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The bees (Hymenoptera: Anthophila) of the city of Viladecans (NE Iberian Peninsula): species checklist and new faunistic records

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Abstract

The bees (Hymenoptera: Anthophila) of the city of Viladecans (NE Iberian Peninsula): species checklist and new faunistic records

We provide a list of the bee species present in the city of Viladecans (NE Iberian Peninsula). The list contains 161 species, representing ca.15% of the Iberian Peninsula's fauna. These records come from an extensive and systematic sampling covering all the spatial variability in the municipality (urban and natural ecosystems) as well as the flight period of most bee species in Mediterranean ecosystems (March-October). We detected eight species of conservation interest included in the Red List of European Bees: *Colletes collaris*, *C. pulchellus*, *Trachusa interrupta*, *Anthidium cingulatum*, *Lasioglossum clypeare*, *Ammobates punctatus*, *Sphecodes olivieri*, and *S. scabricollis*. In addition, we detected two species new to the regional fauna of Catalonia (NE Spain): *Lasioglossum algericolellum* and *Nomada beaumonti*. Thus, urban ecosystems may host not only diverse bee communities but also endangered species, which represents both an opportunity and a management challenge for biodiversity managers from cities. We urge apidologists to publish standardized, comprehensive, available, and validated information on bee communities, in order to improve the knowledge on the distribution and diversity of the bee fauna.

Key words: Anthophila, Checklist, Mediterranean ecosystems, Iberian Peninsula, Urban ecosystems, Endangered species

Resum

Les abelles (Hymenoptera: Anthophila) de la ciutat de Viladecans (NE Península Ibèrica): llistat d'espècies i novetats faunístiques

Proporcionem una llista de les espècies d'abelles presents a la ciutat de Viladecans (NE Península Ibèrica). La llista conté 161 espècies, representant aproximadament el 15% de la fauna de la Península Ibèrica. Aquests registres provenen d'un mostreig extens i sistemàtic que cobreix tota la variabilitat espacial del municipi (ecosistemes urbans i naturals), així com el període de vol de la majoria de les espècies d'abelles als ecosistemes mediterranis (març-octubre). Hem detectat vuit espècies d'interès per a la conservació incloses a la Llista Vermella Europea d'Abelles: *Colletes collaris*, *C. pulchellus*, *Trachusa interrupta*, *Anthidium cingulatum*, *Lasioglossum clypeare*, *Ammobates punctatus*, *Sphecodes olivieri*, i *S. scabricollis*. A més, hem detectat dos espècies noves per a la fauna regional de Catalunya (NE Espanya): *Lasioglossum algericolellum* i *Nomada beaumonti*. Així, els ecosistemes urbans poden albergar no només comunitats diverses d'abelles, sinó també espècies amenaçades, la qual cosa representa una oportunitat però també un repte de gestió per als gestors de la biodiversitat de les ciutats. Instem els apidòlegs a publicar informació estandarditzada, completa, disponible i validada de les comunitats d'abelles, per tal de millorar el coneixement sobre la distribució i la diversitat de la fauna d'abelles.

Paraules clau: Anthophila, Checklist, Ecosistemes mediterranis, Península Ibèrica, Ecosistemes urbans, Espècies amenaçades

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Introduction

The Mediterranean basin region is known to host a remarkably high bee diversity on a global scale (the highest in Europe), and the Iberian Peninsula plays a key role (Michener 2007). This is attributed to several factors, such as its age and isolation, favourable climatic conditions and open vegetation, as well as its geographical location between North Africa and Europe (Michener 1979, Michez et al 2025). In recent years, significant progress has been made in compiling checklists of the Anthophila of the Iberian Peninsula (including Spain), with around 1,100 known species of bees (Ortiz-Sánchez 2020, Reverté et al 2023).

In spite of this, detailed bee checklists (or publicly easily available species lists) are scarce, and this hampers the study of real bee distribution and richness patterns at smaller scales other than large geographical areas or at the country level. In addition to that, the bee fauna must be studied in detail in ecosystems historically ignored by apidologists, such as urban ecosystems, for several reasons. First, because urban ecosystems may host more bee species than adjacent ecosystems, especially if the reference landscape is simplified, such as high-intensity agricultural land (Theodorou et al 2020, Youngsteadt and Keighron 2023). Second, because urban ecosystems may host a variety of unique floral and nesting resources, and serve as a refuge for several bee species inhabiting urban environments, even rare or threatened (Martins et al 2017, Lanner et al 2020, Hernández-Castellano et al 2026). Third, because European policies are fostering the restoration of urban ecosystems within cities (*e.g.,* Wilk et al 2019, European Union 2024), and therefore knowing which species inhabit them is crucial to monitor the status of the ecosystem.

In this study, we report the bee fauna of urban and natural ecosystems of the city of Viladecans, a municipality in the province of Barcelona (Catalonia, NE Iberian Peninsula). The list contains 161 species.

Material and methods

The study was carried out in the municipality of Viladecans (province of Barcelona, NE Iberian Peninsula) (41°18'58.1"N, 2°01'10.3"E) (fig. 1). The climate is Mediterranean, with an average temperature of 17ºC and an average rainfall of 591 mm. The municipality of Viladecans, of about 20 km^2, consists of an urban settlement located in the northern part of the municipality, but more than half of its extension corresponds to natural and semi-natural areas. On the one hand, the Llobregat Delta is an agricultural area containing protected wetlands, and is located in the south of the municipality. On the other hand, the Garraf mountain, with Mediterranean forests and scrubland, is located in the north of the municipality.

The study was conducted in seven urban parks and three natural areas (fig. 1), covering all the ecological variability (urban park physiognomy, vegetation structure, and floral composition) in each ecosystem type. Each sampling site was surveyed monthly, from March to October. In each sampling site, we established an irregular transect covering all the spatial variability present, including all flowering plant species. The survey consisted of plant-pollinator surveys, which

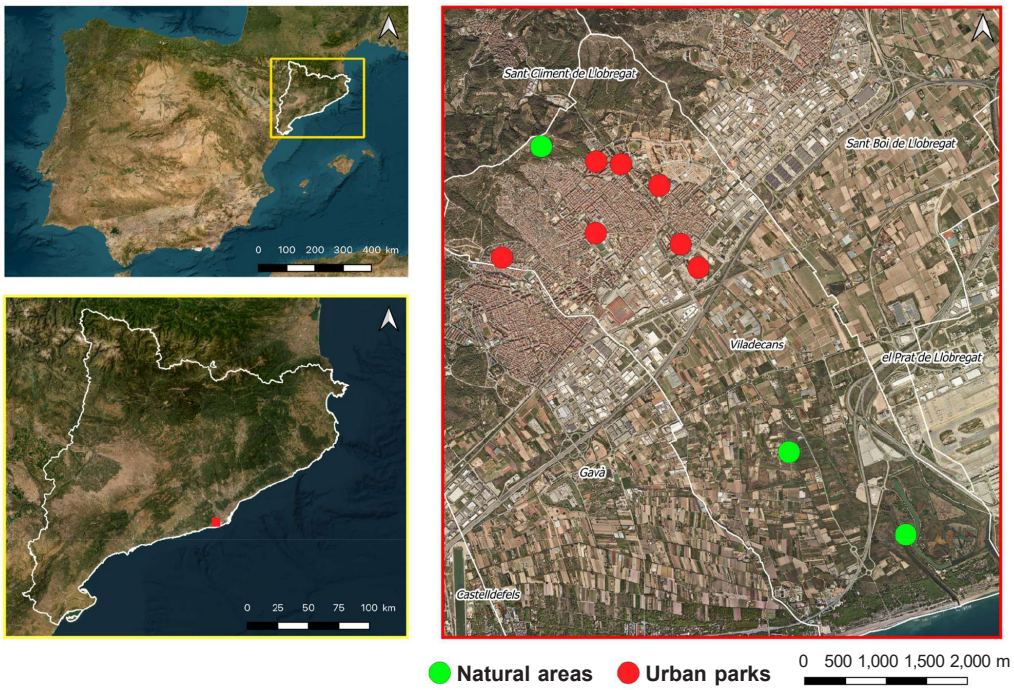

Fig. 1. Map of the study area, with sampling sites (green: natural areas, red: urban parks) highlighted.

are based on scanning all the flowers of all the flowering plant species in the sampled area, recording all the interactions with floral visitors. Surveys were carried out from 9 am to 3 pm, in weather suitable for pollinator activity. The sampling completeness for all sampling sites, which is calculated from individual rarefaction and extrapolation curves (Chao and Chiu 2016), was 96 ± 1%, meaning that the characterization of bee communities was almost perfect.

Generally, one bee of each detected morphospecies was captured in each survey. For complex taxa in which even morphospecies are difficult to distinguish (*e.g. Lasioglossum* or *Hylaeus*), several specimens were captured in each survey, normally one in each flowering plant in which these bee taxa were recorded. Specimens were pinned, labeled, and conserved in entomological collections, and finally identified to the species level in the laboratory, following the keys listed in the appendix 1. The entomological collections of this study are stored at the Wildlife Ecology and Health Lab, at the Universitat Autònoma de Barcelona (https://weh.cat/). The database containing the information of all the specimens collected can be found at Mendeley data (DOI: 10.17632/y2y4rpfpvr.1).

Results

In the list presented below, we compile all the species identified in this study, along with their currently recognized status. The reference checklist employed in this study was that of Ghisbain et al (2025), the most up-to-date and comprehensive source currently available for European wild bee species, with systematics at the family, subfamily, and tribe levels. In total, we detected 161 species.

Family Andrenidae Latreille, 1802
Tribe Andrenini Latreille, 1802
Genus *Andrena* Fabricius, 1775
Subgenus *Aenandrena* Warncke, 1968
Andrena aeneiventris Morawitz, 1872
Subgenus *Brachyandrena* Pittioni, 1948
Andrena colletiformis Morawitz, 1873
Subgenus *Chlorandrena* Pérez, 1890
Andrena cinerea Brullé, 1833
Andrena humilis Imhoff, 1832
Andrena nigroolivacea Dours, 1873
Andrena rhenana Stöckhert, 1930
Andrena senecionis Pérez, 1895
Subgenus *Chrysandrena* Hedicke, 1933
Andrena hesperia Smith, 1853
Subgenus *Euandrena* Hedicke, 1933
Andrena vulpecula Kriechbaumer, 1873
Subgenus *Melandrena* Pérez, 1890
Andrena flavipes Panzer, 1799
Andrena limata Smith, 1853
Andrena nigroaenea (Kirby, 1802)
Subgenus *Micrandrena* Ashmead, 1899
Andrena alfkenella Perkins, 1914
Andrena djelfensis Pérez, 1895
Andrena nana (Kirby, 1802)
Andrena spreta Pérez, 1895
Andrena tenuistriata Pérez, 1895
Subgenus *Plastandrena* Hedicke, 1933
Andrena agilissima (Scopoli, 1770)
Andrena pilipes Fabricius, 1781
Subgenus *Rufandrena* Warncke, 1968
Andrena orbitalis Morawitz, 1871
Subgenus *Simandrena* Pérez, 1890
Andrena propinqua Schenck, 1853
Subgenus *Taeniandrena* Hedicke, 1933
Andrena afzeliella (Kirby, 1802)

Tribe Panurgini Leach, 1815
Genus *Panurgus* Panzer, 1806
Subgenus *Panurgus* Panzer, 1806
Panurgus dentipes Latreille, 1811

Family Apidae Latreille, 1802
Tribe Ammobatini Handlirsch, 1925
Genus *Ammobates* Latreille, 1809
Ammobates punctatus (Fabricius, 1804)

Tribe Anthophorini Dahlbom, 1835
Genus *Amegilla* Friese, 1897
Subgenus *Amegilla* Friese, 1897
Amegilla garrula (Rossi, 1790)
Amegilla quadrifasciata (de Villers, 1789)
Subgenus *Zebramegilla* Brooks, 1988
Amegilla albigena (Lepeletier, 1841)
Amegilla savignyi (Lepeletier, 1841)
Amegilla talaris (Pérez, 1895)
Genus *Anthophora* Latreille, 1803
Subgenus *Anthophora* Latreille, 1803
Anthophora crinipes Smith, 1854
Anthophora plumipes (Pallas, 1772)
Subgenus *Caranthophora* Brooks, 1988
Anthophora pubescens (Fabricius, 1781)
Subgenus *Heliophila* Klug, 1807
Anthophora bimaculata (Panzer, 1798)
Subgenus *Paramegilla* Friese, 1897
Anthophora femorata (Olivier, 1789)

Tribe Apini Latreille, 1802
Genus *Apis* Linnaeus, 1758
Apis mellifera Linnaeus, 1758

Tribe Bombini Latreille, 1802
Genus *Bombus* Latreille, 1802
Subgenus *Bombus* Latreille, 1802
Bombus terrestris (Linnaeus, 1758)
Subgenus *Thoracobombus* Dalla Torre, 1880
Bombus pascuorum (Scopoli, 1763)

Tribe Ceratinini Latreille, 1802
Genus *Ceratina* Latreille, 1802
Subgenus *Ceratina* Latreille, 1802
Ceratina cucurbitina (Rossi, 1792)
Subgenus *Dalyatina* Terzo, 2007
Ceratina parvula Smith, 1854
Subgenus *Euceratina* Hirashima, Moure & Daly, 1971
Ceratina callosa (Fabricius, 1794)
Ceratina cyanea (Kirby, 1802)
Ceratina dallatorreana Friese, 1896

Tribe Epeolini Robertson, 1903
Genus *Epeolus* Latreille, 1802
Epeolus julliani Pérez, 1884

Tribe Eucerini Latreille, 1802
Genus *Eucera* Scopoli, 1770
Subgenus *Eucera* Scopoli, 1770
Eucera colaris Dours, 1873
Eucera longicornis (Linnaeus, 1758)
Eucera nigrescens Pérez, 1879
Eucera nigrilabris Lepeletier, 1841
Eucera numida Lepeletier, 1841
Eucera pollinosa Smith, 1854
Genus *Tetralonia* Spinola, 1839
Tetralonia strigata (Lepeletier, 1841)

Tribe Nomadini Latreille, 1802
Genus *Nomada* Scopoli, 1770
Subgenus *Collicula* Straka, 2024
Nomada beaumonti Schwarz, 1967
Nomada integra Brullé, 1833
Subgenus *Gestamen* Straka, 2024
Nomada panurgina Morawitz, 1868
Subgenus *Heminomada* Cockerell, 1902
Nomada bifasciata Olivier, 1811
Nomada goodeniana (Kirby, 1802)
Nomada succincta Panzer, 1798
Subgenus *Mininomada* Straka, 2024
Nomada sheppardana (Kirby, 1802)
Subgenus *Nomada* Scopoli, 1770
Nomada piccioliana Magretti, 1883

Tribe Xylocopini Latreille, 1802
Genus *Xylocopa* Latreille, 1802
Subgenus *Xylocopa* Latreille, 1802
Xylocopa valga Gerstäcker, 1872

Family Colletidae Lepeletier, 1841
Tribe Colletini Latreille, 1802
Genus *Colletes* Latreille, 1802
Colletes abeillei Pérez, 1903
Colletes acutus Pérez, 1903
Colletes collaris Dours, 1872
Colletes nigricans Gistel, 1857
Colletes pulchellus Pérez, 1903
Colletes succinctus (Linnaeus, 1758)

Tribe Hylaeini Viereck, 1916
Genus *Hylaeus* Fabricius, 1793
Subgenus *Dentigera* Popov, 1939
Hylaeus brevicornis Nylander, 1852
Hylaeus imparilis Förster, 1871
Subgenus *Lambdopsis* Popov, 1939
Hylaeus annularis (Kirby, 1802)
Hylaeus dilatatus (Kirby, 1802)
Subgenus *Paraprosopis* Popov, 1939
Hylaeus clypearis (Schenck, 1853)
Hylaeus pictipes Nylander, 1852
Hylaeus taeniolatus Förster, 1871
Subgenus *Prosopis* Fabricius, 1804
Hylaeus coriaceus (Pérez, 1895)
Hylaeus gibbus Saunders, 1850
Hylaeus pictus (Smith, 1853)
Subgenus *Spatulariella* Popov, 1939
Hylaeus punctatus (Brullé, 1833)

Family Halictidae Thomson, 1869
Tribe Halictini Thomson, 1869
Genus *Halictus* Latreille, 1804
Subgenus *Halictus* Latreille, 1804
Halictus brunnescens (Eversmann, 1852)
Subgenus *Hexataenites* Pesenko, 1984
Halictus fulvipes (Klug, 1817)
Halictus scabiosae (Rossi, 1790)

Genus *Lasioglossum* Curtis, 1833
Subgenus *Dialictus* Robertson, 1902
Lasioglossum aureolum (Pérez, 1903)
Lasioglossum morio (Fabricius, 1793)
Lasioglossum nitidulum (Fabricius, 1804)
Subgenus *Hemihalictus* Cockerell, 1897
Lasioglossum clypeare (Schenck, 1853)
Lasioglossum griseolum (Morawitz, 1872)
Lasioglossum ibericum Ebmer, 1975
Lasioglossum limbellus (Morawitz, 1875)
Lasioglossum minutissimum (Kirby, 1802)
Lasioglossum pauperatum (Brullé, 1833)
Lasioglossum pseudoplanulum (Blüthgen, 1924)
Lasioglossum punctatissimum (Schenck, 1853)
Lasioglossum transitorium (Schenck, 1868)
Lasioglossum truncaticolle (Morawitz, 1877)
Lasioglossum villosulum (Kirby, 1802)
Subgenus *Leuchalictus* Warnke, 1975
Lasioglossum callizonium (Pérez, 1895)
Lasioglossum leucozonium (Schrank, 1781)
Lasioglossum zonulus (Smith, 1848)
Subgenus *Pyghalictus* Warncke, 1975
Lasioglossum glabriusculum (Morawitz, 1872)
Lasioglossum politum (Schenck, 1853)
Subgenus *Sphecodogastra* Ashmead, 1899
Lasioglossum algericolellum (Strand, 1909)
Lasioglossum interruptum (Panzer, 1798)
Lasioglossum malachurum (Kirby, 1802)
Lasioglossum mediterraneum (Blüthgen, 1926)
Lasioglossum nigripes (Lepeletier, 1841)
Lasioglossum pauxillum (Schenck, 1853)
Genus *Seladonia* Robertson, 1918
Subgenus *Mucoreohalictus* Pesenko, 2004
Seladonia pollinosa (Sichel, 1860)
Subgenus *Seladonia* Robertson, 1918
Seladonia gemmea (Dours, 1872)
Seladonia smaragdula species complex[1]
Seladonia subaurata (Rossi, 1792)
Genus *Sphecodes* Latreille, 1804
Sphecodes alternatus Smith, 1853
Sphecodes ephippius (Linnaeus, 1767)
Sphecodes olivieri Lepeletier, 1825
Sphecodes niger von Hagens, 1874
Sphecodes puncticeps Thomson, 1870
Sphecodes scabricollis Wesmael, 1865

Tribe Nomiini Robertson, 1904
Genus *Nomiapis* Kirby, 1900
Nomiapis diversipes (Latreille, 1806)

Family Megachilidae Latreille, 1802
Tribe Anthidiini Ashmead, 1899
Genus *Anthidiellum* Cockerell, 1904
Anthidiellum strigatum (Panzer, 1805)

[1] Species complex that in our region (Catalonia, NE Iberian Peninsula) includes *Seladonia smaragdula* (Vachal, 1895), *Seladonia submediterranea* Pauly, 2015, and probably *Seladonia gemmella* Pauly, 2015 (see Pauly et al 2015), with indistinguishable females (only the males are distinguishable).

Genus *Anthidium* Fabricius, 1804
Subgenus *Anthidium* Fabricius, 1804
Anthidium cingulatum Latreille, 1809
Anthidium florentinum (Fabricius, 1775)
Anthidium loti Perris, 1852
Anthidium manicatum (Linnaeus, 1758)
Subgenus *Proanthidium* Friese, 1898
Anthidium oblongatum (Illiger, 1806)
Genus *Pseudoanthidium* Friese, 1898
Subgenus *Pseudoanthidium* Friese, 1898
Pseudoanthidium scapulare (Latreille, 1809)
Genus *Rhodanthidium* Isensee, 1927
Subgenus *Rhodanthidium* Isensee, 1927
Rhodanthidium septemdentatum (Latreille, 1809)
Genus *Stelis* Panzer, 1806
Subgenus *Stelis* Panzer, 1806
Stelis breviuscula (Nylander, 1848)
Stelis punctulatissima (Kirby, 1802)
Genus *Trachusa* Panzer, 1804
Subgenus *Paraanthidium* Friese, 1898
Trachusa interrupta (Fabricius, 1781)

Tribe Megachilini Latreille, 1802
Genus *Coelioxys* Latreille, 1809
Subgenus *Allocoelioxys* Tkalců, 1974
Coelioxys afer Lepeletier, 1841
Coelioxys argenteus Lepeletier, 1841
Coelioxys echinatus Förster, 1853
Subgenus *Rozeniana* Rocha-Filho, 2016
Coelioxys aurolimbatus Förster, 1853
Genus *Megachile* Latreille, 1802
Subgenus *Callomegachile* Michener, 1962
Megachile sculpturalis Smith, 1853
Subgenus *Creightonella* Cockerell, 1908
Megachile albisecta (Klug, 1817)
Subgenus *Eutricharaea* Thomson, 1872
Megachile apicalis Spinola, 1808
Megachile argentata (Fabricius, 1793)
Megachile leachella Curtis, 1828
Megachile pusilla Pérez, 1884
Megachile rotundata (Fabricius, 1787)
Subgenus *Megachile* Latreille, 1802
Megachile centuncularis (Linnaeus, 1758)
Megachile melanopyga Costa, 1863
Megachile pilicrus Morawitz, 1877
Megachile versicolor Smith, 1844
Subgenus *Pseudomegachile* Friese, 1898
Megachile ericetorum Lepeletier, 1841
Subgenus *Xanthosarus* Robertson, 1903
Megachile willughbiella (Kirby, 1802)

Tribe Osmiini Newman, 1834
Genus *Heriades* Spinola, 1808
Subgenus *Heriades* Spinola, 1808
Heriades crenulata Nylander, 1856
Heriades rubicola Pérez, 1890
Genus *Hoplitis* Klug, 1807
Subgenus *Alcidamea* Cresson, 1864
Hoplitis leucomelana (Kirby, 1802)

Subgenus *Hoplitis* Klug, 1807
Hoplitis adunca (Panzer, 1798)
Hoplitis benoisti (Alfken, 1935)
Genus *Osmia* Panzer, 1806
Subgenus *Allosmia* Tkalců, 1974
Osmia rufohirta Latreille, 1811
Subgenus *Erythrosmia* Schmiedeknecht, 1885
Osmia andrenoides Spinola, 1808
Subgenus *Helicosmia* Thomson, 1872
Osmia aurulenta (Panzer, 1799)
Osmia caerulescens (Linnaeus, 1758)
Osmia dimidiata Morawitz, 1870
Osmia latreillei (Spinola, 1806)
Osmia niveata (Fabricius, 1804)
Subgenus Metallinella Tkalců, 1966
Osmia brevicornis (Fabricius, 1798)
Subgenus *Osmia* Panzer, 1806
Osmia bicornis (Linnaeus, 1758)
Osmia emarginata Lepeletier, 1841
Subgenus *Pyrosmia* Tkalců, 1975
Osmia submicans Morawitz, 1870
Genus *Protosmia* Ducke, 1900
Subgenus *Chelostomopsis* Cockerell, 1925
Protosmia capitata (Schletterer, 1889)

Family Melittidae Schenck, 1860
Tribe Melittini Schenck, 1860
Genus *Melitta* Kirby, 1802
Melitta leporina (Panzer, 1799)

Discussion

We found 161 bee species, representing approximately 15 % of the known Iberian Peninsula fauna (Ortiz-Sánchez 2020, Reverté et al 2023). This result is surprising, since our study area covered just 20 km^2, and consisted mainly of anthropogenic habitats. Other studies in our region (NE Iberian Peninsula) have found similar species richness in comparable areas (Torné-Noguera et al 2014, Osorio-Canadas et al 2016), suggesting that local α-diversity of bees (or γ-diversity in smaller regions) is very high in virtually every type of Mediterranean ecosystem (Michener 1979).

Only in urban parks, we found a total of 115 bee species. This result also suggests that even heavily anthropized ecosystems can support a significant amount of bee diversity (Tsang et al 2025) and a considerable proportion of the species from the geographical region. Two non-excluding mechanisms can explain this pattern. On the one hand, a wide range of bees may be able to tolerate the environmental conditions of urban ecosystems (for instance, generalist or cavity-nesting bees) (Fauviau et al 2022). On the other hand, urban ecosystems may host plenty of flowering and nesting resources, allowing the development of complex bee communities (Hall et al 2016). In our study system, urban ecosystems hosted a diverse array of bees comprising very different biological features and ecological requirements, from eusocial supergeneralist species (*e.g., Apis mellifera*) to solitary oligolectic bees (*e.g., Andrena orbitalis*, *Melitta leporina*). We also found the exotic species *Megachile sculpturalis*, which gathers pollen almost exclusively from the ornamental tree *Styphnolobium japonicum* Schott 1830 (Lanner et al *in preparation*). Urban ecosystems are therefore potential scenarios for exotic species, including bees, where they may transition to an invasive status (Fitch et al 2019, Ruszkowski and Mola 2025).

In our study, we detected eight species from the European Red List of Bees (Michez et al 2026). **1)** *Colletes collaris*, within the category 'Endangered'. *C. collaris* is broadly oligolectic on Asteroideae and Cichorioideae (Asteraceae) (Müller and Kuhlmann 2008). *C. collaris* was found in an urban park in September and October, foraging on *Dittrichia viscosa* Greuter 1973 and *Salvia rosmarinus* (Spenn., 1835). **2)** *Colletes pulchellus*, **3)** *Trachusa interrupta*, within the category 'Vulnerable'. *C. pulchellus* is polylectic with a strong preference for Fabaceae (Müller and Kuhlmann 2008), whereas *T. interrupta* is oligolectic on Dipsacaceae (Baldock et al 2018). *C. pulchellus* was found in a natural area in July, foraging on *Lotus dorycnium* L. *Trachusa interrupta* was found in one urban park in June and two natural areas in June and July. In the urban park we detected territorial males on a naturalized slope full of native wild flowers. In natural areas, we detected the species foraging on *Scabiosa atropurpurea* L., 1753, *Medicago sativa* L., 1753, *Lotus dorycnium*, and *Cirsium monspessulanum* (L.) Hill. **4)** *Anthidium cingulatum*, **5)** *Lasioglossum clypeare*, within the category 'Near Threa-

tened'. *A. cingulatum* is polylectic (Baldock et al 2018), whereas *L. clypeare* is polylectic with a preference for Lamiaceae (Westrich 2019). *A. cingulatum* was found in an urban park in August foraging in *Ballota nigra* L., 1753 and in a natural area in July foraging on *Medicago sativa*, *Salvia rosmarinus*, and *Spartium junceum* L., 173. *L. clypeare* was found in a natural area, in June, foraging on *Stachys ocymastrum* (L.) Briq. **6)** *Ammobates punctatus*, **7)** *Sphecodes olivieri*, and **8)** *Sphecodes scabricollis*, within the category 'Near Threatened'. These three species are cuckoo bees. *A. punctatus* parasitizes *Anthophora bimaculata*, while *S. olivieri* and *S. scabricollis* parasitizes several species of *Lasioglossusm* and *Halictus*, with unknown hosts in the Iberian Peninsula (Bogusch and Straka 2012, Scheuchl and Willner 2016). We found *A. punctatus* in an urban park, in June, flying over bare soil, where a large population of *A. bimaculata*, its host, was present. We found both species of *Sphecodes* in a natural area, in July, foraging on *Lotus dorycnium*.

These observations on endangered species have two important implications for conservation. First, urban ecosystems host endangered bee species of conservation priority, and thus conservation measures such as habitat protection and monitoring must be taken also in urban ecosystems such as urban parks. Second, bee species of conservation priority present in urban ecosystems depend on non-managed habitats such as bare soil and slopes, as well as on native flowering plant species such as weeds (spontaneous herbs) and shrubs. Therefore, biodiversity managers in cities must ensure the improvement of populations of bee species of conservation priority by 1) decreasing human pressure on natural areas and 2) rewilding urban parks (see *e.g.* Pardee and Philpott 2014, Lehmann 2021) by fostering seminatural habitats and native vegetation (Dylewski et al 2019, Lowenstein et al 2019).

Finally, according to Ceballos (1956), Bartomeus et al (2022), GBIF.org (2025), and Sentil et al (2026), we detected two species new to the regional fauna of Catalonia: *Lasioglossum algericolellum* and *Nomada beaumonti*.

Conclusions

We urge the scientific community and apidologists across the Iberian Peninsula to publish standardized and comprehensive information on bee communities at local and regional scales, and to make this information easily available for the public (academic, administration, and citizens), in order to improve the knowledge on the distribution and diversity of the bee fauna. This information 1) may be based on scientific studies, monitoring schemes, or naturalistic activity, 2) must contain essential data of specimens (what, where, when), 3) must be (and it should be able to be) validated by taxonomic experts (in many cases species identity can only be revealed with specimens in entomological collections), and when possible 4) it should be accompanied by relevant ecological information to predict responses or improve species conservation (*e.g.* interactions with flowers, habitats, etc.).

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Appendix 1

List of taxonomic references used in this study to identify bee specimens.

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