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

Hugo Gaspar[1], Thomas J. Wood[2], Catarina Siopa[3], Sara Lopes[4], João Loureiro[5] &Sílvia Castro[6]

[1, 3, 4, 5, 6]Centre for Functional Ecology, Department of Life Sciences, University of Coimbra, Calçada Martim de Freitas, 3000-456 Coimbra, Portugal. [2]Laboratory of Zoology, University of Mons, Mons, Belgium. E-mails: [1]hgaspar@uc.pt ; [2]thomas-james.wood@umons.ac.be ; [3]catarinasiopa@gmail.com ; [4]saralopes2295@gmail.com ; [5]jloureiro@uc.pt ; [6]scastro@bot.uc.pt

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 (Taeniandrena) 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 (Taeniandrena) 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	*Andrena, Flavipanurgus, Panurgus*	55	264
Apidae	10	*Amegilla, Ammobates, Anthophora, Apis, Bombus, Ceratina, Eucera, Melecta, Nomada, Tetralonia, Xylocopa*	53	224
Colletidae	2	*Colletes, Hylaeus*	15	57
Halictidae	6	*Dufourea, Halictus, Lasioglossum, Nomiapis, Nomioides, Sphecodes*	48	264
Megachilidae	12	*Afranthidium, Anthidiellum, Anthidium, Coelioxys, Heriades, Hoplitis, Icteranthidium, Megachile, Osmia, Protosmia, Pseudoanthidium, Stelis*	38	156
Melittidae	2	*Dasypoda, Macropis*	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) alfkenella* 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) falsifica* 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* EVERSMANN, 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♀ (INV13 414), det. T. Wood and H. Gaspar; 25.vi.2021, 1♂ (INV13426), det. T. Wood.

***Andrena (incertae sedis) oviventris* 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) simontornyella* 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* EVERSMANN, 1852**
17.v.2021, 1♀ (IN13247), 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 (Copoxyla) 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* EVERSMANN, 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 noskiewiczi* 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 *Afranthidium* Michener, 1948

****Afranthidium (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 (Alcidamea) 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) caerulescens* (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) breviuscula* 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 *Dasypoda* Latreille, 1802

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

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

***Dasypoda 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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