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BEE (APOIDEA) DIVERSITY AND ABUNDANCE IN OILSEED CROPS IN THE SUDOE REGION – AN ENTOMOLOGICAL BASELINE

Data provided by: Universidad de Burgos, CNRS-CEBC, Universidad Autónoma de Madrid, INRA-Entomologie

This product of the Poll-Ole-GI SUDOE project consists of an entomological baseline for pollinating bee (Apoidea) insects found within fields of oilseed crops in the project pilot zones. This data was collected directly from the field during the project period of 2016-2017, and there is also bibliographic information available for the Zone Atelier Plaine & Val de Sèvre (ZAPVS) study area for the period of 2010-2012. The intention of this dataset is to serve as an important technical baseline for monitoring of pollinators and the pollination ecosystem service in oilseed production agroecosystems.

The data was collected by entomological pan traps - water-filled bowls simulating flowers since they are painted with different colors of ultraviolet light-reflecting paints. Flying insects are attracted and fall into the water-filled traps. These pan traps were placed in fields with the two oilseed crops (sunflower, rapeseed) for 48h. This method was chosen for reasons of standardization and data comparability (Poll-Ole-GI SUDOE Technical Committee).

The information provided shows only relative abundances of pollinators since absolute abundance may be dependent on multiple factors including year, particular temperature or climatic conditions at time of sampling, etc. Therefore, the data are best interpreted as a measure of diversity (i.e. what species can be found in these agroecosystems) Though the relative abundances of the insects are likely indicative of their importance for pollination within the crop, it is actually not a direct measure of pollination –information which can only be acquired by direct observation of individuals on flowers. Also, pollinators have different pollinating efficiencies, dependent on both the flower and the insect.

**TABLE 1 – CAPTURED INSECTS IN CUENCA (SPAIN) 2017 –
SUNFLOWER**

Family	Species	Relative abundance (%)
Andrenidae	<i>Andrena albopunctata</i>	0.6
Andrenidae	<i>Andrena flavipes</i>	0.4
Andrenidae	<i>Andrena labialis</i>	0.1
Anthophoridae	<i>Amegilla quadrifasciata</i>	2.4
Anthophoridae	<i>Tetraloniella julliani</i>	1.0
Apidae	<i>Bombus hortorum</i>	0.1
Apidae	<i>Bombus terrestris</i>	0.6
Apidae	<i>Ceratina chalcites</i>	0.8
Apidae	<i>Ceratina chalybea</i>	1.0
Apidae	<i>Ceratina cucurbitina</i>	0.8
Apidae	<i>Ceratina dallatorreana</i>	0.6
Apidae	<i>Ceratina nigrolabiata</i>	0.8
Apidae	<i>Xylocopa iris</i>	2.8
Apidae	<i>Xylocopa valga</i>	0.3
Colletidae	<i>Hylaeus crassanus</i>	0.3
Colletidae	<i>Hylaeus variegatus</i>	0.4
Halictidae	<i>Halictus maculatus</i>	0.3
Halictidae	<i>Halictus patellatus</i>	0.4
Halictidae	<i>Halictus quadricinctus</i>	0.1
Halictidae	<i>Halictus scabiosae</i>	0.1
Halictidae	<i>Halictus seladonius</i>	0.1
Halictidae	<i>Halictus sexcinctus</i>	0.4
Halictidae	<i>Halictus gemmeus</i>	1.9
Halictidae	<i>Halictus subauratus</i>	1.4
Halictidae	<i>Lasioglossum clypeare</i>	4.5
Halictidae	<i>Lasioglossum glabriusculum</i>	18.3
Halictidae	<i>Lasioglossum interruptum</i>	11.1
Halictidae	<i>Lasioglossum malachurum</i>	13.4
Halictidae	<i>Lasioglossum nigripes</i>	0.1
Halictidae	<i>Lasioglossum punctatissimum</i>	0.1
Halictidae	<i>Lasioglossum villosulum</i>	6.9
Halictidae	<i>Lasioglossum albocinctum</i>	3.3
Halictidae	<i>Lasioglossum bimaculatum</i>	1.0
Halictidae	<i>Lasioglossum callizonium</i>	0.1
Halictidae	<i>Lasioglossum leucozonium</i>	1.6
Halictidae	<i>Lasioglossum</i> morphotype B (5 mm)	18.9
Halictidae	<i>Lasioglossum</i> morphotype C (7 mm)	0.3
Halictidae	<i>Lasioglossum</i> morphotype E	0.1
Halictidae	<i>Lasioglossum</i> morphotype F	0.1

Megachilidae	<i>Lithurgus cornutus</i>	0.1
Megachilidae	<i>Megachile pilidens</i>	0.9
Megachilidae	<i>Megachile centuncularis</i>	1.4
Mellitidae	<i>Dasypoda altercator</i>	0.3

TABLE 2 – CAPTURED INSECTS IN BURGOS (SPAIN) 2017 –
SUNFLOWER

Family	Species	Relative abundance with honeybee (%)	Relative abundance without honeybee (%)
Andrenidae	<i>Andrena albopunctata</i>	0.9	1.4
Andrenidae	<i>Andrena cf. A. suerinensis</i>	0.1	0.1
Andrenidae	<i>Andrena flavipes</i>	0.9	1.4
Andrenidae	<i>Andrena hispania</i>	0.1	0.1
Andrenidae	<i>Andrena morio</i>	0.0	0.1
Andrenidae	<i>Andrena pilipes</i>	0.1	0.1
Andrenidae	<i>Andrena sp.</i>	0.1	0.2
Andrenidae	<i>Panurgus banksianus</i>	0.0	0.0
Andrenidae	<i>Panurgus cephalotes</i>	0.3	0.4
Anthophoridae	<i>Amegilla bimaculata</i>	0.2	0.4
Anthophoridae	<i>Amegilla quadripunctata</i>	0.2	0.3
Anthophoridae	<i>Xylocopa cantabrita</i>	0.0	0.0
Anthophoridae	<i>Xylocopa iris</i>	0.1	0.1
Anthophoridae	<i>Xylocopa sp.</i>	0.0	0.1
Anthophoridae	<i>Xylocopa violacea</i>	0.2	0.3
Apidae	<i>Anthophora bimaculata</i>	0.0	0.0
Apidae	<i>Bombus cf. B. cullumanus</i>	0.0	0.0
Apidae	<i>Bombus cf. B. laesus</i>	0.2	0.3
Apidae	<i>Bombus hortorum</i>	0.0	0.0
Apidae	<i>Bombus terrestris</i>	0.4	0.6
Apidae	<i>Ceratina chalcites</i>	0.0	0.1
Apidae	<i>Ceratina cyanea</i>	0.1	0.1
Apidae	<i>Eucera cineraria</i>	0.1	0.1
Apidae	<i>Eucera sp.</i>	0.0	0.0
Apidae	<i>Nomada sp.</i>	0.0	0.0
Apidae	<i>Pseudapis sp.</i>	0.0	0.0
Apidae	<i>Apis mellifera</i>	34.1	NA
Colleidae	<i>Colletes nigricans</i>	0.0	0.0
Colleidae	<i>Colletes sp.</i>	0.0	0.0

Colletidae	<i>Hylaeus sp.</i>	0.1	0.1
Colletidae	<i>Hylaeus variegatus</i>	0.1	0.2
Halictidae	<i>Halictus cf. H. patellatus</i>	1.6	2.5
Halictidae	<i>Halictus cf. H. scabiosae</i>	0.0	0.0
Halictidae	<i>Halictus sp. (g. compressus-simplex)</i>	0.0	0.1
Halictidae	<i>Halictus gemmeus</i>	0.1	0.1
Halictidae	<i>Halictus patellatus</i>	0.4	0.6
Halictidae	<i>Halictus quadricinctus</i>	1.3	1.9
Halictidae	<i>Halictus scabiosae</i>	2.8	4.3
Halictidae	<i>Halictus sexcinctus</i>	0.1	0.2
Halictidae	<i>Halictus smaragdulus</i>	0.7	1.0
Halictidae	<i>Halictus sp.</i>	2.0	3.1
Halictidae	<i>Halictus subauratus</i>	0.0	0.1
Halictidae	<i>Lasioglossum albocinctum</i>	2.7	4.0
Halictidae	<i>Lasioglossum discum</i>	2.9	4.5
Halictidae	<i>Lasioglossum leucozonium</i>	0.1	0.1
Halictidae	<i>Lasioglossum perclavipes</i>	1.2	1.8
Halictidae	<i>Lasioglossum sp.</i>	0.0	0.1
Halictidae	<i>Lasioglossum sp. (morphotype A)</i>	0.2	0.3
Halictidae	<i>Lasioglossum sp. (morphotype D)</i>	0.4	0.7
Halictidae	<i>Lasioglossum cf. L. interruptum</i>	0.0	0.0
Halictidae	<i>Lasioglossum corvinum</i>	1.4	2.2
Halictidae	<i>Lasioglossum sp. (g. malachurum)</i>	0.0	0.0
Halictidae	<i>Lasioglossum glabriusculum</i>	15.9	24.1
Halictidae	<i>Lasioglossum interruptum</i>	0.9	1.3
Halictidae	<i>Lasioglossum malachurum</i>	17.2	26.2
Halictidae	<i>Lasioglossum pauperatum</i>	0.0	0.1
Halictidae	<i>Lasioglossum pauxillum</i>	0.4	0.6
Halictidae	<i>Lasioglossum politum</i>	0.0	0.0
Halictidae	<i>Lasioglossum sp.</i>	7.3	11.1
Megachilidae	<i>Anthidium florentinum</i>	0.0	0.0
Megachilidae	<i>Anthidium manicatum</i>	0.1	0.1
Megachilidae	<i>Lithurgus cornuta</i>	0.1	0.1
Megachilidae	<i>Megachile centuncularis</i>	0.0	0.0
Megachilidae	<i>Megachile cf. M. melanopyga</i>	0.1	0.2
Megachilidae	<i>Megachile pilidens</i>	0.8	1.2
Megachilidae	<i>Megachile rotundata</i>	0.0	0.0
Megachilidae	<i>Osmia niveocincta</i>	0.0	0.0
Mellitidae	<i>Dasypoda altercator</i>	0.1	0.1

**TABLE 3 – CAPTURED INSECTS IN ZAPVS (FRANCE) 2016-2017 –
RAPESEED**

Family	Species	Relative abundance (%)
Andrenidae	<i>Andrena agilissima</i>	0.6
Andrenidae	<i>Andrena carantonica</i>	0.2
Andrenidae	<i>Andrena chrysoceles</i>	0.1
Andrenidae	<i>Andrena cineraria</i>	1.3
Andrenidae	<i>Andrena distinguenda</i>	0.4
Andrenidae	<i>Andrena flavipes</i>	3.2
Andrenidae	<i>Andrena gr rufula</i>	0.1
Andrenidae	<i>Andrena haemorrhoea</i>	0.5
Andrenidae	<i>Andrena humilis</i>	0.1
Andrenidae	<i>Andrena minutula</i>	0.2
Andrenidae	<i>Andrena nana</i>	0.1
Andrenidae	<i>Andrena nigroaena</i>	0.4
Andrenidae	<i>Andrena nigroolivacea</i>	1.3
Andrenidae	<i>Andrena nitida</i>	0.1
Andrenidae	<i>Andrena niveata</i>	0.1
Andrenidae	<i>Andrena nuptialis</i>	0.1
Andrenidae	<i>Andrena subopaca</i>	0.3
Apidae	<i>Apis mellifera</i>	7.8
Apidae	<i>Bombus lapidarius</i>	0.9
Apidae	<i>Bombus pascuorum</i>	0.1
Apidae	<i>Bombus ruderatus</i>	0.2
Apidae	<i>Bombus terrestris</i>	1.1
Apidae	<i>Bombus veteranus</i>	0.1
Apidae	<i>Eucera nigrescens</i>	0.6
Halictidae	<i>Halictus gr simplex</i>	5.1
Halictidae	<i>Halictus maculatus</i>	0.1
Halictidae	<i>Halictus scabiosa</i>	6.4
Halictidae	<i>Halictus smaragdulus</i>	0.2
Halictidae	<i>Halictus sp</i>	0.2
Colletidae	<i>Hylaeus annularis</i>	0.1
Halictidae	<i>Lasioglossum</i>	3.7
Halictidae	<i>Lasioglossum calceatum</i>	0.1
Halictidae	<i>Lasioglossum glabriusculum</i>	1.0
Halictidae	<i>Lasioglossum griseolum</i>	0.1
Halictidae	<i>Lasioglossum interruptum</i>	0.5
Halictidae	<i>Lasioglossum lativentre</i>	0.1
Halictidae	<i>Lasioglossum leucozonium</i>	1.1
Halictidae	<i>Lasioglossum limbellum</i>	0.2
Halictidae	<i>Lasioglossum lineare</i>	3.4

Halictidae	<i>Lasioglossum malachurum</i>	22.9
Halictidae	<i>Lasioglossum minutissimum</i>	0.1
Halictidae	<i>Lasioglossum morio</i>	2.4
Halictidae	<i>Lasioglossum nigripes</i>	0.1
Halictidae	<i>Lasioglossum parvulum</i>	0.1
Halictidae	<i>Lasioglossum pauperatum</i>	0.1
Halictidae	<i>Lasioglossum pauxillum</i>	5.2
Halictidae	<i>Lasioglossum politum</i>	0.2
Halictidae	<i>Lasioglossum puncticolle</i>	0.3
Halictidae	<i>Lasioglossum pygmaeum</i>	0.1
Halictidae	<i>Lasioglossum subhirtum</i>	23.2
Halictidae	<i>Lasioglossum villosulum</i>	3.3
Halictidae	<i>Lasioglossum xanthopus</i>	0.1
Halictidae	<i>Lasioglossum zonulum</i>	0.1
Apidae	<i>Nomada fabriciana</i>	0.1
Apidae	<i>Nomada hirtipes</i>	0.1
Apidae	<i>Nomada lathburiana</i>	0.1
Apidae	<i>Nomada ruficornis</i>	0.1
Apidae	<i>Nomada sexfascita</i>	0.1
Megachilidae	<i>Osmia niveata</i>	0.1
Halictidae	<i>Sphecodes ruficrus</i>	0.1

TABLE 4 – CAPTURED INSECTS IN ZAPVS (FRANCE) 2016-2017 – SUNFLOWER

Family	Species	Relative abundance (%)
Andrenidae	<i>Andrena agillissima</i>	0.1
Andrenidae	<i>Andrena alfkenella</i>	0.3
Andrenidae	<i>Andrena distinguenda</i>	0.1
Andrenidae	<i>Andrena dorsata</i>	0.1
Andrenidae	<i>Andrena flavipes</i>	3.3
Andrenidae	<i>Andrena florea</i>	0.1
Andrenidae	<i>Andrena labialis</i>	0.1
Andrenidae	<i>Andrena minutula</i>	0.8
Andrenidae	<i>Andrena pusilla</i>	0.1
Andrenidae	<i>Andrena rosae</i>	0.1
Andrenidae	<i>Andrena subopaca</i>	0.1
Apidae	<i>Apis mellifera</i>	6.8
Apidae	<i>Bombus lapidarius</i>	0.6
Apidae	<i>Bombus ruderatus</i>	0.1
Apidae	<i>Bombus terrestris</i>	1.1

Melittidae	<i>Dasygaster hirtipes</i>	0.1
Apidae	<i>Eucera nigrescens</i>	0.1
Halictidae	<i>Halictus gr simplex</i>	6.3
Halictidae	<i>Halictus langobardicus</i>	0.1
Halictidae	<i>Halictus maculatus</i>	0.1
Halictidae	<i>Halictus scabiosa</i>	1.3
Halictidae	<i>Halictus simplex</i>	0.1
Halictidae	<i>Halictus smaragdulus</i>	0.2
Halictidae	<i>Halictus tumulorum</i>	0.1
Colletidae	<i>Hylaeus annularis</i>	0.1
Colletidae	<i>Hylaeus incongruus</i>	0.1
Halictidae	<i>Lasioglossum glabriusculum</i>	3.2
Halictidae	<i>Lasioglossum interruptum</i>	0.6
Halictidae	<i>Lasioglossum laticeps</i>	0.5
Halictidae	<i>Lasioglossum leucozonium</i>	0.6
Halictidae	<i>Lasioglossum limbellum</i>	0.2
Halictidae	<i>Lasioglossum majus</i>	0.1
Halictidae	<i>Lasioglossum malachurum</i>	22.4
Halictidae	<i>Lasioglossum minutissimum</i>	0.1
Halictidae	<i>Lasioglossum morio</i>	4.3
Halictidae	<i>Lasioglossum pauperatum</i>	0.1
Halictidae	<i>Lasioglossum pauxillum</i>	8.2
Halictidae	<i>Lasioglossum politum</i>	2.5
Halictidae	<i>Lasioglossum puncticolle</i>	0.5
Halictidae	<i>Lasioglossum subhirtum</i>	33.2
Halictidae	<i>Lasioglossum villosulum</i>	0.6
Halictidae	<i>Lasioglossum zonulum</i>	0.1
Melittidae	<i>Melitta leporina</i>	0.2
Apidae	<i>Nomada facilis</i>	0.1
Apidae	<i>Nomada flavoguttata</i>	0.1
Megachilidae	<i>Osmia spinulosa</i>	0.1
Andrenidae	<i>Panurgus dentipes</i>	0.6
Halictidae	<i>Sphecodes monilicornis</i>	0.1
Apidae	<i>Tetralonia malvae</i>	0.1
Apidae	<i>Xylocopa valga</i>	0.1

**TABLE 5 – CAPTURED INSECTS IN ZAPVS (FRANCE) 2010-2012* –
RAPESEED**

* bibliographical information, see references below

Family	Species	Relative abundance (%)
Andrenidae	<i>Andrena carantonica/trimmerana</i>	1.0
Andrenidae	<i>Andrena chrysoseles</i>	0.5
Andrenidae	<i>Andrena cineraria</i>	10.4
Andrenidae	<i>Andrena distinguenda</i>	17.4
Andrenidae	<i>Andrena dorsata</i>	5.0
Andrenidae	<i>Andrena flavipes</i>	2.0
Andrenidae	<i>Andrena fulva</i>	0.5
Andrenidae	<i>Andrena gravida</i>	3.0
Andrenidae	<i>Andrena haemorrhoea</i>	2.5
Andrenidae	<i>Andrena minutula</i>	0.5
Andrenidae	<i>Andrena nigroaenea</i>	2.0
Andrenidae	<i>Andrena pilipes</i>	1.0
Andrenidae	<i>Andrena rufula</i>	3.5
Andrenidae	<i>Andrena strobmella</i>	0.5
Apidae	<i>Anthophora plumipes</i>	0.5
Apidae	<i>Bombus lapidarius</i>	28.4
Apidae	<i>Bombus terrestris</i>	14.9
Apidae	<i>Eucera nigrescens</i>	1.0
Halictidae	<i>Halictus rubicundus</i>	0.5
Halictidae	<i>Halictus tumulorum</i>	1.5
Halictidae	<i>Lasioglossum calceatum</i>	0.5
Halictidae	<i>Lasioglossum malachurum</i>	0.5
Halictidae	<i>Lasioglossum subhirtum</i>	1.0
Apidae	<i>Nomada zonata</i>	0.5
Megachilidae	<i>Osmia cornuta</i>	0.5
Halictidae	<i>Sphecodes gibbus</i>	0.5

TABLE 6 – CAPTURED INSECTS IN ZAPVS (FRANCE) 2010-2012* – SUNFLOWER

* bibliographical information, see references below

Family	Species	Relative abundance (%)
Andrenidae	<i>Andrena decipiens</i>	0.2
Andrenidae	<i>Andrena flavipes</i>	1.3
Andrenidae	<i>Andrena ovatula</i>	0.2
Apidae	<i>Bombus lapidarius</i>	49.5
Apidae	<i>Bombus pascuorum</i>	1.9
Apidae	<i>Bombus ruderarius</i>	0.2
Apidae	<i>Bombus ruderatus</i>	1.0
Apidae	<i>Bombus sylvarum</i>	0.4
Apidae	<i>Bombus terrestris</i>	33.3
Halictidae	<i>Halictus monilapis inseparabile female</i>	0.4
Halictidae	<i>Halictus scabiosae</i>	1.0
Halictidae	<i>Halictus simplex</i>	0.2
Halictidae	<i>Halictus tumulorum</i>	1.7
Megachilidae	<i>Hoplitis adunca</i>	0.2
Halictidae	<i>Lasioglossum interruptum</i>	0.4
Halictidae	<i>Lasioglossum malachurum</i>	2.5
Halictidae	<i>Lasioglossum nigripes</i>	0.2
Halictidae	<i>Lasioglossum pauxillum</i>	0.2
Halictidae	<i>Lasioglossum politum</i>	0.4
Halictidae	<i>Lasioglossum punctatissimum</i>	0.8
Halictidae	<i>Lasioglossum subhirtum</i>	2.5
Megachilidae	<i>Megachile rotundata</i>	0.2
Apidae	<i>Nomada flavoguttata</i>	0.2
Megachilidae	<i>Osmia spinulosa</i>	0.2
Halictidae	<i>Sphecodes monilicornis</i>	0.4
Apidae	<i>Xylocopa violacea</i>	0.2

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