2025. Mise à jour de la liste des abeilles de France métropolitaine (Hymenoptera, Apocrita, Apoidea). Osmia. 13:1–48. doi:10.47446/OSMIA13.1.

Tamura K, Stecher G, Kumar S. 2021. MEGA11 molecular evolutionary genetics analysis version 11. Molecular Biology and Evolution. 38(7):3022–3027. doi:10.1093/molbev/msab120.

Westrich P. 1989. Die Wildbienen Baden Württembergs Unter besonderer Berücksichtigung der Biologie und Ökologie. Stuttgart: Eugen Ulmer Verlag.

Wood T et al. 2024. The InBIO barcoding initiative database DNA barcodes of Iberian bees. Biodiversity Data Journal. 12:e117172. doi:10.3897/BDJ.12.e117172.