

NEW REGIONAL CONTRIBUTIONS TO THE KNOWLEDGE OF THE PORTUGUESE BEE FAUNA (HYMENOPTERA: ANTHOPHILA)

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Abstract: Recent contributions with reviews at the national scale and occasional discoveries set the number of mainland Portuguese bee species at 720. However, regional edaphoclimatic singularities and sampling effort differences suggest there is an urgent need to expand sampling efforts to largely unexplored regions. *Beira Baixa* (central part of the Portuguese interior) is one of the most poorly studied regions in Portugal concerning its bee fauna. Here, we report a list of bee species sampled during ecological research in an agroecosystem in *Beira Baixa* during an entire year using non-targeted netting and targeted captures. The present work reports 131 first records for the region (compared to a baseline of 134 species), one species new for the Portuguese fauna and one species recently described as new to science. This study highlights the need for detailed studies in unexplored areas to update the checklist and bee species distribution in Portugal.

Key words: Hymenoptera, Anthophila, wild bees, checklist, faunistics, Beira Baixa, Portugal.

Nuevas aportaciones regionales al conocimiento de la fauna portuguesa de abejas (Hymenoptera: Anthophila)

Resumen: Aportaciones recientes con revisiones a escala nacional y descubrimientos ocasionales sitúan el número de especies de abejas del Portugal continental en 720. Sin embargo, las peculiaridades edafoclimáticas regionales y las diferencias en el esfuerzo de muestreo sugieren que hay una urgente necesidad de expandir los esfuerzos de muestreo a regiones en gran parte inexploradas. *Beira Baixa* (parte central del interior portugués) es una de las regiones menos estudiadas de Portugal en cuanto a su fauna de abejas. Aquí, presentamos una lista de especies de abejas, muestreadas durante todo un año en el marco de investigación ecológica en un agroecosistema de *Beira Baixa* utilizando capturas no dirigidas y dirigidas con red entomológica. El presente trabajo reporta 131 primeras citas para la región (en comparación con los registros históricos de 134 especies), un registro nuevo para la fauna portuguesa y una especie recientemente descrita como nueva para la ciencia. Este estudio pone de manifiesto la necesidad de estudios detallados en áreas inexploradas para actualizar la lista de especies y la distribución de especies de abejas en Portugal.

Palabras clave: Hymenoptera, Anthophila, abejas silvestres, listado de especies, faunística, Beira Baixa, Portugal.

Introduction

Portugal is located in the Mediterranean basin, one of the world's hotspots for bee species richness (Michener, 2007). Interest in the bee fauna of Portugal was recently revitalised by the publication of the most comprehensive checklist to date at the national level (Portuguese mainland only), listing 680 taxa (Baldock *et al.*, 2018). Furthermore, this number has been updated with taxonomic corrections and the addition of new species, not only for Portugal but also for science, with the current total for the mainland reaching 720 taxa (Litman *et al.*, 2022; Praz *et al.*, 2022; Soares *et al.*, 2022; Wood *et al.*, 2020, 2021; Wood & Le Divelec, 2022; Wood & Ortiz-Sánchez, 2022). However, there are significant differences in the sampling effort among regions, with *Beira Baixa* (in the Portuguese interior) being the most poorly sampled region of mainland Portugal (Wood *et al.*, 2020).

Currently, the available data at the national level primarily results from significant historical contributions, especially by M. de A. Diniz (Coimbra, Portugal), predominantly during the middle of the last century, and from the visit of specialists that sampled mostly around the popular touristic regions for short periods, in most cases during personal vacations, since the beginning of this century (Baldock *et al.*, 2018).

Due to the paucity of local Portuguese bee specialists and the scarcity of taxonomic research on Iberian bees, the knowledge of the bee fauna has been mainly dependent on naturalists and their personal collections and ecological targeted academic studies with significant sampling (Baldock *et al.*, 2018). The latter studies usually test different factors and sometimes consider larger temporal and/or spatial scales than occasional individual collections and, thus, have the potential to contribute relevant data on the bee fauna if the sampled specimens are identified taxonomically to the species level.

In this paper, we report observations of bee species that resulted from a systematic study aimed at evaluating plant-pollinator interactions, pollinator and plant diversity and abundance, and food and nesting resources, in a complex agroecosystem in *Beira Baixa*, during an entire year from an ecological perspective.

Materials and methods

The study was conducted in an agricultural mosaic in Vale de Prazeres, Fundão, Castelo Branco, Portugal (40.100584, -7.404935, altitude 460 m a.s.l., digital degrees obtained from Google Earth online in WGS84), located south of

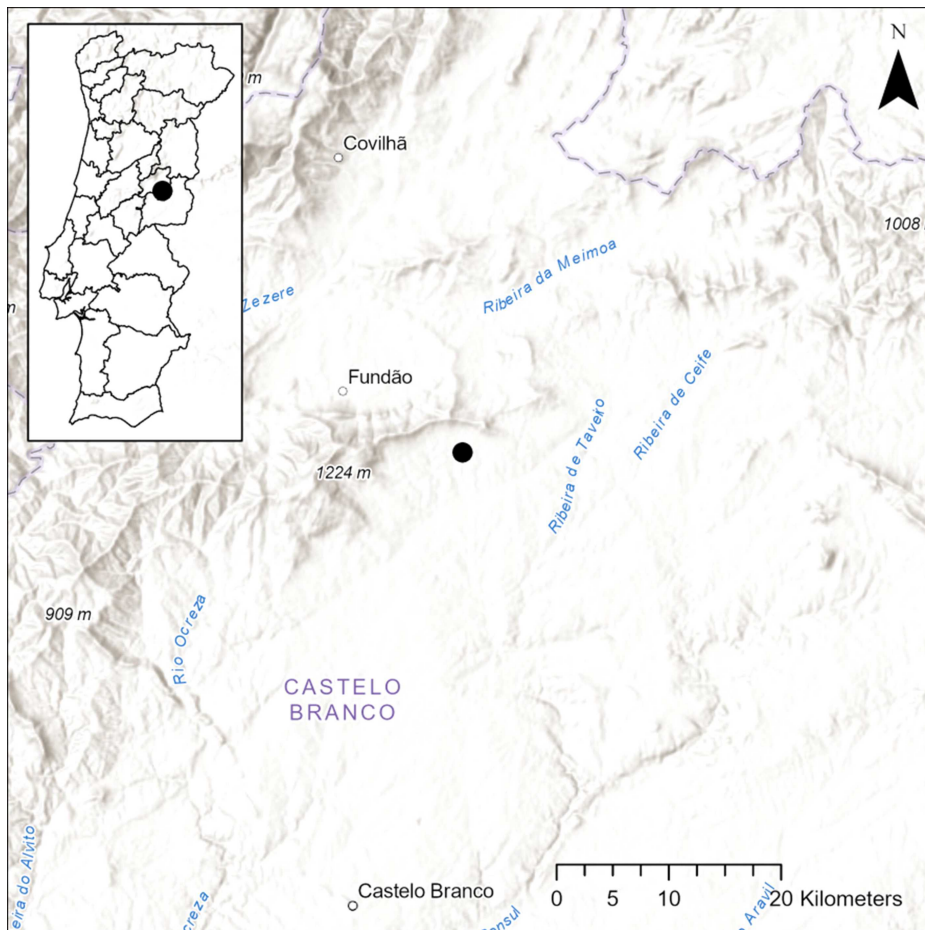


Fig. 1. Location of the study site. The inset map in the left upper corner shows its position in Portugal, with administrative divisions being based on NUTS3. // Ubicación del área de estudio. El mapa del recuadro muestra su posición en Portugal, con divisiones administrativas según NUTS3.

Serra da Gardunha (Fig.1.). The study area is located in *Cova da Beira* based on NUTS3 or in *Beira Baixa* based on the province classification used in Baldock *et al.* (2018). Data collection was made around 40 ha and included surveys in several habitats of diverse plant communities, including a sweet cherry orchard, an olive grove, a vineyard, hedgerows, pine forest, open shrubland, shrubland dominated by *Cistus* sp., semi-natural habitat, annual grasslands, permanent grasslands, riparian areas and invasive species forest.

Insects were sampled using non-targeted sweep netting and targeted individual catches based on visual inspection of the vegetation. For the non-targeted sampling, the specimens were captured in random transects within the above-mentioned habitats using a net with a 35 cm Ø opening and 5 mm mesh in the surroundings of flower resources. In targeted individual catches, insects were captured at the time they were visiting a floral resource. These methodologies were applied for 2-4 days each month between February 2021 and January 2022. All the habitats were visited and sampled monthly.

All the specimens were collected by the field team responsible for the work, credited as Catarina Siopa, Hugo Gaspar, Sara Lopes and Sílvia Castro. At the moment of this publication, all the specimens are deposited in the entomological collection of the FLOWer lab, Centre for Functional Ecology, Department of Life Sciences, University of Coimbra, Portugal, except one specimen of *Andrena (Taenidrendra) lusitania* Wood & Ortiz-Sánchez 2022 ♂, which will be deposited in the Oberösterreichisches Landesmuseum in Linz (Austria).

Additionally, a total of 164 specimens were selected for biological material extraction for DNA barcode analysis – marked here with the specimen number (INV"number"), within the scope of another project that will provide barcode data on the Portuguese bee fauna.

The identification of each specimen was made by H. Gaspar (895 specimens, 91.5%) and T. Wood (83 specimens, 8.5%) by analysing the morphology of the specimens under magnification (maximum 50×) with a binocular microscope.

Results

In this study, we collected 978 specimens (889 with sweeping net and 89 with targeted catches), representing 213 species from each of the six known families in Portugal's bee fauna as summarised in Table I. A total of 131 species are new to *Beira Baixa* (marked below with *), one to the Portuguese entomofauna (listed below with **) – *Macropis (Macropis) fulvipes* (Fabricius, 1804) – and one has recently been described as new to science (listed below with ***) – *Andrena (Taenidrendra) lusitania* Wood & Ortiz-Sánchez, 2022. The total number of bee species recorded from *Beira Baixa* now stands at 279, being now the fourth Portuguese province with highest bee diversity (before it was at the 11th place; Wood *et al.*, 2020), illustrating the major contribution that focused studies can make to our understanding of local and regional bee faunas.

Table I. Summary of the families and genera sampled here, including the number of genera and species detected and the number of specimens collected. // Resumen de las familias y géneros encontrados, con indicación del número de géneros y especies detectados y el número de ejemplares recogidos. Spe: Species; Speci: Specimens

Family	Genera	Spe	Speci
Andrenidae	3 <i>Andrena</i> , <i>Flavipanurgus</i> , <i>Panurgus</i>	55	264
Apidae	10 <i>Amegilla</i> , <i>Ammobates</i> , <i>Anthophora</i> , <i>Apis</i> , <i>Bombus</i> , <i>Ceratina</i> , <i>Eucera</i> , <i>Melecta</i> , <i>Nomada</i> , <i>Tetralonia</i> , <i>Xylocopa</i>	53	224
Colletidae	2 <i>Colletes</i> , <i>Hylaeus</i>	15	57
Halictidae	6 <i>Dufourea</i> , <i>Halictus</i> , <i>Lasioglossum</i> , <i>Nomiapis</i> , <i>Nomioides</i> , <i>Sphecodes</i>	48	264
Megachilidae	12 <i>Afranthidium</i> , <i>Anthidiellum</i> , <i>Anthidium</i> , <i>Coelioxys</i> , <i>Heriades</i> , <i>Hoplitis</i> , <i>Icteranthidium</i> , <i>Megachile</i> , <i>Osmia</i> , <i>Protosmia</i> , <i>Pseudoanthidium</i> , <i>Stelis</i>	38	156
Melittidae	2 <i>Dasydoda</i> , <i>Macropis</i>	4	13

Species list

ANDRENIDAE

Genus *Andrena* Fabricius, 1775

****Andrena (Plastandrena) agilissima* (SCOPOLI, 1770)**

18.iv.2021, 3♂ (INV13382), 1♀, det. H. Gaspar; 16.iv.2021, 1♂ det. H. Gaspar.

****Andrena (Micrandrena) alfenella* PERKINS, 1914**

17.v.2021, 2♂, det. T. Wood and H. Gaspar.

***Andrena (Micrandrena) ampla* WARNCKE, 1967**

19.v.2021, 1♀, det. T. Wood.

***Andrena (Euandrena) bicolor* FABRICIUS, 1775**

15.ii.2021, 1♀, det. H. Gaspar; 22.ii.2021, 1♀, det. H. Gaspar; 19.v.2021, 1♀, det. H. Gaspar.

***Andrena (Plastandrena) bimaculata* (KIRBY, 1802)**

10.iii.2021, 1♀ (INV13398), det. H. Gaspar; 16.iii.2021, 1♀, det. H. Gaspar; 19.v.2021, 1♀, det. T. Wood.

***Andrena (Melandrena) cineraria* (LINNAEUS, 1758)**

16.iv.2021, 1♀, det. H. Gaspar.

****Andrena (Chlorandrena) cinerea* BRULLÉ, 1832**

18.v.2021, 1♀, det. T. Wood.

***Andrena (Micrandrena) fabrella* PÉREZ, 1903**

18.iv.2021, 1♀, det. T. Wood.

***Andrena (Micrandrena) fulsifica* PERKINS, 1915**

10.iii.2021, 1♀, det. H. Gaspar.

****Andrena (Truncandrena) ferrugineicrus* DOURS, 1872**

15.iii.2021, 4♀, det. H. Gaspar.

***Andrena (Melandrena) flavipes* PANZER, 1799**

12.ii.2021, 1♀, det. H. Gaspar; 13.ii.2021, 4♂ det. H. Gaspar; 22.ii.2021, 1♀, det. H. Gaspar; 10.iii.2021, 1♂, 1♀, det. H. Gaspar; 15.iii.2021, 1♂, det. T. Wood; 17.iii.2021, 1♂ (INV13392), det. H. Gaspar; 17.v.2021, 1♀, det. H. Gaspar; 18.v.2021, 1♂, 1♀, det. H. Gaspar; 22.vi.2021, 2♂ det. H. Gaspar.

****Andrena (incertae sedis) florea* FABRICIUS, 1793**

18.iv.2021, 1♂ det. H. Gaspar; 19.iv.2021, 1♀, det. H. Gaspar; 19.v.2021, 2♀, det. H. Gaspar.

****Andrena (Melandrena) florentina* MAGRETTI, 1883**

14.ii.2021, 3♂ (INV13387), det. T. Wood and H. Gaspar; 22.ii.2021, 1♀ (INV13394), det. H. Gaspar; 16.iii.2021, 2♀, det. H. Gaspar; 17.iii.2021, 1♀, det. H. Gaspar.

***Andrena (Aciandrena) fulica* WARNCKE, 1974**

18.iv.2021, 1♂, 1♀ (INV13379), det. T. Wood and H. Gaspar.

****Andrena (Andrena) fulva* (MÜLLER, 1766)**

19.iv.2021, 1♀, det. H. Gaspar.

***Andrena (Euandrena) granulosa* PÉREZ, 1902**

10.iii.2021, 1♀, det. T. Wood; 15.iii.2021, 1♀, det. T. Wood; 16.iv.2021, 1♂, det. T. Wood.

****Andrena (Aenandrena) hedikae* JÄGER, 1934**

20.v.2021, 1♀ (INV13418), det. T. Wood.

****Andrena (Chrysandrena) hesperia* SMITH, 1853**

17.iv.2021, 1♂, det. T. Wood; 18.iv.2021, 2♂ (INV13376), det. H. Gaspar; 18.v.2021, 1♀, det. T. Wood; 19.v.2021, 1♀, det. T. Wood.

***Andrena (Chlorandrena) humilis* IMHOFF, 1832**

17.iv.2021, 1♀, det. T. Wood; 18.v.2021, 1♀, det. T. Wood; 20.v.2021, 1♂, det. T. Wood.

***Andrena (Euandrena) impressa* WARNCKE, 1967**

19.v.2021, 1♂, det. T. Wood.

****Andrena (Poecilandrena) labiata* FABRICIUS, 1781**

17.iii.2021, 1♀, det. T. Wood.

***Andrena (Biareolina) lagopus* LATREILLE, 1809**

12.ii.2021, 1♂, det. H. Gaspar; 14.ii.2021, 5♂ (INV13396), 1♀ det. H. Gaspar; 11.iii.2021, 1♀ det. H. Gaspar; 15.iii.2021, 4♂ (INV13389), det. H. Gaspar; 16.iii.2021, 1♂, det. H. Gaspar; 17.iii.2021, 2♂, det. H. Gaspar; 17.iv.2021, 1♀, det. H. Gaspar.

****Andrena (Leucandrena) leptopyga* PÉREZ, 1895**

16.iii.2021, 1♂, det. T. Wood; 18.iv.2021, 1♂ (INV13371), det. T. Wood; 19.iv.2021, 1♂, det. H. Gaspar.

***Andrena (Chlorandrena) leucolippa* PÉREZ, 1895**

17.v.2021, 2♂, 1♀, det. T. Wood and H. Gaspar; 18.v.2021, 1♀, det. T. Wood; 24.vi.2021, 1♀, det. T. Wood.

****Andrena (Melandrena) limata* SMITH, 1853**

17.iii.2021, 1♀, det. H. Gaspar; 19.v.2021, 1♀ (INV13386), det. T. Wood; 22.vi.2021, 1♀ (INV13384), det. T. Wood.

***Andrena (incertae sedis) limbata* EVERS-MANN, 1852**

17.iv.2021, 1♂, 1♀, det. H. Gaspar; 18.iv.2021, 2♂, 1♀, det. H. Gaspar; 19.iv.2021, 1♂, det. H. Gaspar.

****Andrena (Micrandrena) longibarbis* PÉREZ, 1895**

16.iii.2021, 2♂, det. H. Gaspar; 17.iii.2021, 1♂, 3♀ (INV13422), det. T. Wood and H. Gaspar.

******Andrena (Taeniandrena) lusitania* WOOD & ORTIZ-SÁNCHEZ 2022**

15.iii.2021, 1♂, det. T. Wood.

***Andrena (Micrandrena) mariana* WARNCKE, 1968**

First observed male of ssp. *alma* Warncke, 1975.

12.ii.2021, 1♂, det. H. Gaspar; 15.iii.2021, 1♂, det. T. Wood; 17.iv.2021, 1♀ (INV13377), det. T. Wood; 18.iv.2021, 1♀, det. T. Wood.

***Andrena (Micrandrena) minutula KIRBY, 1802**

13.ii.2021, 1♂, det. H. Gaspar; 14.ii.2021, 4♂, 1♀ (INV13407), det. T. Wood and H. Gaspar; 15.ii.2021, 2♂, det. H. Gaspar; 22.ii.2021, 4♀, det. T. Wood; 11.iii.2021, 1♂, det. H. Gaspar; 15.iii.2021, 2♀, det. H. Gaspar; 17.iii.2021, 1♀, det. H. Gaspar; 17.v.2021, 1♀, det. T. Wood; 18.v.2021, 1♀, det. T. Wood.

***Andrena (Melandrena) morio BRULLÉ, 1832**

17.iii.2021, 1♂ (INV13380), det. H. Gaspar; 16.iv.2021, 1♀, det. H. Gaspar; 17.iv.2021, 1♀ (INV13381), det. H. Gaspar.

Andrena (Micrandrena) nana (KIRBY, 1802)

14.ii.2021, 2♂ (INV13404), det. H. Gaspar; 10.iii.2021, 1♀, det. H. Gaspar; 15.iii.2021, 3♀ (INV13406), det. T. Wood; 18.iv.2021, 1♀, det. H. Gaspar.

***Andrena (Melandrena) nigroaenea (KIRBY, 1802)**

12.ii.2021, 1♂, det. H. Gaspar; 13.ii.2021, 1♀, det. H. Gaspar; 14.ii.2021, 3♂, 2♀, det. H. Gaspar; 15.ii.2021, 2♀, det. H. Gaspar; 23.ii.2021, 2♀, det. H. Gaspar; 17.iii.2021, 1♂, 1♀, det. H. Gaspar.

***Andrena (Rufandrena) orbitalis MORAWITZ, 1871**

16.iii.2021, 1♂, det. T. Wood; 17.iii.2021, 1♂ (INV13425), det. T. Wood; 18.iv.2021, 1♂, 2♀ (INV13374), det. T. Wood and H. Gaspar; 19.iv.2021, 1♂ (INV13373), det. H. Gaspar.

Andrena (Taeniandrena) ovatula (KIRBY, 1802)

12.ii.2021, 1♂, det. T. Wood; 15.ii.2021, 1♂, det. T. Wood; 10.iii.2021, 1♀, det. T. Wood; 15.iii.2021, 1♂, det. T. Wood; 16.iii.2021, 1♀ (INV13429), det. T. Wood; 17.iii.2021, 3♀ (INV13414), det. T. Wood and H. Gaspar; 25.vi.2021, 1♂ (INV13426), det. T. Wood.

***Andrena (incertae sedis) oiventris PÉREZ, 1895**

17.iv.2021, 1♂, det. T. Wood; 19.iv.2021, 1♂ (INV13378), det. T. Wood; 18.v.2021, 1♀, det. T. Wood.

***Andrena (Plastandrena) pilipes FABRICIUS, 1781**

17.iii.2021, 2♀, det. H. Gaspar; 18.iv.2021, 1♀, det. H. Gaspar; 22.vi.2021, 1♂, det. H. Gaspar; 23.vi.2021, 2♂, det. H. Gaspar.

***Andrena (Andrena) praecox (SCOPOLI, 1763)**

22.ii.2021, 1♀ (INV13395), det. H. Gaspar and T. Wood.

***Andrena (Simandrena) propinqua SCHENCK, 1853**

23.ii.2021, 1♂, det. T. Wood; 16.iii.2021, 1♂, 1♀, det. T. Wood; 17.iii.2021, 6♀ (INV13423, INV13410), det. T. Wood and H. Gaspar; 18.iv.2021, 1♀ (INV13417), det. T. Wood; 22.vi.2021, 1♂ (INV13427), det. T. Wood.

***Andrena (Chlorandrena) rhenana STOECKHERT, 1930**

15.iii.2021, 1♂ (INV13413), det. T. Wood.

Andrena (Chlorandrena) rhyssonota PÉREZ, 1895

19.iv.2021, 2♂, 2♀ (INV13372), det. T. Wood and H. Gaspar; 18.v.2021, 3♀, det. T. Wood and H. Gaspar.

Andrena (Taeniandrena) russula LEPELETIER, 1841

10.iii.2021, 2♂ (INV13408), det. T. Wood; 15.iii.2021, 1♀, det. T. Wood; 18.iv.2021, 1♀ (INV13375), det. H. Gaspar.

***Andrena (Micrandrena) simontomyella NOSKIEWICZ, 1939**

23.ii.2021, 1♀, det. T. Wood; 10.iii.2021, 1♀, det. H. Gaspar; 18.v.2021, 1♀, det. H. Gaspar.

Andrena (Micrandrena) spreta PÉREZ, 1895

14.ii.2021, 1♂, 1♀, det. H. Gaspar; 15.ii.2021, 2♂, det. H. Gaspar; 23.ii.2021, 1♂, det. H. Gaspar; 11.iii.2021, 1♀, det. H. Gaspar; 16.iii.2021, 1♂, 3♀ (INV13415), det. T. Wood and H. Gaspar; 17.iii.2021, 1♂, 4♀ (INV13416), det. H. Gaspar; 18.iv.2021, 1♀, det. H. Gaspar; 17.v.2021, 2♂, det. T. Wood and H. Gaspar; 18.v.2021, 1♂, det. H. Gaspar; 19.v.2021, 1♂, det. H. Gaspar; 20.v.2021, 2♂, det. H. Gaspar.

***Andrena (Suandrena) suerinensis FRIESE, 1884**

15.iii.2021, 4♂, det. T. Wood and H. Gaspar; 17.iii.2021, 1♂, det. H. Gaspar.

***Andrena (Melandrena) thoracica FABRICIUS, 1775**

22.ii.2021, 1♂ (INV13391), det. H. Gaspar; 17.iii.2021, 1♀, det. H. Gaspar.

***Andrena (Hoplandrena) trimmerana (KIRBY, 1802)**

22.vi.2021, 1♀, det. T. Wood.

***Andrena (Graecandrena) verticalis PÉREZ, 1895**

19.v.2021, 1♂, det. H. Gaspar.

***Andrena (Truncandrena) villipes PÉREZ, 1895**

16.iii.2021, 1♂, det. H. Gaspar; 17.iv.2021, 1♂, det. T. Wood.

Genus Flavipanurgus Warncke, 1972

***Flavipanurgus kastiliensis (WARNCKE, 1987)**

17.iv.2021, 1♂, 2♀ (INV13322), det. H. Gaspar.

Genus Panurgus Panzer, 1806

Panurgus (Panurgus) banksianus (KIRBY, 1802)

18.iv.2021, 1♀, det. H. Gaspar; 19.iv.2021, 1♂, 2♀ (INV13324), det. H. Gaspar.

Panurgus (Panurgus) calcaratus (SCOPOLI, 1763)

18.v.2021, 3♂, 3♀, det. H. Gaspar; 19.v.2021, 1♀ (INV13323), det. H. Gaspar; 23.vi.2021, 1♀, det. H. Gaspar.

Panurgus (Pachycephalopanurgus) canescens LATREILLE, 1811

17.v.2021, 1♂, det. H. Gaspar; 22.vi.2021, 1♂, det. H. Gaspar; 23.vi.2021, 2♀, det. H. Gaspar.

Panurgus (Panurgus) cephalotes LATREILLE, 1811

18.v.2021, 1♂, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

Panurgus (Panurgus) perezi SAUNDERS, 1881

17.v.2021, 1♂, det. H. Gaspar; 18.v.2021, 3♂, det. H. Gaspar; 19.v.2021, 1♂, det. H. Gaspar; 23.vi.2021, 1♂, 1♀, det. H. Gaspar; 15.vii.2021, 1♂, 1♀, det. H. Gaspar; 20.vii.2021, 1♀, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

Apidae

Genus Amegilla Friese, 1897

Amegilla (Zebramegilla) albigena (LEPELETIER, 1841)

25.vi.2021, 1♂, det. H. Gaspar; 19.vii.2021, 1♀, det. H. Gaspar; 10.viii.2021, 4♂ (INV13344), det. H. Gaspar; 14.x.2021, 1♀, det. H. Gaspar.

Genus Ammobates Latreille, 1809

***Ammobates (Ammobates) vinctus GERSTÄCKER, 1869**

21.vii.2021, 4♂ (INV13337), det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

Genus Anthophora Latreille, 1803

***Anthophora (Pyganthophora) atroalba LEPELETIER, 1841**

16.iii.2021, 2♂, 1♀, det. H. Gaspar; 17.iii.2021, 1♂, det. H. Gaspar; 16.iv.2021, 1♂, det. H. Gaspar; 17.iv.2021, 1♂, 1♀, det. H. Gaspar; 18.iv.2021, 4♀ (INV13334), det. H. Gaspar.

Anthophora (Heliophila) bimaculata (PANZER, 1798)

23.vi.2021, 1♀ (INV13332), det. H. Gaspar; 14.x.2021, 1♂, det. H. Gaspar.

***Anthophora (Anthophora) crinipes SMITH, 1854**

17.iv.2021, 1♂ (INV13331), det. H. Gaspar; 19.v.2021, 1♀ (INV13335), det. H. Gaspar

***Anthophora (Lophanthophora) dispar LEPELETIER, 1841**

13.ii.2021, 1♂, det. H. Gaspar; 15.ii.2021, 4♂, det. H. Gaspar; 15.iii.2021, 2♀, det. H. Gaspar; 17.v.2021, 1♀ (INV13330), det. H. Gaspar.

***Anthophora (Heliophila) fulvodimidiata DOURS, 1869**

17.v.2021, 1♂, det. H. Gaspar.

**Anthophora (Lophanthophora) hispanica* (FABRICIUS, 1787)
22.ii.2021, 1♀ (INV13329), det. H. Gaspar.

**Anthophora (Pyganthophora) romandii* DOURS, 1869
10.iii.2021, 1♂, det. H. Gaspar.

Genus *Apis* Linnaeus, 1758

Apis (Apis) mellifera Linnaeus 1758

Present all year around.

13.ii.2021, 1♀, det. H. Gaspar; 18.iv.2021, 1♂, det. H. Gaspar.

Genus *Bombus* Latreille, 1802

Bombus (Megabombus) hortorum (LINNAEUS, 1761)

11.iii.2021, 1♀, det. H. Gaspar; 19.v.2021, 3♀, det. H. Gaspar;
22.vi.2021, 1♂, det. H. Gaspar.

Bombus (Bombus) terrestris (LINNAEUS, 1758)

15.ii.2021, 1♂, det. H. Gaspar; 11.iii.2021, 1♀, det. H. Gaspar; 19.v.
2021, 1♀ (INV13234), det. H. Gaspar; 18.i.2022, 1♀, det. H. Gaspar.

Bombus (Psithyrus) vestalis (GEOFFROY, 1785)

13.ii.2021, 1♀ (INV13233), det. H. Gaspar.

Genus *Ceratina* Latreille, 1802

Ceratina (Euceratina) chalcites GERMAR, 1839

19.v.2021, 1♀, det. H. Gaspar; 21.vii.2021, 1♀ (INV13258), det.
H. Gaspar; 9.viii.2021, 1♀, det. H. Gaspar; 10.viii.2021, 1♀, det.
H. Gaspar.

**Ceratina (Euceratina) chalybea* CHEVRIER, 1872

19.vii.2021, 1♀, det. H. Gaspar; 20.vii.2021, 1♀, det. H. Gaspar.

Ceratina (Ceratina) cucurbitina (ROSSI, 1792)

15.ii.2021, 1♂, det. H. Gaspar; 10.iii.2021, 1♂, det. H. Gaspar;
15.iii.2021, 2♂, det. H. Gaspar; 18.iv.2021, 2♂, det. H. Gaspar;
19.v.2021, 1♀, det. H. Gaspar; 24.vi.2021, 1♀, det. H. Gaspar;
21.vii.2021, 1♀, det. H. Gaspar.

Ceratina (Euceratina) cyanea (KIRBY, 1802)

17.v.2021, 1♀, det. H. Gaspar; 18.v.2021, 1♀, det. H. Gaspar;
20.v.2021, 1♂, det. H. Gaspar; 24.vi.2021, 1♀, det. H. Gaspar;
25.vi.2021, 1♀, det. H. Gaspar; 19.vii.2021, 1♂ (INV13254), 2♀
(INV13252), det. H. Gaspar; 9.viii.2021, 1♂, 2♀, det. H. Gaspar.

**Ceratina (Euceratina) dallatorreana* FRIESE, 1896

19.vii.2021, 1♀ (INV13255), det. H. Gaspar.

Ceratina (Euceratina) mocsaryi FRIESE, 1896

17.v.2021, 1♂, det. H. Gaspar; 24.vi.2021, 1♀, det. H. Gaspar;
19.vii.2021, 1♂ (INV13253), det. H. Gaspar; 20.vii.2021, 1♂, det.
H. Gaspar; 9.viii.2021, 1♂ (INV13257), det. H. Gaspar.

Ceratina (Euceratina) nigrolabiata FRIESE, 1896

20.v.2021, 2♂, det. H. Gaspar; 22.vi.2021, 1♂, 1♀, det. H. Gaspar;
9.viii.2021, 1♀, det. H. Gaspar; 10.viii.2021, 2♀ (INV13256), det.
H. Gaspar.

Genus *Eucera* Scopoli, 1770

**Eucera (Eucera) barbiventris* PÉREZ, 1902

10.iii.2021, 1♂, det. H. Gaspar; 11.iii.2021, 1♂, det. H. Gaspar;
15.iii.2021, 2♂ (INV13239), det. H. Gaspar.

**Eucera (Eucera) cineraria* EVERS MANN, 1852

17.v.2021, 1♀ (INV13247), det. H. Gaspar; 19.v.2021, 1♂, det. H.
Gaspar; 20.v.2021, 1♂ (INV13243), det. H. Gaspar; 22.vii.2021,
1♀, det. H. Gaspar.

**Eucera (Eucera) collaris* DOURS, 1873

17.iii.2021, 1♀ (INV13237), det. H. Gaspar.

**Eucera (Eucera) dalmatica* LEPELETIER, 1841

Locally very abundant.

19.v.2021, 2♂, 2♀, det. H. Gaspar; 20.v.2021, 3♂ (INV13236),
2♀, det. H. Gaspar; 22.vi.2021, 1♀ (INV13235), det. H. Gaspar.

**Eucera (Eucera) elongatula* VACHAL, 1907

16.iii.2021, 2♂ (INV13241, INV13242), 1♀, det. H. Gaspar.

**Eucera (Eucera) nigrescens* (PÉREZ, 1879)

17.iii.2021, 2♂ (INV13250), det. H. Gaspar; 18.iv.2021, 2♂
(INV13240), 1♀ (INV13246), det. H. Gaspar; 18.v.2021, 1♀
(INV13248), det. H. Gaspar.

**Eucera (Eucera) nigrilabris* LEPELETIER, 1841

14.ii.2021, 4♂, det. H. Gaspar; 15.ii.2021, 1♂, det. H. Gaspar;
10.iii.2021, 1♂, det. H. Gaspar; 17.iii.2021, 4♀, det. H. Gaspar.

**Eucera (Eucera) notata* LEPELETIER, 1841

10.iii.2021, 4♂, det. H. Gaspar; 17.iii.2021, 1♂, det. H. Gaspar;
16.iv.2021, 1♀, det. H. Gaspar; 18.iv.2021, 2♂ (INV13245), det.
H. Gaspar; 17.v.2021, 1♀, det. H. Gaspar; 18.v.2021, 4♀
(INV13244), det. H. Gaspar.

**Eucera (Eucera) pollinosa* SMITH, 1854

17.iv.2021, 1♂, det. H. Gaspar; 19.v.2021, 1♀, det. H. Gaspar.

Genus *Melecta* Latreille, 1802

**Melecta (Melecta) festiva* LIEFTINCK, 1980

15.iii.2021, 1♂ (INV13336), det. H. Gaspar.

Genus *Nomada* Scopoli, 1770

**Nomada agrestis* FABRICIUS, 1787

17.iii.2021, 2♂ (INV13265), det. H. Gaspar.

**Nomada basalis* HERRICH-SCHÄFFER, 1839

19.v.2021, 1♀ (INV13270), det. H. Gaspar.

**Nomada bifasciata* OLIVIER, 1811

19.iv.2021, 1♀, det. H. Gaspar.

**Nomada discrepans* SCHMIEDEKNECHT, 1882

11.iii.2021, 2♀, det. H. Gaspar; 16.iii.2021, 3♂ (INV13259), 3♀
(INV13260), det. T. Wood and H. Gaspar.

**Nomada duplex* SMITH, 1854

14.ii.2021, 1♂ (INV13264), det. H. Gaspar.

**Nomada fallax* PÉREZ, 1913

20.v.2021, 1♀, det. H. Gaspar.

**Nomada femoralis* MORAWITZ, 1869

19.iv.2021, 1♂, 2♀, det. H. Gaspar.

**Nomada flavoguttata* (KIRBY, 1802)

12.ii.2021, 1♂, det. H. Gaspar; 15.ii.2021, 2♂, det. H. Gaspar.

**Nomada glaucopis* PÉREZ, 1890

16.iii.2021, 1♂ (INV13263), det. H. Gaspar.

**Nomada integra* BRULLÉ, 1832

20.v.2021, 1♂ (INV13266), det. H. Gaspar.

**Nomada linsenmaieri* SCHWARZ, 1974

20.v.2021, 1♂ (INV13267), det. H. Gaspar.

**Nomada merceti* ALFKEN, 1909

22.vi.2021, 3♂, 5♀, det. H. Gaspar; 23.vi.2021, 2♀, det. H. Gaspar;
24.vi.2021, 3♂, 2♀, det. H. Gaspar.

**Nomada nobilis* HERRICH-SCHÄFFER, 1839

17.iv.2021, 1♀ (INV13262), det. H. Gaspar.

Nomada sanguinea SMITH, 1854

20.v.2021, 2♀, det. H. Gaspar; 22.v.2021, 5♀ (INV13271), det. H.
Gaspar.

**Nomada sexfasciata* (PANZER, 1799)

18.iv.2021, 1♀, det. H. Gaspar; 19.iv.2021, 1♀, det. H. Gaspar;
20.v.2021, 1♀ (INV13269), det. H. Gaspar.

**Nomada sheppardana* (KIRBY, 1802)

18.iv.2021, 2♀, det. H. Gaspar.

***Nomada similis MORAWITZ, 1872**

23.vii.2021, 1♀, det. H. Gaspar.

***Nomada succincta PANZER, 1798**

15.ii.2021, 1♀ (INV13261), det. H. Gaspar; 15.iii.2021, 1♀, det. H. Gaspar.

Genus Tetralonia Spinola, 1838

***Tetralonia (Tetralonia) iberica (DUSMET, 1926)**

22.vii.2021, 1♂, det. H. Gaspar; 21.vii.2021, 3♂, 1♀, det. H. Gaspar; 10.viii.2021, 6♂, 5♀ (INV13251), det. H. Gaspar.

Genus Xylocopa Latreille, 1802

Xylocopa (Rhysoxylocopa) cantabrita LEPELETIER, 1841

23.ii.2021, 1♂, det. H. Gaspar; 10.iii.2021, 1♂, det. H. Gaspar; 15.iii.2021, 3♂, det. H. Gaspar; 17.iv.2021, 1♀, det. H. Gaspar; 16.ix.2021, 1♂, det. H. Gaspar.

***Xylocopa (Copoxyta) iris (CHRIST, 1791)**

21.vii.2021, 1♀ (INV13231), det. H. Gaspar.

Xylocopa (Xylocopa) violacea (LINNAEUS, 1758)

22.vi.2021, 1♂ (INV13232), det. H. Gaspar; 10.viii.2021, 1♀, det. H. Gaspar.

COLLETIDAE

Genus Colletes Latreille, 1802

Colletes albomaculatus (LUCAS, 1849)

16.iv.2021, 1♀, det. H. Gaspar; 18.v.2021, 1♂ (INV13308), det. H. Gaspar.

***Colletes cunicularius (LINNAEUS, 1761)**

22.ii.2021, 5♂, det. H. Gaspar; 16.iii.2021, 2♀, det. H. Gaspar.

***Colletes hylaeiformis EVERSMAAN, 1852**

21.vii.2021, 6♂ (INV13309), 1♀, det. H. Gaspar; 10.viii.2021, 3♂, 2♀, det. H. Gaspar.

***Colletes nigricans GISTEL, 1857**

17.v.2021, 1♀ (INV13310), det. H. Gaspar.

***Colletes noskiewiczii COCKERELL, 1942**

15.x.2021, 1♀, det. H. Gaspar.

Genus Hylaeus Fabricius, 1793

***Hylaeus (Lambdopsis) annularis (KIRBY, 1802)**

18.iv.2021, 1♀, det. H. Gaspar; 19.v.2021, 1♂, det. H. Gaspar; 21.vii.2021, 1♂ (INV13320), 1♀, det. H. Gaspar; 10.viii.2021, 3♀, det. H. Gaspar.

***Hylaeus (Paraprosopis) clypearis (SCHENCK, 1853)**

19.v.2021, 2♂, 2♀, det. H. Gaspar; 21.vii.2021, 1♀, det. H. Gaspar; 10.viii.2021, 1♀, det. H. Gaspar; 16.ix.2021, 1♂, det. H. Gaspar; 17.ix.2021, 1♀, det. H. Gaspar.

***Hylaeus (Abrupta) cornutus CURTIS, 1831**

10.viii.2021, 1♂ (INV13315), det. H. Gaspar.

***Hylaeus (Hylaeus) difformis (EVERSMANN, 1852)**

22.vi.2021, 1♂, det. H. Gaspar.

Hylaeus (Prosopis) gibbus SAUNDERS, 1850

17.iv.2021, 1♂, det. H. Gaspar; 23.vi.2021, 1♀, det. H. Gaspar; 17.ix.2021, 1♀, det. H. Gaspar.

Hylaeus (Spatulariella) hyalinatus SMITH, 1843

19.v.2021, 1♂, det. H. Gaspar.

***Hylaeus (Prosopis) meridionalis FÖRSTER, 1871**

22.vi.2021, 1♂, 1♀, det. H. Gaspar; 24.vi.2021, 1♂, det. H. Gaspar; 19.vii.2021, 2♂, det. H. Gaspar; 21.vii.2021, 2♂, 1♀, det. H. Gaspar.

***Hylaeus (Paraprosopis) pictipes NYLANDER, 1852**

21.vii.2021, 1♀ (INV13319), det. H. Gaspar; 10.viii.2021, 1♀ (INV13314), det. H. Gaspar.

***Hylaeus (Prosopis) variegatus (FABRICIUS, 1798)**

10.viii.2021, 1♂ (INV13317), 1♀, det. H. Gaspar.

Hylaeus (Hylaeus) sp.

10.viii.2021, 1♂ (INV13316), det. H. Gaspar.

HALICTIDAE

Genus Dufourea Lepeletier, 1841

***Dufourea (Dentirophites) gaullei VACHAL, 1897**

17.iv.2021, 1♂, 1♀, det. H. Gaspar; 18.iv.2021, 3♂, 1♀, det. H. Gaspar; 17.v.2021, 1♂ (INV13293), det. H. Gaspar; 18.v.2021, 1♀, det. H. Gaspar.

Genus Halictus Latreille, 1804

Halictus (Halictus) fulvipes (KLUG, 1817)

17.iii.2021, 3♀, det. H. Gaspar; 18.iv.2021, 1♀, det. H. Gaspar; 18.v.2021, 3♀, det. H. Gaspar; 19.v.2021, 1♀, det. H. Gaspar; 20.v.2021, 1♀, det. H. Gaspar; 22.vi.2021, 2♂, 2♀, det. H. Gaspar; 23.vi.2021, 1♀, det. H. Gaspar; 24.vi.2021, 1♂, 1♀, det. H. Gaspar; 10.viii.2021, 2♂, 1♀, det. H. Gaspar; 17.ix.2021, 2♂, det. H. Gaspar.

Halictus (Seladonia) gemmeus DOURS, 1872

23.vi.2021, 1♂, 3♀, det. H. Gaspar; 24.vi.2021, 1♀, det. H. Gaspar; 15.vii.2021, 2♂, 1♀, det. H. Gaspar; 10.viii.2021, 3♂, det. H. Gaspar.

***Halictus (Vestitohalictus) pollinosus SICHEL, 1860**

17.v.2021, 1♀, det. H. Gaspar; 24.vi.2021, 1♂, det. H. Gaspar; 19.vii.2021, 1♂, det. H. Gaspar; 21.vii.2021, 2♂ (INV13276), det. H. Gaspar.

Halictus (Halictus) quadricinctus (FABRICIUS, 1776)

17.iv.2021, 1♀, det. H. Gaspar; 18.iv.2021, 1♀, det. H. Gaspar; 22.vi.2021, 3♂, det. H. Gaspar

***Halictus (Halictus) quadripartitus BLÜTHGEN, 1924**

10.viii.2021, 1♂ (INV13274), det. H. Gaspar.

Halictus (Halictus) scabiosae (ROSSI, 1790)

18.v.2021, 1♀, det. H. Gaspar; 22.vi.2021, 1♂, det. H. Gaspar; 20.vii.2021, 1♀, det. H. Gaspar.

Halictus (Seladonia) smaragdulus VACHAL, 1895

23.vi.2021, 2♂, 1♀, det. H. Gaspar; 24.vi.2021, 1♂, 1♀, det. H. Gaspar; 25.vi.2021, 1♂, det. H. Gaspar; 17.ix.2021, 1♂, det. H. Gaspar.

Halictus (Seladonia) subauratus (ROSSI, 1792)

19.v.2021, 2♀ (INV13277), det. H. Gaspar; 20.v.2021, 1♀, det. H. Gaspar; 23.vi.2021, 1♂, 1♀, det. H. Gaspar; 21.vii.2021, 2♀, det. H. Gaspar; 10.viii.2021, 1♂, 3♀, det. H. Gaspar.

Genus Lasioglossum Curtis, 1833

Lasioglossum (Lasioglossum) albocinctum (LUCAS, 1849)

13.ii.2021, 1♀, det. H. Gaspar; 18.v.2021, 2♀, det. H. Gaspar; 19.v.2021, 1♀, det. H. Gaspar; 20.v.2021, 1♀, det. H. Gaspar; 22.vi.2021, 1♀, det. H. Gaspar; 24.vi.2021, 1♂, det. H. Gaspar; 15.vii.2021, 1♀, det. H. Gaspar; 21.vii.2021, 1♂, det. H. Gaspar; 9.viii.2021, 1♂, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

***Lasioglossum (Dialictus) aureolum (PÉREZ, 1903)**

11.xii.2021, 1♀, det. H. Gaspar.

***Lasioglossum (Lasioglossum) bimaculatum (DOURS, 1872)**

15.iii.2021, 1♀, det. H. Gaspar; 17.iv.2021, 1♀, det. H. Gaspar; 18.iv.2021, 4♀ (INV13287), det. H. Gaspar; 17.v.2021, 2♀, det. H. Gaspar; 18.v.2021, 2♀, det. H. Gaspar; 19.v.2021, 1♀, det. H. Gaspar; 23.vi.2021, 1♀, det. H. Gaspar.

Lasioglossum (Hemihalictus) brevicorne (SCHENCK, 1868)

10.iii.2021, 2♀, det. H. Gaspar; 11.iii.2021, 1♀, det. H. Gaspar; 16.iii.2021, 1♀, det. H. Gaspar; 17.iii.2021, 3♀, det. H. Gaspar; 18.iv.2021, 2♀, det. H. Gaspar; 17.v.2021, 3♀, det. H. Gaspar; 18.v.2021, 1♀, det. H. Gaspar; 22.vi.2021, 1♂, det. H. Gaspar;

24.vi.2021, 1♂, det. H. Gaspar; 25.vi.2021, 1♂, 1♀, det. H. Gaspar; 20.vii.2021, 1♀, det. H. Gaspar; 16.ix.2021, 1♂, 1♀, det. H. Gaspar; 15.x.2021, 1♂, det. H. Gaspar; 15.xii.2021, 1♂, det. H. Gaspar.

Lasioglossum (Hemihalictus) buccale (PÉREZ, 1903)

10.iii.2021, 1♀, det. H. Gaspar; 23.vi.2021, 1♂ (INV13281), det. H. Gaspar.

****Lasioglossum (Lasioglossum) callizonium (PÉREZ, 1895)***

15.iii.2021, 1♀, det. H. Gaspar; 19.iv.2021, 1♀, det. H. Gaspar; 23.vi.2021, 2♀, det. H. Gaspar.

****Lasioglossum (Hemihalictus) corvinum (Morawitz, 1878)***

14.x.2021, 1♂, det. H. Gaspar; 18.xi.2021, 1♀, det. H. Gaspar.

Lasioglossum (Lasioglossum) costulatum (KRIECHBAUMER, 1873)

17.v.2021, 1♀, det. H. Gaspar; 20.v.2021, 1♀, det. H. Gaspar; 15.vii.2021, 1♂, det. H. Gaspar.

****Lasioglossum (Lasioglossum) discum (SMITH, 1853)***

15.vii.2021, 1♂, det. H. Gaspar; 21.vii.2021, 1♀ (INV13291), det. H. Gaspar; 10.viii.2021, 1♀, det. H. Gaspar; 16.ix.2021, 1♀, det. H. Gaspar.

****Lasioglossum (Sphecodogastra) dusmeti (BLÜTHGEN, 1924)***

18.v.2021, 1♂ (INV13288), det. H. Gaspar.

****Lasioglossum (Hemihalictus) griseolum (MORAWITZ, 1872)***

23.vi.2021, 1♂, det. H. Gaspar; 9.viii.2021, 1♀, det. H. Gaspar; 10.viii.2021, 1♀, det. H. Gaspar.

****Lasioglossum (Sphecodogastra) interruptum (PANZER, 1798)***

22.vi.2021, 1♂, det. H. Gaspar; 23.vi.2021, 2♂, 1♀, det. H. Gaspar; 25.vi.2021, 2♂, 1♀, det. H. Gaspar; 9.viii.2021, 1♀ (INV13290), det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

Lasioglossum (Leuchalictus) leucozonium (SCHRANK, 1781)

23.vi.2021, 2♂, det. H. Gaspar; 20.vii.2021, 1♀, det. H. Gaspar; 9.viii.2021, 1♂, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

Lasioglossum (Sphecodogastra) malachurum (KIRBY, 1802)

14.ii.2021, 6♀, det. H. Gaspar; 15.ii.2021, 2♀, det. H. Gaspar; 15.iii.2021, 1♀, det. H. Gaspar; 16.iii.2021, 1♀, det. H. Gaspar; 17.iii.2021, 5♀, det. H. Gaspar; 19.v.2021, 1♀, det. H. Gaspar; 20.v.2021, 1♀, det. H. Gaspar; 23.vi.2021, 3♂, 1♀, det. H. Gaspar; 25.vi.2021, 1♂, det. H. Gaspar; 15.vii.2021, 1♂, det. H. Gaspar; 20.vii.2021, 1♂, det. H. Gaspar; 21.vii.2021, 1♀, det. H. Gaspar.

****Lasioglossum (Sphecodogastra) mediterraneum (BLÜTHGEN, 1926)***

18.v.2021, 1♂, det. H. Gaspar; 15.vii.2021, 1♂ (INV13292), det. H. Gaspar.

Lasioglossum (Evylaeus) pauperatum (BRULLÉ, 1832)

19.iv.2021 (INV13284), 1♀, det. H. Gaspar.

Lasioglossum (Sphecodogastra) pauxillum (SCHENCK, 1853)

22.ii.2021, 1♀, det. H. Gaspar; 10.iii.2021, 1♀, det. H. Gaspar; 17.iii.2021, 1♀, det. H. Gaspar; 17.iv.2021, 1♀, det. H. Gaspar; 19.iv.2021, 1♀, det. H. Gaspar; 18.v.2021, 1♀, det. H. Gaspar; 19.v.2021, 1♀, det. H. Gaspar; 23.vi.2021, 2♀, det. H. Gaspar; 21.vii.2021, 1♀, det. H. Gaspar; 9.viii.2021, 1♀, det. H. Gaspar; 10.viii.2021, 1♀, det. H. Gaspar; 16.ix.2021, 2♀, det. H. Gaspar.

****Lasioglossum (Lasioglossum) prasinum (SMITH, 1848)***

19.iv.2021, 1♀, det. H. Gaspar.

Lasioglossum (Evylaeus) punctatissimum (SCHENCK, 1853)

23.vi.2021, 1♂ (INV13279), det. H. Gaspar.

****Lasioglossum (Hemihalictus) sphecodimorphum (VACHAL, 1892)***

19.v.2021, 1♀ (INV13285), det. H. Gaspar.

Lasioglossum (Hemihalictus) villosulum (KIRBY, 1802)

11.iii.2021, 1♀ (INV13283), det. H. Gaspar; 19.v.2021, 2♂ (INV13280), det. H. Gaspar; 9.viii.2021, 2♂, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

****Lasioglossum (Lasioglossum) xanthopus (KIRBY, 1802)***

15.ii.2021, 1♂, det. H. Gaspar; 17.iv.2021, 2♀ (INV13278), det. H. Gaspar.

Genus *Nomiapis* Cockerell, 1919

****Nomiapis diversipes (LATREILLE, 1806)***

21.vii.2021, 1♂, 1♀ (INV13273), det. H. Gaspar; 9.viii.2021, 1♀, det. H. Gaspar.

****Nomiapis paulyi WOOD & LE DIVELEC, 2022***

22.vi.2021, 1♀, det. H. Gaspar; 24.vi.2021, 2♀, det. H. Gaspar; 15.vii.2021, 2♂, 1♀, det. H. Gaspar; 19.vii.2021, 2♂ (INV13272), 1♀, det. H. Gaspar; 21.vii.2021, 1♂, 1♀, det. H. Gaspar; 9.viii.2021, 1♂, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

Genus *Nomioides* Schenck, 1866

****Nomioides (Nomioides) facilis SMITH, 1853***

09.ix.2021, 1♂, det. H. Gaspar.

Genus *Sphecodes* Latreille, 1805

Sphecodes alternatus SMITH, 1853

23.vi.2021, 1♂ (INV13303), det. H. Gaspar.

****Sphecodes crassanus WARNCKE, 1992***

21.vii.2021, 2♂ (INV13294), det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

****Sphecodes croaticus MEYER, 1922***

14.ii.2021, 1♂, det. H. Gaspar; 15.iii.2021, 1♂, 1♀, det. H. Gaspar; 16.iii.2021, 2♂, det. H. Gaspar; 18.v.2021, 1♂, det. H. Gaspar; 21.vii.2021, 2♂, det. H. Gaspar; 10.viii.2021, 2♂, det. H. Gaspar.

Sphecodes ephippius (LINNAEUS, 1767)

18.iv.2021, 2♀, det. H. Gaspar; 19.iv.2021, 1♀ (INV13298), det. H. Gaspar; 17.v.2021, 1♀, det. H. Gaspar.

Sphecodes gibbus (LINNAEUS, 1758)

21.vii.2021, 2♂, 1♀, det. H. Gaspar.

****Sphecodes longulus HAGENS, 1882***

23.vi.2021, 1♂, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar; 16.ix.2021, 1♂, det. H. Gaspar; 17.ix.2021, 3♂, det. H. Gaspar; 14.x.2021, 1♂, det. H. Gaspar.

Sphecodes marginatus HAGENS, 1882

17.iii.2021, 1♀ (INV13295), det. H. Gaspar.

Sphecodes monilicornis (KIRBY, 1802)

16.iii.2021, 1♂ (INV13297), det. H. Gaspar; 22.vi.2021, 1♂ (INV13304), det. H. Gaspar; 10.viii.2021, 1♂ (INV13305), det. H. Gaspar.

****Sphecodes pseudofasciatus BLÜTHGEN, 1925***

23.vi.2021, 1♂ (INV13289), det. T. Wood; 24.vi.2021, 1♂, det. H. Gaspar; 21.vii.2021, 1♂, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar.

Sphecodes puncticeps THOMSON, 1870

19.iv.2021, 2♀ (INV13299, INV13300), det. H. Gaspar; 10.viii.2021, 1♂ (INV13306), det. H. Gaspar.

Sphecodes reticulatus THOMSON, 1870

17.iv.2021, 1♀ (INV13296), det. H. Gaspar.

****Sphecodes rubicundus HAGENS, 1875***

15.iii.2021, 1♀ (INV13302), det. H. Gaspar.

****Sphecodes ruficrus (ERICHSON, 1835)***

16.iv.2021, 1♀ (INV13301), det. H. Gaspar.

MEGACHILIDAE

Genus *Afrantheidium* Michener, 1948

****Afrantheidium (Mesanthidium) carduele (Morawitz, 1876)***

15.vii.2021, 1♀ (INV13349), det. H. Gaspar; 23.vi.2021, 1♂, det. H. Gaspar.

Genus *Anthidiellum* Cockerell, 1904

Anthidiellum (Anthidiellum) strigatum (PANZER, 1805)

17.v.2021, 1♂, det. H. Gaspar; 22.vi.2021, 1♀, det. H. Gaspar; 23.vi.2021, 1♀, det. H. Gaspar; 19.vii.2021, 1♀, det. H. Gaspar; 20.vii.2021, 1♀, det. H. Gaspar; 21.vii.2021, 1♀, det. H. Gaspar; 9.viii.2021, 1♂, 4♀, det. H. Gaspar; 10.viii.2021, 1♀ (INV13350), det. H. Gaspar.

Genus *Anthidium* Fabricius, 1804

Anthidium (Anthidium) florentinum (FABRICIUS, 1775)

21.vii.2021, 1♂, 1♀, det. H. Gaspar; 17.ix.2021, 1♀, det. H. Gaspar.

Anthidium (Anthidium) manicatum (LINNAEUS, 1758)

10.viii.2021, 1♀, det. H. Gaspar.

Anthidium (Proanthidium) oblongatum ILLIGER, 1806

15.vii.2021, 1♀, det. H. Gaspar.

**Anthidium (Anthidium) punctatum* LATREILLE, 1809

19.v.2021, 1♀ (INV13339), det. H. Gaspar.

**Anthidium (Anthidium) taeniatum* LATREILLE, 1809

15.vii.2021, 1♀ (INV13341), det. H. Gaspar.

Genus *Coelioxys* Latreille, 1809

**Coelioxys (Allocoelioxys) afer* LEPELETIER, 1841

09.viii.2021, 1♂ (INV13347), det. H. Gaspar.

**Coelioxys (Allocoelioxys) obtusus* PÉREZ, 1884

Locally very abundant.

21.vii.2021, 1♂, det. H. Gaspar; 10.viii.2021, 9♂ (INV13346), 7♀ (INV13345), det. H. Gaspar.

Genus *Heriades* Spinola, 1808

Heriades (Heriades) crenulata NYLANDER, 1856

19.v.2021, 1♂ (INV13355), det. H. Gaspar; 24.vi.2021, 2♂, det. H. Gaspar; 15.vii.2021, 1♀, det. H. Gaspar; 19.vii.2021, 2♂, 1♀, det. H. Gaspar; 21.vii.2021, 5♂, 1♀, det. H. Gaspar; 9.viii.2021, 2♀, det. H. Gaspar

**Heriades (Heriades) rubicola* PÉREZ, 1890

20.v.2021, 1♀, det. H. Gaspar; 23.vi.2021, 1♂, det. H. Gaspar; 24.vi.2021, 1♂, det. H. Gaspar; 21.vii.2021, 1♂ (INV13354), det. H. Gaspar; 16.ix.2021, 1♀, det. H. Gaspar; 17.ix.2021, 1♂, det. H. Gaspar.

**Heriades (Heriades) truncorum* (LINNAEUS, 1758)

22.vi.2021, 1♂ (INV13356), det. H. Gaspar.

Genus *Hoplitis* Klug, 1807

**Hoplitis (Hoplitis) adunca* (PANZER, 1798)

18.iv.2021, 2♂, det. H. Gaspar; 18.v.2021, 3♂, det. H. Gaspar; 20.v.2021, 1♀, det. H. Gaspar; 23.vi.2021, 1♂, det. H. Gaspar.

**Hoplitis (Anthocopa) albiscopa* (FRIESE, 1899)

18.v.2021, 2♂, 4♀ (INV13368), det. T. Wood and H. Gaspar.

**Hoplitis (Hoplitis) annulata* (LATREILLE, 1811)

24.vi.2021, 1♀ (INV13366), det. H. Gaspar.

**Hoplitis (Anthocopa) antigae* (PÉREZ, 1895)

17.v.2021, 1♂, det. H. Gaspar; 19.v.2021, 1♀, det. H. Gaspar; 20.v.2021, 1♀, det. H. Gaspar.

Hoplitis (Aldidamea) brachypogon (PÉREZ, 1879)

17.v.2021, 1♂ (INV13367), det. H. Gaspar.

Hoplitis sp.

17.v.2021, 1♀ (INV13369), det. H. Gaspar.

Genus *Icteranthidium* Michener, 1948

**Icteranthidium grohmanni* (SPINOLA, 1838)

19.vii.2021, 2♀ (INV13353), det. H. Gaspar; 10.viii.2021, 1♀, det. H. Gaspar.

Genus *Megachile* Latreille, 1802

**Megachile (Eutricharaea) apicalis* SPINOLA, 1808

24.vi.2021, 1♀, det. H. Gaspar; 15.vii.2021, 2♂ (INV13342), det. H. Gaspar; 21.vii.2021, 2♂, det. H. Gaspar; 10.viii.2021, 1♂, 1♀, det. H. Gaspar.

Megachile (Megachile) centuncularis (LINNAEUS, 1758)

21.vii.2021, 1♂, det. H. Gaspar; 10.viii.2021, 1♀, det. H. Gaspar.

**Megachile (Megachile) melanopyga* COSTA, 1863

21.vii.2021, 1♂, 1♀, det. H. Gaspar; 10.viii.2021, 1♂, det. H. Gaspar; 14.x.2021, 1♀, det. H. Gaspar.

**Megachile (Megachile) octosignata* NYLANDER, 1852

17.ix.2021, 1♀, det. H. Gaspar.

Megachile (Eutricharaea) pilidens ALFKEN, 1924

22.vi.2021, 1♂, det. H. Gaspar; 15.vii.2021, 1♀, det. H. Gaspar; 19.vii.2021, 1♂, det. H. Gaspar; 20.vii.2021, 1♀, det. H. Gaspar; 21.vii.2021, 1♂, 4♀ (INV13348), det. H. Gaspar; 9.viii.2021, 1♂, 1♀, det. H. Gaspar; 10.viii.2021, 6♂ (INV13343), 1♀, det. H. Gaspar; 16.ix.2021, 1♀, det. H. Gaspar.

**Megachile (Eutricharaea) pusilla* PÉREZ, 1884

22.vi.2021, 1♀, det. H. Gaspar.

Genus *Osmia* Panzer, 1806

**Osmia (Hoplosmia) anceyi* PÉREZ, 1879

19.v.2021, 1♂, 1♀, det. H. Gaspar; 23.vi.2021, 1♀ (INV13361), det. H. Gaspar.

**Osmia (Helicosmia) aurulenta* PANZER, 1799

19.v.2021, 1♀, det. H. Gaspar.

Osmia (Helicosmia) caerulea (LINNAEUS, 1758)

15.iii.2021, 1♂, det. H. Gaspar; 16.iii.2021, 2♂, det. H. Gaspar; 18.iv.2021, 1♂, 1♀, det. H. Gaspar; 17.v.2021, 1♀ (INV13362), det. H. Gaspar; 22.vi.2021, 1♀, det. H. Gaspar; 21.vii.2021, 2♂, det. H. Gaspar.

**Osmia (Pyrosmia) ferruginea* LATREILLE, 1811

22.vi.2021, 1♀ (INV13364), det. H. Gaspar.

**Osmia (Helicosmia) labialis* PÉREZ, 1879

18.iv.2021, 2♂, det. H. Gaspar; 19.iv.2021, 1♂ (INV13360), det. H. Gaspar.

**Osmia (Helicosmia) latreillei* (SPINOLA, 1806)

18.v.2021, 1♀, det. H. Gaspar; 20.v.2021, 1♀, det. H. Gaspar.

**Osmia (Hoplosmia) ligurica* MORAWITZ, 1868

18.iv.2021, 1♂, det. H. Gaspar; 19.iv.2021, 1♂, det. H. Gaspar; 17.v.2021, 1♀, det. H. Gaspar; 19.v.2021, 2♀, det. H. Gaspar

Osmia (Helicosmia) niveata (FABRICIUS, 1804)

22.vi.2021, 1♀ (INV13363), det. H. Gaspar.

**Osmia (Helicosmia) signata* ERICHSON, 1835

18.iv.2021, 1♂, det. H. Gaspar.

Genus *Protosmia* Ducke, 1900

**Protosmia (Protosmia) glutinosa* (GIRAUD, 1871)

22.vi.2021, 1♂, det. H. Gaspar.

Genus *Pseudoanthidium* Friese, 1898

Pseudoanthidium (Pseudoanthidium) scapulare (LATREILLE, 1809)

22.vi.2021, 1♀ (INV13352), det. H. Gaspar; 19.vii.2021, 2♂ (INV13351), det. H. Gaspar.

Genus *Stelis* Panzer, 1806

**Stelis (Stelis) breviscula* NYLANDER, 1848

18.v.2021, 1♂, det. H. Gaspar; 23.vi.2021, 1♂, det. H. Gaspar; 21.vii.2021, 1♂ (INV13357), 1♀, det. H. Gaspar; 16.ix.2021, 1♀, det. H. Gaspar.

**Stelis (Protostelis) signata* (LATREILLE, 1809)
19.vii.2021, 1♂ (INV13358), 1♀, det. H. Gaspar; 9.viii.2021, 2♂,
det. H. Gaspar.

MELITTIDAE

Genus *Dasygaster* Latreille, 1802

**Dasygaster crassicornis* FRIESE, 1896
17.v.2021, 1♀ (INV13311), det. H. Gaspar; 19.iv.2021, 2♂
(INV13313), 1♀, det. H. Gaspar.

**Dasygaster hirtipes* (FABRICIUS, 1793)
15.x.2021, 1♂, det. H. Gaspar.

**Dasygaster morotei* QUILIS, 1928
18.iv.2021, 4♂ (INV13312), det. H. Gaspar; 17.v.2021, 1♀, det. H.
Gaspar; 18.v.2021, 1♂, 1♀, det. H. Gaspar

Genus *Macropis* Panzer, 1809

***Macropis (Macropis) fulvipes* (Fabricius, 1804)
22.vi.2021, 1♂ (INV13321), det. H. Gaspar.

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