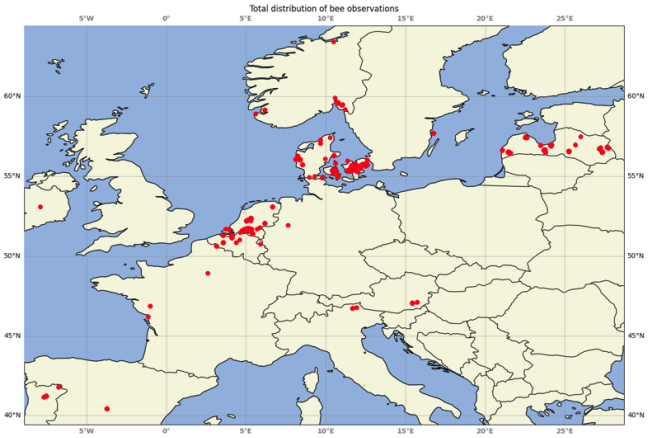
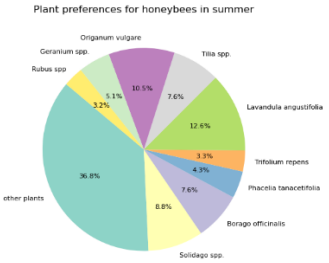
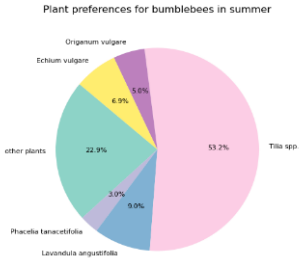
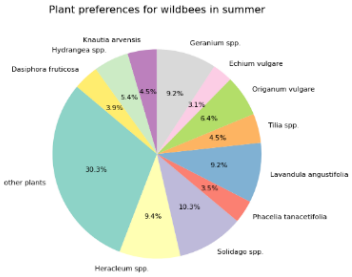
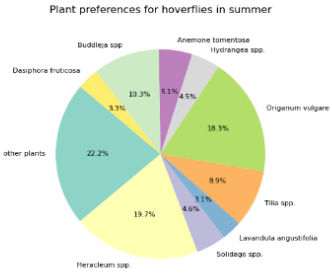
Report beeplants.eu 2024











J. van der Steen, Alveus AB Consultancy

28 January 2024

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Contents

Abstract

Due to concerns about the capacity of areas to feed honeybees, bumblebees, solitary bees, and hoverflies, this citizen science study is being conducted. These concerns arise from the increasing use of space through infrastructure, agricultural intensification, and loss of biodiversity. One way to answer these questions is to conduct a baseline measurement to determine where things stand and follow up for a few years to see if anything changes. In the EU BetterB study, we tackle this with research by beekeeping citizen scientists who register honey bees, bumblebees, solitary bees, hoverflies, and other insects in the flowers and report them in the beeplants.eu app. The citizen scientists were asked to record the number of the above-mentioned insects several times at the same flowers and locations. This way, local soil conditions do not affect the number of insects. The beekeeper citizen scientists were asked to make the registrations near their place of residence and workplace. We started the study in 2024 with 225 participants in Finland, Latvia, Norway, Denmark, the Netherlands, Belgium and France. Data from January 2024 to the end of September 2024 was analyzed. The disclaimer before the results are displayed is that the plant species mentioned are not a ranking of the best bee plants, the registrations were made on bee plants in the vicinity of the participants.

We had 7544 observations on 113 plant species. Calculated per observations, 45 percent of the recordings had one pollinating insect, 23 percent had two insects, 10 percent had four insects, 1 percent had five insects, and 16 percent had no insects. After cleaning the database to remove all observations on plants that were reported less than 10 times, 5698 observations on 74 plants remained. The following results are based on this data. We see that none of the 74 plant species was visited by just one insect in all observations over time. This means that the above-mentioned insects share these food sources. The data was further analyzed for the relative abundance of specific flowers in winter, spring, and summer, the impact of temperature, combinations of insects per observation, and the flowering times of these plants. When talking about more and less hereafter, this means “in relation to the other insects”. In winter, most honeybees were seen, most commonly on *Crocus* and bumblebees and solitary bees on willow (*Salix* spp). In spring we saw honeybees most often on sycamore maple (*Acer pseudoplantanus*), bumblebees and solitary on cranesbill (*Geranium* spp), and solitary bees on phacelia (*Phacelia tanacetifolium*). In summer, honey bees were most commonly seen on lavender (*Lavendula angustofolia*), bumblebees on lime (*Tilia* spp), and solitary bees and hoverflies on hogweed (*Heracleum* spp). In the temperature range from 2 to 9 °C, we saw honeybees most often on maple (*Acer campestre*) and bumblebees on dandelion (*Taraxacum* spp). In the range from 9 to 16 °C, this was mainly on prun for honey bees (*Prunus domestica*) and hoverflies mostly on hogweed. In the range of 16 - 23 °C, honeybees and bumblebees were most commonly seen on the lavender and hoverflies on the hogweed. Taking all data into account, honeybees were mainly found on field maple (*Acer campestre*), followed by lavender and wild marjoram (*Origanum vulgare*), and bumblebees on lime trees. The solitary bees were reported on a wide range of plants, showing no preference. The hoverflies were mainly reported on hogweed. When we look at the honeybees, bumblebees, solitary bees, and hoverflies, we see that the majority of the plants were mainly visited by the honeybee, except for the autumn anemone (*Anemone tomentosa*), stripe seed (*Crepis* spp) and five other plants by hoverflies. Snakewort (*Echium* spp) and 12 other plant species were mainly visited by bumblebees. We have not yet looked at the locations and land use in this report.

Layman summary

Because of concerns about the carrying capacity of regions to feed the honey bees, bumblebees, solitary bees, hoverflies, and all other insects that depend on flowers, the beeplants.eu study is being conducted. These concerns arise because of the increasing use of space by infrastructure, the intensification of agriculture, and the loss of biodiversity. A way to answer these questions is to conduct a baseline measurement, to determine if this changes in time. We did so with the help of beekeeper citizen scientis that recorded pollinating insects, both single and combinations of pollinating insects on flowers. The data presented are based on the plant catalog in the beeplants.eu app. Here the best bee plants are listed. The recordings were done near the citizen scientist place of residence and workplace and are not representative of "bee plants". By making recordings of the same plants at the same locations the visiting insects and combination of insects is the result of that location and depends on the temperature and time of the day. By multiple recordings on the same plants and locations the parameter locations is ruled out as is the soil condition. The data are quantitative data and the percentages shown, indicate the quantitative data.

All plants in the plant catalog are visited by honey bees (HB), bumblebees (BB), solitary bees (SB, in the figures referred to as "wild bees"), hoverflies (HF), and other insects (OI) such as butterflies and beetles. Besides recording single pollinating insect visits, on all plants simultaneously combinations of 2 or more pollinating insects were observed. Of 33 plant species the means of the overall visits were recorded. This showed that the HB was dominant on 10 plant species, the BB on 13 species *Ribes sangineum*, *Lamium alba*, *Rubus ideaus*, *Phacelia tanacetifolia*, *Salix* spp., *Trifolium pratense* , *Echium vulgare*, *Geranium* spp. *Cirsiums spp./ Carduus* spp. *Papaver* spp, *Malus x domestica, Knautia arvensis*, *Lamium purpureum*. The HF on 10 species *Solidago* spp., *Origanum vulgare*, *Taraxacum* spp. *Rosa* spp. *Hydrangea* spp., *Anemona tomentosa*, *Buddleja* spp., *Crepis* spp., *Hypochaeris radicata*.

The 225 citizen scientists from Finland, Latvia, Norway, Denmark, the Netherlands, Belgium, France, Austria, and Switzerland were asked to record honey bees (HB), bumblebees (BB), solitary bees, (SB), hoverflies (HF) and other insects (OI) in the beeplants.eu app. The plants on which the insects could be observed were in the plant catalog in this app. The complete overall dataset of 7544 observations, done in winter, spring, and summer 2024 showed that in 16% of the observations, no pollinator or other insects were recorded, in 45% there was 1 pollinator, in 23 % 2 pollinators, in 10% there were 3 pollinators, in 4% 4 pollinators and finally in 1% 5 pollinating insects were recorded. Before analysing the data, the overall database was cleaned up before performing the data analyses by discarding all observations less than 10 per plant, merging all recordings with 1% of all recordings into the category "other plants" (OP), and merging all combinations of insects simultaneously on a flower of less than 5% into the category "other combinations" (OC). This resulted in the database of 5698 observations of 74 plant species with 3236 only bees (HB), 2301 bumblebees (BB), 1110 solitary bees (SB) (wild bees), 2328 hoverflies HF, and 1267 other insects like butterflies and beetles.

The number of pollinators in winter, spring, and summer of 2024 shows that in winter a limited number of plant species were visited by HB with the majority on *Crocus* spp; similar for the BB with a preference for *Salix* spp, Most SB was found on *Prunus spinosa*, and most hoverflies on *Salix* spp. In spring the number of recordings on different plant species increased. Most recordings of the HB were on *Acer pseudoplantanus*, and of the BB on *Geranium* spp. The SB preferred *Phacealia tanacetifoium*, the hoverflies *Geranium* spp, and the other insects were mostly recorded on *Acer pseudoplantanus*. In summer the HB was mostly recorded *Lavendula angustifolia*, the BB on *Tilia spp*, and the SB on *Heracleum* spp. The HF were dominant on *Heracleum* and the other insects on *Tilia* spp.

At temperatures ranging from 2 to 9 °C. the HB preferred *Acer campestre*, the BB T*araxacum* spp, the SB were mostly found on *Prunus spinosa*, the HF on *Taraxacum* spp., and the OI on *Acer campestre*. In the range of 9 – 16 °C. most HB were found on *Prunus domestica*, BB on S*ymphonicarpus* spp. SB on *Phacelia tanacetifolia*, the HF on *Heracleum* spp., and the OI on *Tussilago farfare*. The temperature range from 16

to 23 °C. showed HB mostly on *Acer campestre*, BB on *Tilia* spp. SB on *Geranium* spp, HF on *Origanum vulgare* and OI on *Tilia* spp. The temperature ranging from 23 to 30 °C. showed that HB and BB preferred *Lavendula angustifolia*, HF preferred *Heracleum* spp, and OI *Buddleja* spp.

The plant preferences of the HB showed 11 plants species with sufficient recordings to be selected. About 50% were "other plants" showing the large part of insects on plant species recorded in low numbers. The HB were most recorded on *Acer campestre*, followed by *Lavendula angustifolia* and *Origanum vulgare*. The BB showed a significant preference for *Tilia* spp and has 33,6% "other plants. The SB preferred also had a wide range and as HB about 50% of other plants. The HF were mostly recorded on *Heracleum* spp. and *Origanum vulgare* and about one-third of other plants. The majority of the recordings of OI were on other plants.

The combinations on the plant species showed on all plants, combinations of pollinating insects. Apart from recordings of HB and BB as single pollinating insects, all possible combinations of HB+BB, HB+SB, HB+SB+HF+OI. For the majority of the plants, the HB are the dominant pollinators both in single pollinators and in combinations. The exceptions in this study were *Anemona tomentosa*, *Buddleja* spp., *Clematis vitalba*, *Crepis* spp, *Heracleumn* spp. *Hypochaeris radicata*, *Origanum vulgare*, *Plantago* spp. with mostly HF. The BB were the dominant pollinator of *Echium vulgare*, *Helianthus annuus*, *Knautia arvensis*, *Lamiun alba*, *Lamium purpurea*, *Papaver* spp., *Pyrus communis*, *Ribes sangineum*, *Rosa* spp. *Rubus ideaus*, *Trifolium hybridum*, *Trifolium pratense*, and *Verbascum* spp..

The data of the relative visits before- and afternoon show that, in some cases, the afternoon is less visited but the data show a wide variation. This goes for the Netherlands – Belgium, Denmark and Latvia. The relative position of most recorded pollinating insects shifts from south to north, from bumblebee dominant pollinating insect in the Netherlands- Belgium to the honey bee in Denmark and Latvia. In the Netherlands – Belgium we see the BB with 13 most preferred plant species, followed by the Hb and HF with both 10 plant species visited dominantly by these pollinators. An example for the HF is *Heracleum* spp, *and for* BB is *Lamium purpureum*. In Denmark out of 24 of the 33 plants, the HB was the dominant pollinator, the BB in 8 out of 33, and the HF only in 1. An example, HB was most present in *Rubus fructicosa*, BB in *Lamium alba*, and HF in *Verbascus* spp.. The Latvia data show 47 plants of which 37 were mostly visited by HB, the OI was the major pollinating insect on 4 plans, BB on 2, HF on 3, and SB on 1.

All data can be combined. In this report the data of *Origanum vulgare*. *Geranium* spp, *Trifolium repens,* and *Taraxacum* spp. are presented. In this summary, the data of *Origanum vulgare*, the plant species with the most recordings are presented. *Origanum vulgare* had 631 recordings the most observation data. The observations were done in the Netherlands (Nl), Denmark (DK), Norway (NO), and Latvia (LV). In summer, HB, BB), SB, HF, and OI were recorded. In the temperature range of 9 to 16 °C, only HF was recorded, in the range from 16 – 23m HH, BB.SB, HF were found, and in the range 23 – 30 ° C. HB, BB, SB, HF, and O were recorded. The relative preference shows that HF was the most recorded pollinator on *Origanum vulgare*. The combinations recorded were HB+HF 10.5%, BB+HF 11.0%, and other combinations 18.6%. HB, BB, and HF as single pollinators were recorded in 18.8%, 9.3%, and 31.8% respectively of the recording. Of the single insect visits, the HB was 26.9%, BB 15.9%, SB 3.3%, HF 53.0%, and O 0.7% present. The HB and HF were detected mostly before noon. The other pollinators showed about the same frequency before- and afternoon.

The Better-B food-sharing study will be the first comprehensive scientific study of food sharing food sources by pollinating insects. There is currently no extensive information available. There are alone studies in which knowledge about sharing food resources is an indirect result of the actual goal of the study, for example, studies that focus on the exchange of parasites on mutual food sources, studies into the impact of bee colonies on bumblebee colonies and studies into the extreme conditions in which large numbers honey bees are found in a poor area after the end of a massive agricultural boom. The study set-up was to conduct the observations in the neighbourhood of the citizen scientist. Consequently, the plant species presented do not give a complete overview of plants visited by pollinators. Nor will de percentage

of pollinators in the flowers represent the attractiveness because the observations were snapshots during the day. In other words, all data are qualitative data.

Introduction

The beeplants.eu study was set up as a citizen science study where everyone can participate and contribute by submitting his observations and sharing the results. In 2024, 225 citizen scientists did participate. The focus of this study is food sharing. Due to the increasing impact of urbanization, climate change, agriculture, industrialization, infrastructure, and industrial activities, food sources for bees and other pollinating insects are negatively affected. Fewer flowering plants mean scarcer food sources. When more bees and other pollinators (e.g. hoverflies and butterflies) visit the perennial plants, this means that this food source must be shared. Here we come to a sensitive point: leads the sharing from food to competition between pollinating insects? We just don't know because the number and diversity of pollinating insects on flowers not only depends on the availability of flowers, but also nesting opportunities, different foraging periods, whether they live in colonies or are solitary, and different periods of wintering/activity. Most of these factors are spatially/locally determined. Collecting data about the pollinators that visit plants will be the scientific knowledge, the building blocks, to determine whether something is going on and, if so, what is going on and how it can be mitigated. The citizen scientists registered insects at least twice a week on the same flower plots in the same places. This was done in the garden, at the apiary, or for example, during lunch walk during the day. We wanted these observations to be as simple and easy as possible. The citizen scientists monitored honey bees, solitary bees, bumblebees, hoverflies, and other insects on the flowers or part of a tree they have selected, at a glance. The observations of 'no' insects were also very valuable. “no insects” could be due to bad weather or just the fact that there were no insects in the plot at the time of the one-minute observation. Through repeated observations of the same flower plot, we can analyze the influence of the season and the temperature. This helps us understand to what extent local conditions are favorable to all pollinating insects.

The data in “Results” are presented in tables and figures. Where in tables the cell is blank, the data is part of “other plants” or “other insects” or no recordings and not included in the table.

In the Annex the maps of the recording locations are presented and the figures of the pollinator ratios in time.

In the Results, the following abbreviations are used. HB = honey bee; BB = bumblebee; SB = solitary bee and in the results the solitary bees are presented as wild bees. HF = hoverflies, OI are other insects and OP are other plants.

The data are not analysed for land use and area. The will be done in a later stage.

Method

The citizen scientists were asked to register the pollinating insects at least twice a week on the same flower plots in the same places. For example in the garden, at the apiary or for example, or during lunch walk during the day. Generally near the citizen scientist residence. The recordings are numbers of HBs, BBs, SBs, HF, and OI that can be seen in one glance on a flowerbed or part of a shrub or tree. BBs, SBs, and HF were recorded as genera without the specification of species and based on simple overall features explained in the beeplants.eu app. The date, location, and time of day were recorded by default. In 2024 the study was done in winter (January, February, and March), spring (April, May, and June, and summer (July, August, and September).

Results

The overall dataset of 7544 observations on 113 plant species, was done in winter, spring, and summer. This showed that in 16% of the observations, no pollinator or OI were recorded, in 45% there was 1 pollinator, in 23 % 2 pollinators, in 10% there were 3 pollinators, in 4% 4 pollinators and finally in 1% 5 pollinating insects were recorded.

For data analysis, the overall database was cleaned up. The observations of pollinators on plants that were submitted less than 10 times over the complete database (complete 2024 and all countries) were discarded from the data analysis. The plants with a specific pollinating insect recorded less than 1% of the total database were merged into “other plants”. The Combinations of pollinators on plants observed in less than 5% of the total database were merged into “other combinations”. This left 5698 observations performed in 74 plant species, being 3236 HBs, 2301 BBs, 2328 HF, 1110 SBs (wild bees), and 1267 OI like butterflies and beetles.

Results data analyses

Number of observations where there is only 1 pollinator observed visiting the plant

In Figure 1, the observation in the overall dataset presents of the number of flowers where there was only one insect visiting the flower per observation. The Figure shows that 38% of had HBs, 27% BBs, 27% HF and 8% OI.

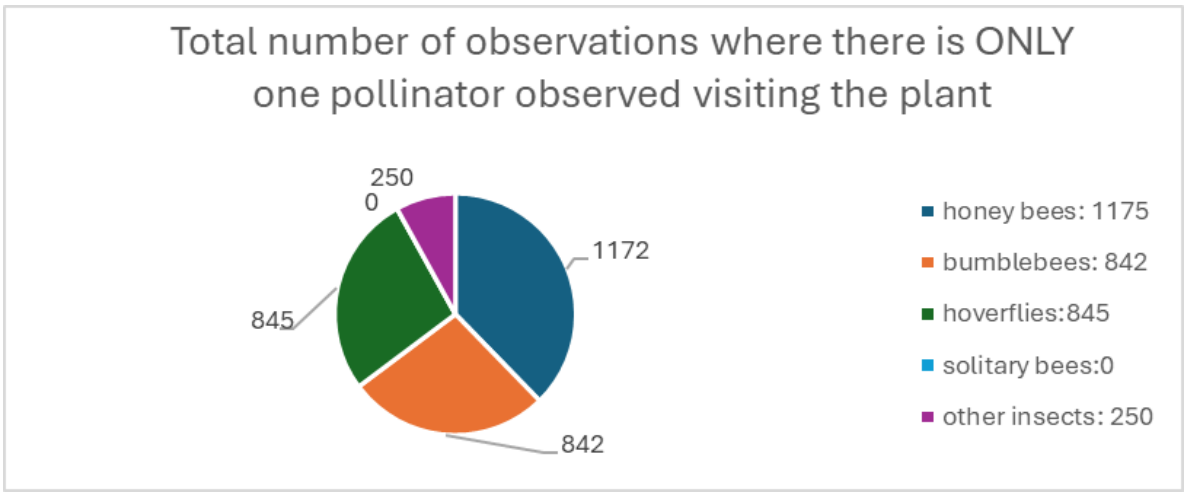


Figure 1. Number of observations where there is only 1 pollinator observed

In Figure 2, the percentages of one and multiple insects recorded per observation. These are alkso data of the overall database. Figure 2 shows the percentages single and multiple insects on a flower during an observation / recording.

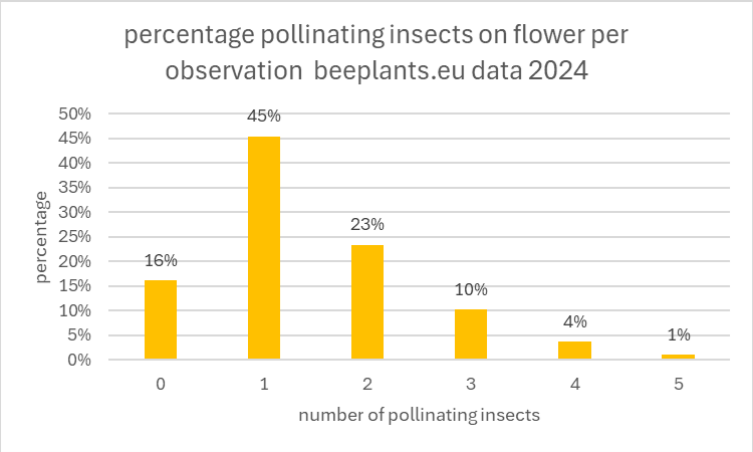


Figure 2. The percentages single and multiple insects on a flower during an observation / recording .

n observations = 7544; number 0 pollinating insects = 1218; number 1 pollinating insects = 3430; number 2 pollinating insects = 1765; number 3 pollinating insects = 775; number 4 pollinating insects = 274; number 5 pollinating insects = 82

Preferences by astronomical season

The data presented in table 1 show that in spring a limited number of plants species were visited in winter by HB with the majority on *Crocus* spp; similar for the BB with a preference for *Salix* spp, Most SB were found on *Prunus spinosa* and most HF on *Salix* spp. In spring the number of recordings on different plants species increased. Most recordings of the HB were on *Acer pseudoplantanus*, of the BB on *Geranium* spp. The SB preferred *Phacealia tanacetifoium,* the HF *Geranium* spp, and the OI were mostly recorded on *Acer pseudoplantanus*. In summer the HB was mostly recorded *Lavendula angustifolia*, the BB on *Tilia* spp, and the SB on *Heracleum* spp. The HF is also on *Heracleum* and the OI on *Tilia* spp.(table 1). In Figure 3, the graphs of the HBs in spring, the BBs in spring, the HF in spring, and the SBs in summer are shown.

Table 1. Percentages recorded insects during the astronomic season WINTER 2024 (in alphabetic order of plant species)

Plants species	HBs	BBs	SBs	HF	OI
Crocus spp.	41.9%	7.7%			
Mahonia aquifolium	4.2%	11.5%	5.0%	5.9%	
Muscari armeniacum		3.8%			
Prunus avium	9.6%	23.1%		23.8%	
Prunus spinosa			85.0%		
Ribes sanguineum	10.8%	3.8%			
Ribes uva crispa			5.0%		
Salix spp.	29.6%	50.0%		64.7%	100%
Taraxacum officinale spp.				5.9%	
Other plants	3.6%		5.0%		

In Figure 3, the HB data are shown. The BB, SB, hoverfly and other insect are in the Annex table 16.

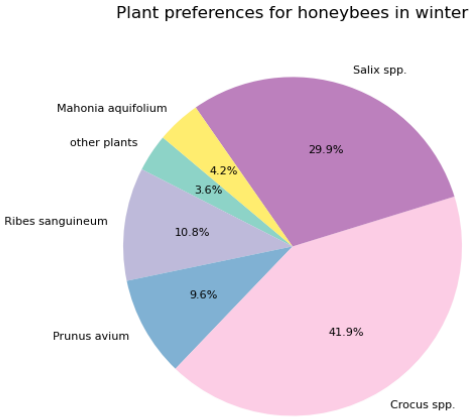


Figure 3, The percentage of HBs, in winter 2024

In spring the number of recordings on different plant species increased. Most recordings of the HB were on *Acer pseudoplantanus*, and of the BB on *Geranium* spp. The SB preferred *Phacealia tanacetifoium*, the HF *Geranium* spp, and the OI were mostly recorded on *Acer pseudoplantanus* (table 2). In Figure 4, the percentages of the BBs are presented. The spring-data of the HB, BB, SB, hovefly and OI are in Figure 30 in the Annex f

Table 2. Percentage pollinating insects on flowers per observation in spring

Plants species	HBs	BBs	SBs	HF	OI
Acer campestre	3.2%				13.2%
Acer pseudoplantanus	18.1%		10.4%		4.1%
Crataegus monogyna				4.8%	
Geranium spp	4.5%	15.0%	12.2%	19.7%	5.9%
Hydrangea spp.	3.2%		7.4%	3.8%	
Malus domesticus	6.2%	3.0%	4.6%		5.4%
Lamium album		7.7%		5.3%	4.6%
Ligustrum vulgare		3.7%			
Phacelia tanacetifolia		3.8%	14.9%		
Prunus avium	6.8%	3.4%	3.1%		
Prunus domestica	10.1%		3.2%		
Rosa spp.		5.7%	4.8%	11.2%	4.2%
Rubus fructicosus		3.6%			
Rubus ideaus		6.2%	3.2%	3.8%	6.5%
Salix spp	5.1%				
Symphonicarpus spp.	3.9%	12.1%			
Taraxacum officinale spp.			6.0%	8.6%	10.6%
Trifolium repens		3.8%			
Tussilago farfara					5.6%
*Other plants**	38.8%	31.6%	30.2%	42.9%	40.9%

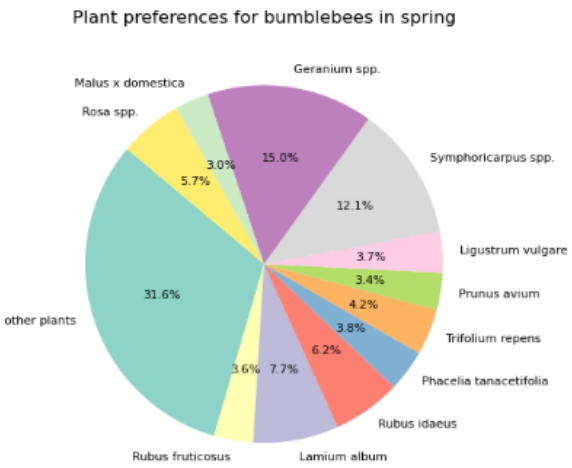


*Figure 4. The percentage of BBs, in **spring** 2024*

In summer data tell that most observations were made on other plants (<1% of all recordings). The 17 plants observed > 1% show that multiple pollinators were recorded on 12 plants. The percentages are presented in Table 3. In Figure 5, the Figure of the SBs in summer is presented. The graphs of the HBs, the BBs, the HF, and the SBs in summer is shown in Figure 31 in the Annex .

Table 3. Preferences by astronomic season SUMMER 2024 (in alphabetic order of plant species)

Plants species	HBs	BBs	SBs	HF	OI
Anemone tomentosa				5.1%	
Borago officinalis	7.6%				
Buddleja spp.				10.3%	10.6%
Cirsium spp / Carduus spp.					9.5%
Dasiphora fruticose			3.9%	3.3%	
Echium vulgare		6.9%	3.1%		
Geranium spp.	5.1%		9.2%		
Heracleum spp.			9.4%	19.7%	
Hydrangea spp.			5.4%	4.5%	6.9%
Knautia arvensis			4.5%		
Lavendulaa angistifolia	12.6%	9.0%	9.2%	3.1%	3.0%
Origanum vulgare	10.5%	5.0%	6.4%	18.3%	3.6%
Phacelia tanacetifolia	4.3%	3.0%	3.5%		
Rubus spp	3.2%				
Solidago spp.	8.8%		10.3%	4.6%	3.1%
Tilia spp.	7.6%	53.2%	4.5%	8.9%	21.1%
Trifolium repens	3.3%				
Other plants	36.8%	22.9%	30.3%	22.2%	36.7%

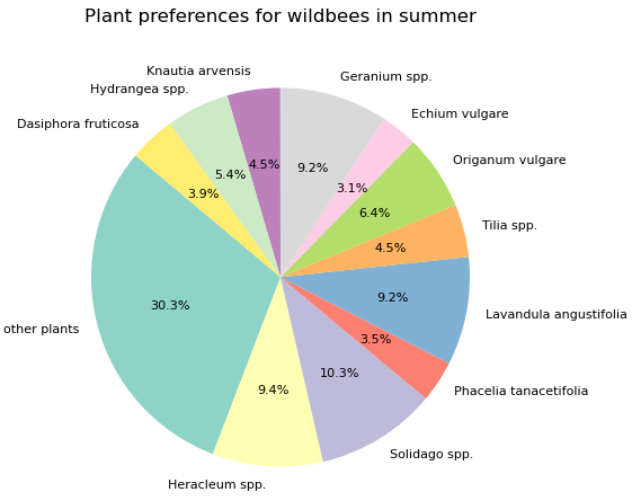


*Figure 5. The percentage of SBs, in **summer** 2024*

There are no autumn data analysed as we analysed the data till the end of September 2024. The autumn data will be included in the 2025 data.

Preferences by temperature

Ranging from 2 to 9 °C.

At temperatures ranging from 2 to 9 °C. the HB was most recorded on *Acer campestre*, the BB on *Taraxacum* spp, the SBs were mostly found on *Prunus spinosa*, the hoverfly on T*araxacum* spp., and the others on *Acer campestre*. All flowers were visited by multiple insects except for *Prunus cerasifera* on which only HF were recored, *Geranium* spp with only SB, *Crocus* spp with solely HBs. On taraxacum spp all insect except for the HB were recorded. The data are presented in table 4. In Figure 6, the plants on which the HBs were recorded is shown. The plants with HBs, BBs, SBs, HF and OI are presented in the Annex in Figure 32.

Table 4. Preferences by temperature ranging from 2 to 9 °C (in alphabetic order of plant species)

Plants species	HBs	BBs	SBs	HF	OI
Acer campestre	16.9%			16.7%	32.50%
Acer pseudoplantanus	15.8%				
Clematis vitalba			4.0%		5.00%
Crocus spp.	3.6%				
Geranium spp.			4.0%		
Lamium alba		11.1%	8.0%	5.6%	15.00%
Mahonia aquifolium	8.2%				
Malus domestica	4.1%		8.0%		15.00%
Muscari armeniacum			4.0%	5.6%	
Prunus avium	14.1%	12.3%	4.0%	5 .6%	15.0%
Prunus cerasifera				11.1%	
Prunus domestica	6.3%	7.4%		11.1%	
Prunus spinosa	10.1%	11.1%	24.0%		

Pyrus communis			20.0%	5.6%	
Ribes sanguineum		6.2%		5.6%	
Ribes uva-crispa			8.0%		
Salix spp.	3.3%	9.9%			
Scilla spp.			4.0%		
Taraxacum officinale		17.3%	12.0%	33.3%	5.0%
Tussilago farfara	3.2%				
Other plants	14.2%	24.7%			12.5%

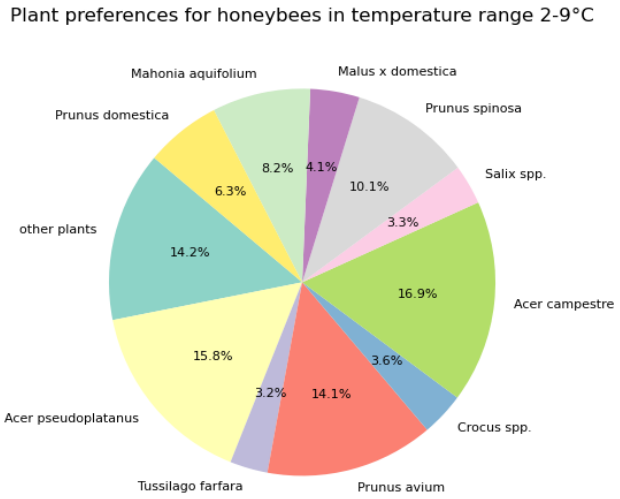


Figure 6. Plants preferences for HBs in the temperature range 2 – 9 oC.

Ranging from 9 to 16 °C.

In the range of 9 – 16 °C. most HB were found on *Prunus domestica*, BB on Symph*onicarpus* spp. SB on *Phacelia tanacetifolia*, the HF on *Heracleum* spp, and the others on *Tussilago farfare*. On all flowers multiple insects were recorded except for *Acer campestre*, *Mahonia aquifolia*, and *Pyrus communis* on which only HBs were recorded, *Echium vulgare*, *Lavendula angustifolia* and *Papaver* spp with only BBs, and *Dasiphora fruticose* and *Origanum vulgare* with only HF. The data are presented in table 5. In Figure 7 the plant preferences of the BB are shown. The preferences of the HBs, BB, SBs, hoverfly and OI are presented in the Annex in Figure 33.

Table 5. Preferences by temperature ranging from 9 to 16 °C (in alphabetic order of plant species)

Plants species	HBs	BBs	SBs	HF	OI
Acer campestre	3.8%				
Acer pseudoplantanus	3.4%		7.2%		
Dasiphora fruticosa				3.1%	
Echium vulgare		4.9%			
Geranium spp.		6.1%		5.2%	
Heracleum spp.				34.7%	
Hydrangea spp.	3.9%		9.6%		

Lamium alba		7.0%			5.0%
Lavendula angustifolia		4.5%			
Ligustrum vulgare	3.4%	4.6%			
Mahonia aquifolium	3.3%				
Malus x domestica	5.7%		4.5%		4.4%
Origanum vulgare				11.1%	
Papaver spp.		4.5%			
Phacelia tanacetifolia		3.2%	31.7%		
Prunus avium	10.2%	3.6%			
Prunus domestica	13.2%				
Pyrus communis			3.3%		
Ribes uva-crispa					3 .8%
Rosa spp.				4.5%	
Rubus ideaus		5.4%			10.7%
Salix spp.	12.0%			3.1%	
Symphoricarpus spp.	4.2%	15.2%			
Taraxacum officinale			6.3%		14.5%
Trifolium repens		3.2%			
Tussilago farfara					14.8%
Other plants	36.9%	36.2%	37.4%	38.1%	46.7%

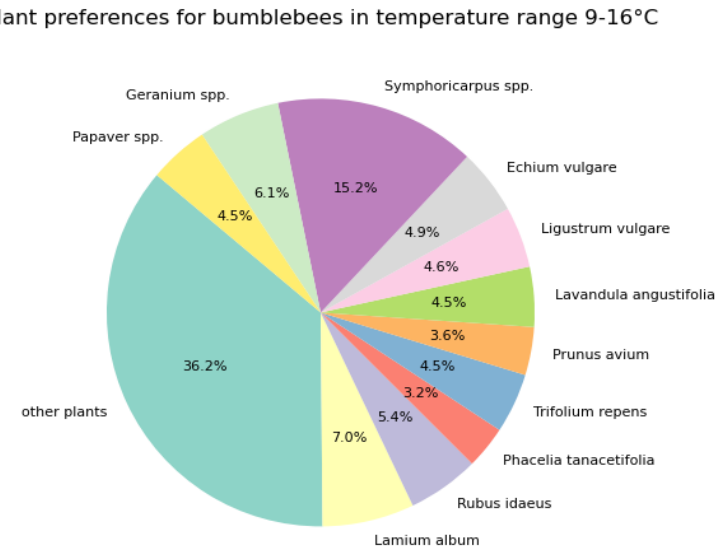


Figure 7. The preference of BBs, in the temperature range of 9 to 16 °C.

Ranging from 16 to 23 °C.

The temperature range from 16 to 23 °C. showed HB mostly on *Acer campestre*, BB on *Tilia* spp. SB on *Geranium* spp, HF on *Origanum vulgare,* and others on *Tilia* spp (table 6). In Figure 7, the preferences of the pollinating insects in the range of 9 to 16 °C. are presented. All flowers had multiple insects except for *Anemone tomenosa* with only HF, *Echium vulgare* with only BBs *Lavendela angustifolia* and *Rosa* spp with SBs and *Phacelia tanacetifolia* and *Rubus ideaus* with only HBs. Figure 8 shows the SBs data. In the Annex in Figure 34 are the data of the HB, BB, solitary nee. Hoverfly and OI presented.

Table 6. Preferences by temperature ranging from 16 to 23 °C (in alphabetic order of plant species)

Plants species	HBs	BBs	SBs	HF	OI
Acer	10.3%		4.3%		5.8%
Anemone				4.3%	
Borago officinalis	5.3%				
Buddleja spp.				9.3%	10.5%
Cirsium spp./					7.9%
Dasiphora fruticose			3.1%	3.1%	
Echium vulgare		4.7%			
Geranium spp.	4.8%	3.7%	12.8%	5.3%	4.2%
Heracleum spp.			3.2%	12.4%	
Hydrangea spp.			5.6%	4.6%	5.3%
Lavendula			5.3%		
Muscari					
Lavendula	6.5%	6.7%			
Origanum vulgare	6.5%	4.0%	4.5%	16.7%	
Phacelia	3.6%				
Rubus ideaus	3.0%				
Solidago spp.	7.1%		8.5%	4.8%	
Rosa spp.			4.4%		
Symphoricarpus	3.1%				
Tilia spp.	6.6%	51.2%	4.1%	10.4%	18.5%
Trifolium repens	3.3%				
Other plants	40.0%	29.7%	44.2%	29.0%	47.8%

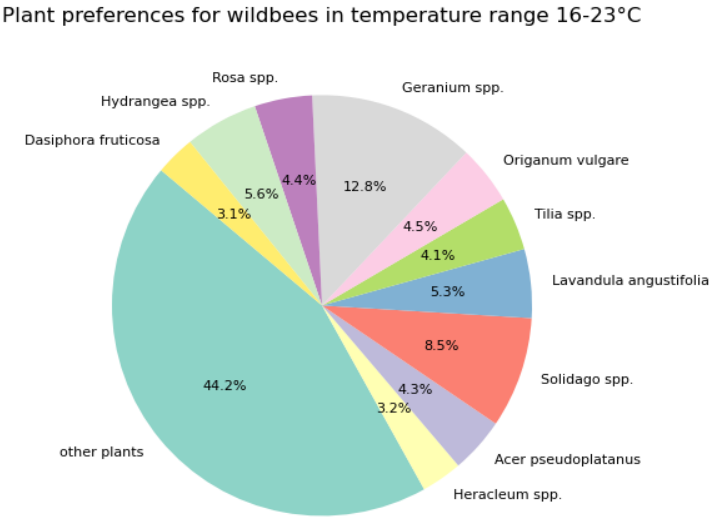


Figure 8. The preference of SB, in the temperature range of 9 to 16 °C.

Ranging from 23 to 30 °C.

The temperature ranging from 23 to 30 °C. showed that HB and BB preferred *Lavendula angustifolia*, HF preferred *Heracleum* spp, and the others *Buddleja* spp. In Table 7 the preferences of the pollinating insects in the range of 23 to 30 °C. are presented. All flowers had multiple insects except for *Anemone tomentosa* that had, as in the previous temperature range only HF, as had *Solidago* spp. On *Borago officinalis* and Rubus spp only HBs were recorded and on *Trifolium pratense* and *Trifolium repens* only BBs. In Figure 9 th references of the hoiverfly iat this temperature range is presented. In the Annex in Figure 35, the preferences of the HB, BB, SB, hoverfly and OI are presented.

Table 7. Preferences by temperature ranging from 23 - 30 oC (in alphabetic order of plant species)

Plants species	HBs	BBs	SBs	HF	OI
Anemone tomentosa				7.0%	
Borago officinalis	7.9%				
Buddleja spp.	4.4%	7.4%		15.4%	24.7%
Cirsium spp./ Carduus					3.5%
Echium vulgare		17.4%	5.0%		
Geranium spp.	8.8%		8.4%		
Heracleum spp.	4.7%		24.7%	27.0%	
Hydrangea spp.			4.2%	4.7%	8.7%
Knautia arvensis			5.4%		
Lavendula angustifolia	20.9%	17.7%	13.8%	5.4%	7.0%
Malus x domestica	6.0%	3.7%			
Melilotus alba		4.4%		16.3%	3.5%
Origanum vulgare	11.3%	3.7%	5.0%		3.5%
Phacelia tanacetifolia	5.9%%	12.8%			3.1%
Rosa spp.					3.5%

Rubus spp.	3.0%				
Solidago spp.				3.2%	
Trifolium pratense		3 .3%			4.2%
Trifolium repens		3.5%			
Other plants	27.0%	26.0%	33.5%	20.7%	38.3%

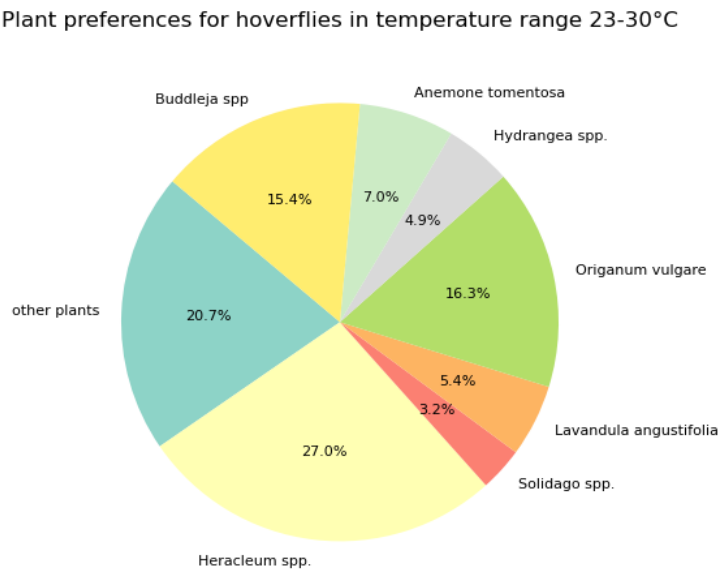


Figure 9. The preference of hoverfly, in the temperature range of 9 to 16 °C.

Pollinator plant preferences

The plant preferences of the HB showed 11 plant species with sufficient recordings to be named. About 50% were "other plants" showing the large part of insects on plant species recorded in low numbers. The BB showed a significant preference for *Tilia* spp and has 33,6% "other plants. The SB preferred also had a wide range and as HB about 50% of other plants. The HF was mostly recorded on *Heracleum* spp. and *Origanum vulgare* and about one-third of other plants. The majority of the recordings of OI were on other plants. In Figure 10 the data of the HB and the hoverfly are presented. In the Annex in Figure 23, the preferences of the HB, BB, SB, hoverfly and OI are presented.

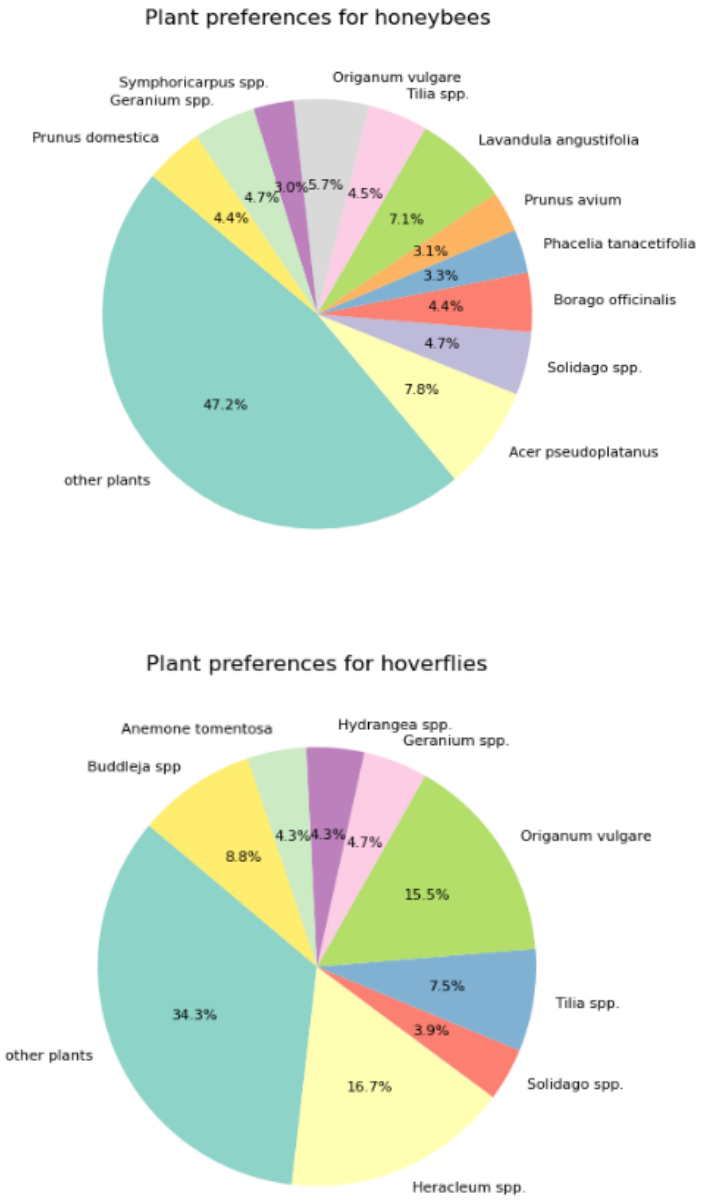


Figure 10. The overall plant preference of HBs and HF

Combinations of insects on flowers

The combinations are observations of the entire observation period from January 2024 till 1 September 2024. The presented combinations are actual recordings.

The combinations on the plant species show on all plants, combinations of pollinating insects. Apart from recordings of HB and BB as single pollinating insects all possible combinations of HB+BB, HB+SB, HB+SB+HF+O, and other combinations. For the majority of the plants, the HB are the dominant pollinators both in single pollinators and in combinations. An exception is *Anemona tomentosa with mostly HF, Buddleja* spp with mostly OI, *Clematis vitalba with OI plus SBs*, and *Crepis* spp, H*eracleum* spp . *Hypochaeris radicata*, *Origanum vulgare*, *Plantago* spp. with mostly HF.

BB were the dominant pollinator of *Echium vulgare*, *Helianthus annuus, Knautia arvensis*, *Lamium alba*, *Lamium purpurea*, *Papaver* spp. *Pyrus communis*, *Ribes sangineum*, *Rosa* spp. *Rubus ideaus*, *Trifolium hybridum*, *Trifolium pratense*, *Verbascum* spp.

In Figure 10 the data of Acer campestre, and Echium vulgare. In the Annex in Figure 24, The combinations of HBs, BBs, SBs, HF, and OI observed in the 74 plant species is presented

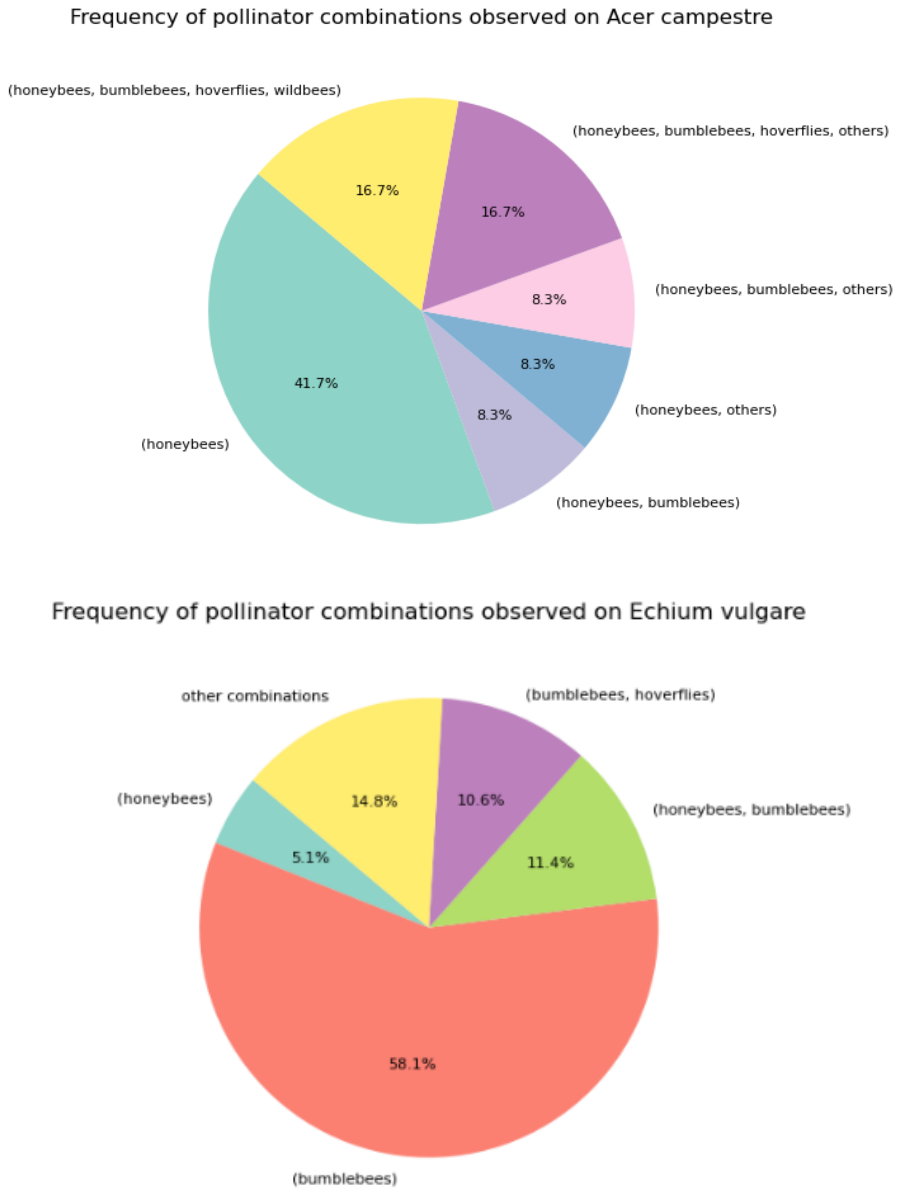


Figure 11. The combinations of HBs, BBs, SBs, HF, and OI observed in Acer campestre and Echium vulgare.

Pollinators, percentages per country per plant: Total, morning, afternoon over the complete observation period

In the Figures, the vertical bar represent the spreading of the number of insects of each recording which varies from 0 to 100%. The dot is the mean of all recordings. Consequently all data presented are indications.

Firstly it is noticed that in all cases the plants are visited by HB, BB, HF, SB, and OI. In the Netherlands – Belgium the BB is the dominant pollinator whereas in Denmark and Latvia, it is the HB. It is striking that the HF plays a major role in plant visits in the Netherlands – Belgium. In Denmark and Latvia their role is minor. Only in Latvia, we see that the SB is the dominant pollinator of *Knautia arvensis*. The OI were dominant in *Filipendula ulmaria*, *Vicia faba*, *Buddleja* spp., and *Crepis* spp.

The data of the relative visits before- and afternoon show that, in some cases, the afternoon is less visited but the data show a wide variation. This goes for the Netherlands – Belgium, Denmark and Latvia.

In the Netherlands – Belgium we see the BB with 13 most preferred plant species, followed by the HB and HF with both 10 plant species visited dominantly by these pollinators. For the HF, *Heracleum* spp, *Solidago* spp *Origanum vulgare*, *Taraxacum* spp. *Rosa* spp. *Hydrangea* spp. *Anemona tomentosa* , *Buddleja* spp., *Crepis* spp., *Hypochaeris radicata* are dominated by HF. The BB was predominant in *Ribes sangineum*, *Lamium alba*, *Rubus ideaus*, *Phacelia tanacetifolia*, *Salix* spp., *Trifolium pratense , Echium vulgare, Geranium spp. Cirsiums spp./ Carduus spp. Papaver spp, Malus x domestica, Knautia arvensis*, *Lamium purpureum*.

In Denmark 24 of the 33 plants, the HB was the dominant pollinator, the BB in 8 out of 33 and the HF only in 1. The HB were most present on *Rubus fructicosa*, *Epilobium* spp., *Chamerion angustifolium*, *Solidago* spp. *Eupatorium cannabinum*, *Borago officinalis*, *Phacelia tanacetifolia*, *Trifolium repens*, *Crataegus monogyna*, *Aesculus hippocastanum*, *Malva* spp. *Ligustrum vulgaris*, *Origanum vulgare*, *Prunus cerasifera*, *Taraxacum officinale*, *Sorbus aucuparia*, *Prunus spinosa*, *Symphonicarpus* spp., *Geranium* spp. *Cirsium* spp./ *Carduus* spp., *Malus x domestica*, *Centaurea scabiosa*, *Hydrangea*, spp. *Buddleja* spp.. The BB in *Lamium alba*, *Rubus ideaus*, *Lytrum salicaria*, *Lavendula angustofolia*, *Echium vulgare*, *Knautia arvensis*, *Cichorium intybus*, *Rosa* spp. and HF in *Verbascus* spp..

The Latvia data show 47 plants of which 37 were mostly visited by HB, the OI was the major pollinating insect on 4 plans, BB on 2, HF on 3, and SB on 1. The HB was seen most on *Acer pseudoplantanus*, *Fagopyrum esculentum*, *Epilobium* spp. , *Lamium alba*, *Tussilago farfara*, *Chamearion angustifolium*, *Solidago* spp., *Rubus ideaus*, *Eupatorium cannabinum*, *Borago officinalis*, *Phacelia tanacetifolia*, *Trifolium repens*, *Crataegus monogyna*, *Fragaria* spp., *Lythrum salicaria*, *Prunus avium*, *Lavandula angustofolia,* Ligustrum vulgare, Tilia spp., Origanum vulgare, Taraxacum officinale, Acer campestre, Salix spp., Pyrus communis, *Brassica napus*, *Helianthus annuus*, *Melilotus alba*, *Geranium* spp., *Cirsium* spp./ *Carduus* spp., *Malus x domestica*, *Anemone nemorosa*, *Mahonia aquifolia*, *Muscaria armeniacum*, *Rosa* spp. *Scilla* spp. *Anemone tomentosa*, *Rubus* spp. BB on *Ribes sangineum*, *Trifolium pratense*, SB on *Knautia arvensis*, HF on *Hydrangea* spp. *Clematis vitalba*, *Dasiphora fruticosea* and OI on *Filipendula ulmaria, Vicia faba*, *Buddleja* spp., *Crepis* spp.,

Ib Figure 12, The mean and spread of the overall-, morning- and afternoon preferences of HB, BB, SB, HF, and OI in Belgium and the Netherlands of the *Heracleum* spp and *Ribes sanguineum* are presented.

In the Annex in the Figures 26 and 28, present the data of Netherlands + Belgium, Denmark, and Latvia respectively.

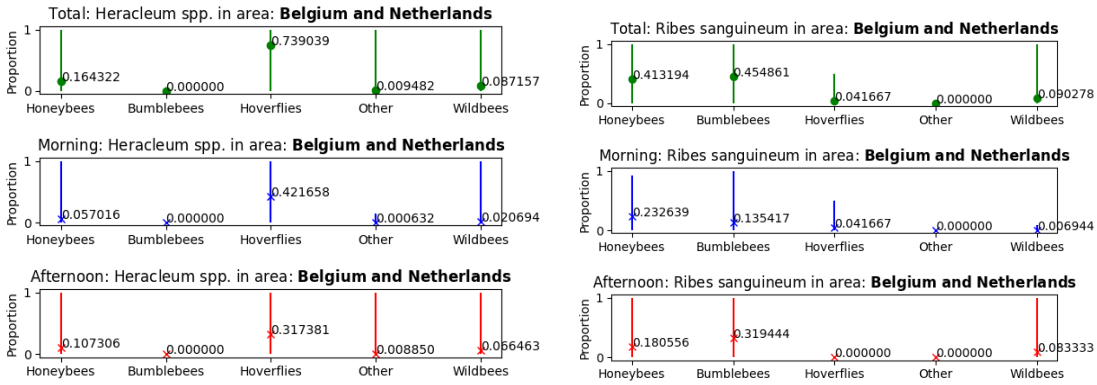


Figure 12. The mean and spread of the overall-, morning- and afternoon preferences on Heracleum spp and Ribes sanguineum in Belgium + the Netherlands

Pollinator ratios in time: Europe

In Figure 13 the Figure of the HBs in the Netherlands and Belgium is presented. The size of the dots show the number of insects recorded. The other Figures on BBs SBs, HF and OI are in the Annex.

The results show the blooming stages which varies from some weeks to much longer. Checking the Figures in line, it is noticeable that the number of flowers observed is larger in Latvia compared to Denmark en the Netherlands / Belgium.

The Figures 31 to 34 in the Annex also show the differences in number of visiting pollinators over Europe and also in the presented countries.

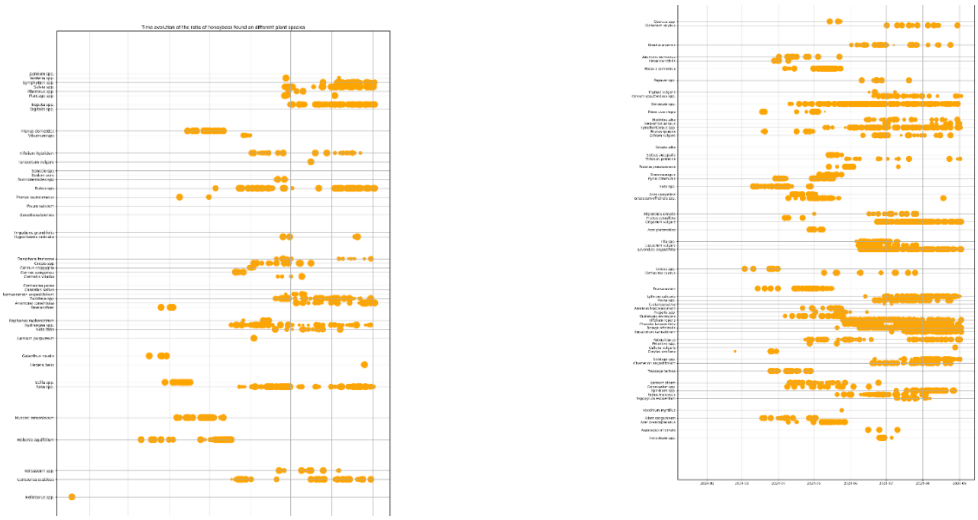


Figure 13, Obervations of HBs in the Netherlands / Belgium

Evaluation

Examples of how to combine the data in the tables and figures of specific plants to evaluate the presence and combinations of pollinating insects depending on the season, the temperature, the relative preference by HB, BB, SB, HF, and OI, and visits before and afternoon. The evaluation data of *Origanum vulgare*, *Geranium* spp, *Trifolium repens,* and *Taraxacum* spp are shown in tables 8 to 11. The evaluation

of *Origanum vulgare* shows that with 631 recordings the most observation data. The observations were done in the Netherlands (Nl), Denmark (DK), Norway (NO), and Latvia (LV). In summer, HB, BB), SB, HF, and OI were recorded. In the temperature range of 9 to 16 °C, only HF was recorded, in the range from 16 – 23m HH, BB.SB and HF were found, and in the range of 23 – 30 ° C. HB, BB, SB, HF, and O were recorded. The relative preference shows that HF was the most recorded pollinator on *Origanum vulgare*. The combinations recorded were HB+HF 10.5%, BB+HF 11.0%, and other combinations 18.6%. HB, BB, and HF as single pollinators were recorded in 18.8%, 9.3%, and 31.8% respectively of the recording. Of the single insect visits, the HB was 26.9%, BB 15.9%, SB 3.3%, HF 53.0%, and O 0.7% present. The HB and HF were detected mostly before noon. The other pollinators showed about the same frequency before- and afternoon.

All plants can be evaluated in this way

Table 8. Evaluation data of Origanum vulgare

	Origanum vulgare
N observations (country) (table)	631 (NL, DK, NO, LV)
Pollinators winter (table 1)	nd
Pollinators spring (table 2)	nd
Pollinators summer (table 3)	HB, BB, SB, HF, OI
Preference by Temp 2 – 9 (table 4)	nd
Preference by Temp 9 – 16 (table 5)	HF
Preference by Temp 16 – 23 (table 6)	HB, BB, SB, HF
Preference by Temp 23 – 30 (table 7)	HB, BB, SB, HF, O
Pollinator – plant preference (Annex Figure 36)	HB 5.7%, BB 3.7%, SB 3.6, HF15.5%,
Combination pollinators (Annex Figure 37)	HB 18.8%, BB 9.3%, HF 31.8%, HB+HF 10.5%, BB+HF 11.0%, other combinations 18.6%
visits before noon (Annex Figures 26 - 28)	HB 16.8%, BB 8.1%, HF 34.9%, SB 2.8% others 0.7%

Table 9. Evaluation data of ***Geranium*** *spp*

	Geranium spp.
N observations (country) (table)	527 (BE, NL, DK, LV)
Pollinators spring (table)	HB, BB, SB, HF, O
Pollinators summer (table)	HB,, SB
Pollinators winter (table)	
Preference by Temp 2 – 9 (table)	SB
Preference by Temp 9 – 16 (table)	BB, HF
Preference by Temp 16 – 23 (table)	HB, BB, SB, HF, O
Preference by Temp 23 – 30 (table)	HB, SB
Preference HB, BB, SB, HF, O (table)	HB 4.7%, BB 3.9%, SB 9.9%, HF 4.7%, O 3.6%

Frequency Combination pollinators (table)	HB 20.7%BB 19.9%, HF 14.4%, HB+BB 5.5%, BB+HF 6.6%, HB+HF+SB 5.2%, other combinations 27.7%
visits before noon (table)	HB 14.9%, BB 16.2%, SB8.1%, HF 17.9%, O 1.3%
Visits Afternoon (table)	HB 11.9%, BB 14.3%, SB 5.0%, HF 9.0%, O 1.3%

Table 10. Evaluation data of Trifolium repens

	Trifolium repens
N observations (country) (table)	223 (DK, LV)
Pollinators spring (table)	BB, O
Pollinators summer (table)	
Pollinators winter (table)	
Preference by Temp 2 – 9 (table)	
Preference by Temp 9 – 16 (table)	BB
Preference by Temp 16 – 23 (table)	HB
Preference by Temp 23 – 30 (table)	BB
Preference HB, BB, SB, HF, O (table)	HB nd, BB nd, SB nd, HF nd, O nd
Frequency Combination pollinators (table)	HB 31.3%, BB 11.0% HB+BB 22.1%, HB+O 9.2%, HB+SB 7.4% HB+BB+O 6.7%, other combinations 12.3%
visits before noon (table)	
Visits Afternoon (table)	

Table 11. Evaluation data of Taraxacum spp

	Taraxacum spp.
N observations (country) (table)	130 (BE, NL, DK, NO, LV, AT, IT)
Pollinators spring (table)	SB, HF, O
Pollinators summer (table)	
Pollinators winter (table)	HF
Preference by Temp 2 – 9 (table)	BB, SB, HF, O
Preference by Temp 9 – 16 (table)	SB, O
Preference by Temp 16 – 23 (table)	
Preference by Temp 23 – 30 (table)	
Preference HB, BB, SB, HF, O (table)	HB
Frequency Combination pollinators (table)	HB nd, BB nd, Sb nd, HF nd, O 3.5%

Mean percentage overall	HB 0%, BB 12.5%, SB 37.5%, HF 37.5%, O 12.5%
Mean percentage visits before noon (table)	HB 0%, BB 6.2%, SB 25.0%, HF 37.5%, O 6.2%
Mean percentage Visits Afternoon (table)	HB 0%, BB 6.2%, SB 12.5%, HF 0%, O 6.2%

Discussion

Let's take a few examples to explain the importance of nesting sites. An environment with a lot of flowers but little or no nesting opportunity for SBs that nest on the ground (e.g. plowing) will result in sightings without those SBs that might become there found. The same goes for honeybees, BBs, HF, and other pollinating insects such as butterflies. The distance between where pollinating insects live and where they forage is important. This is how the foraging distance of SBs and HF is expressed in meters, with a maximum of hundreds of meters. The range of BBs and HBs is expressed in kilometers, with an average of 1 to 1.5 kilometers. BBs, most species of which also nest on the ground, can fly much further than SBs when they are looking for their favourite flower sources. Another important aspect is the foraging strategy of pollinating insects. This is how the honey bee population concentrates massive flowering, during which it remains on the same flower species during a foraging flight and uses the 'bee dance' to provide correct locations. Other pollinating insects, such as BBs and SBs, do not have these dancing communication strategies. BBs collect their food from all plants, with a preference for pollen with a high amino acid content. Generalists among the SBs collect food from all bee plants, while specialists limit themselves to specific plants, ranging from family specialists to species specialists. Everything must be available within the very limited flight radius of SBs, which numbers only a few hundred meters.

Acknowledgment

Most of all I thank the citizen scientists who did the recordings and submissions carefully and provided me with valuable input. Without you, there would not be beeplants.eu. I thank Flemming Vejsnaes, and Ole Kiplinen of the Danish Bee Association (DBF), for their valuable and ever lasting participation and for hosting the database. Matthias Frey of Frey IT did and will do the app updates and improvements and all It needed, Thanks, Matthias. The data analyses were done by Xiaodong Duan and all Figures and maps were made by Elena Fini, both of the University of Aarhus, thank you.

Annex

In the annex, the ranging of number of observation is presented in the figures 14, 15, 16, 17 and 18. The observation locations are depicted in Maps 1 and the pollinator ratios in time of Europe, Belgium – Netherlands, Denmark, and Latvia are in the Figures 20, 21, 22, 23.

Number of observations per plant species

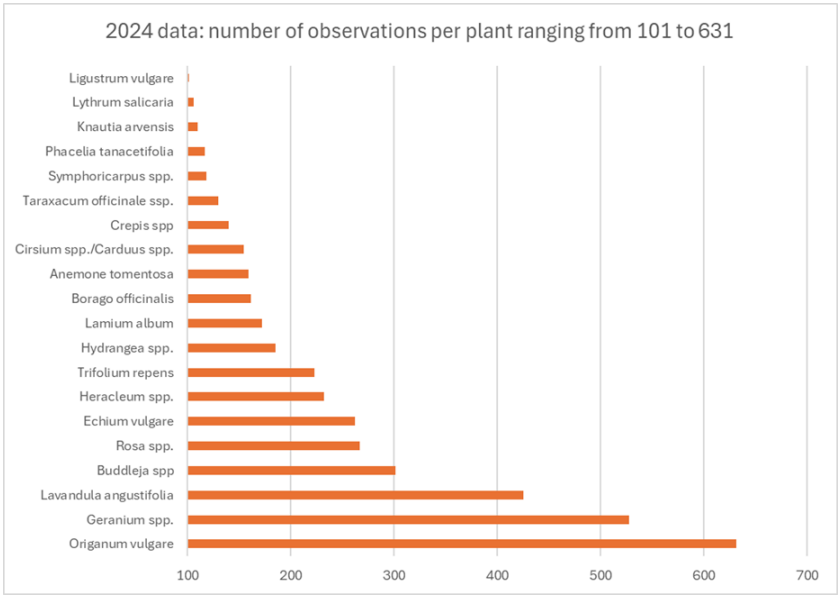


Figure 14. Plants species ranged according to the number of observations from 101 till 631

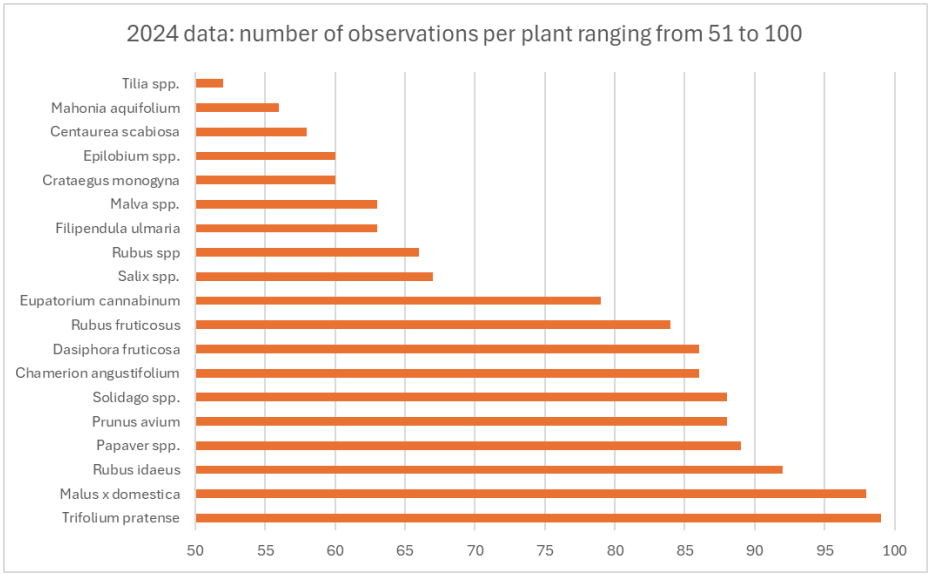


Figure 15. Plant species ranged according to the number of observations from 50 to 100

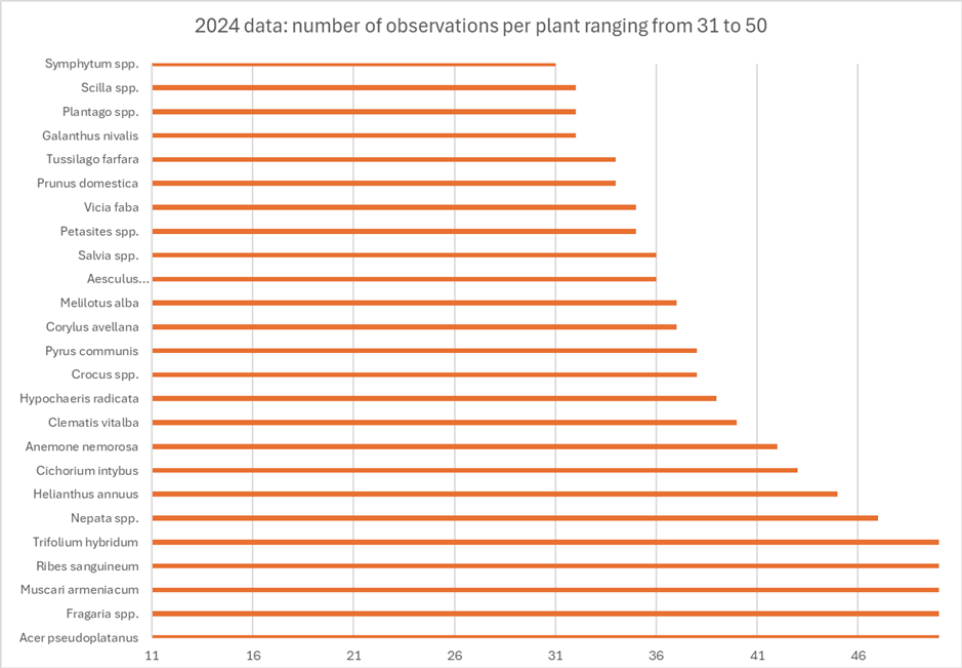


Figure 16. Plant species ranged according to the number of observations from 31 to 50

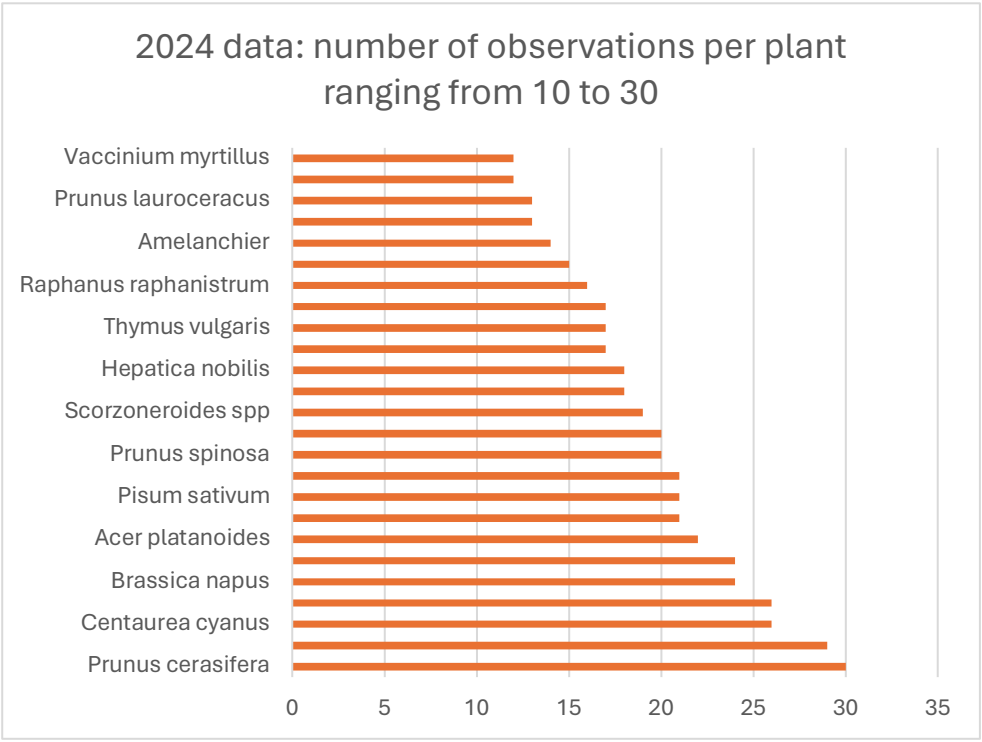


Figure 17. Plant species ranged according to the number of observations from 10 to 30

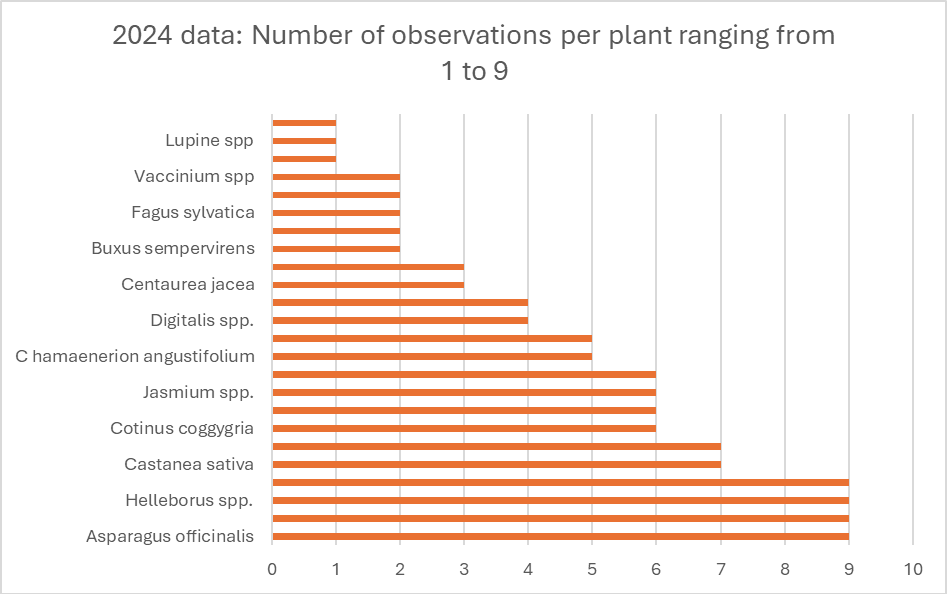


Figure 18. Plant species ranged according to the number of observations from 1 to 9

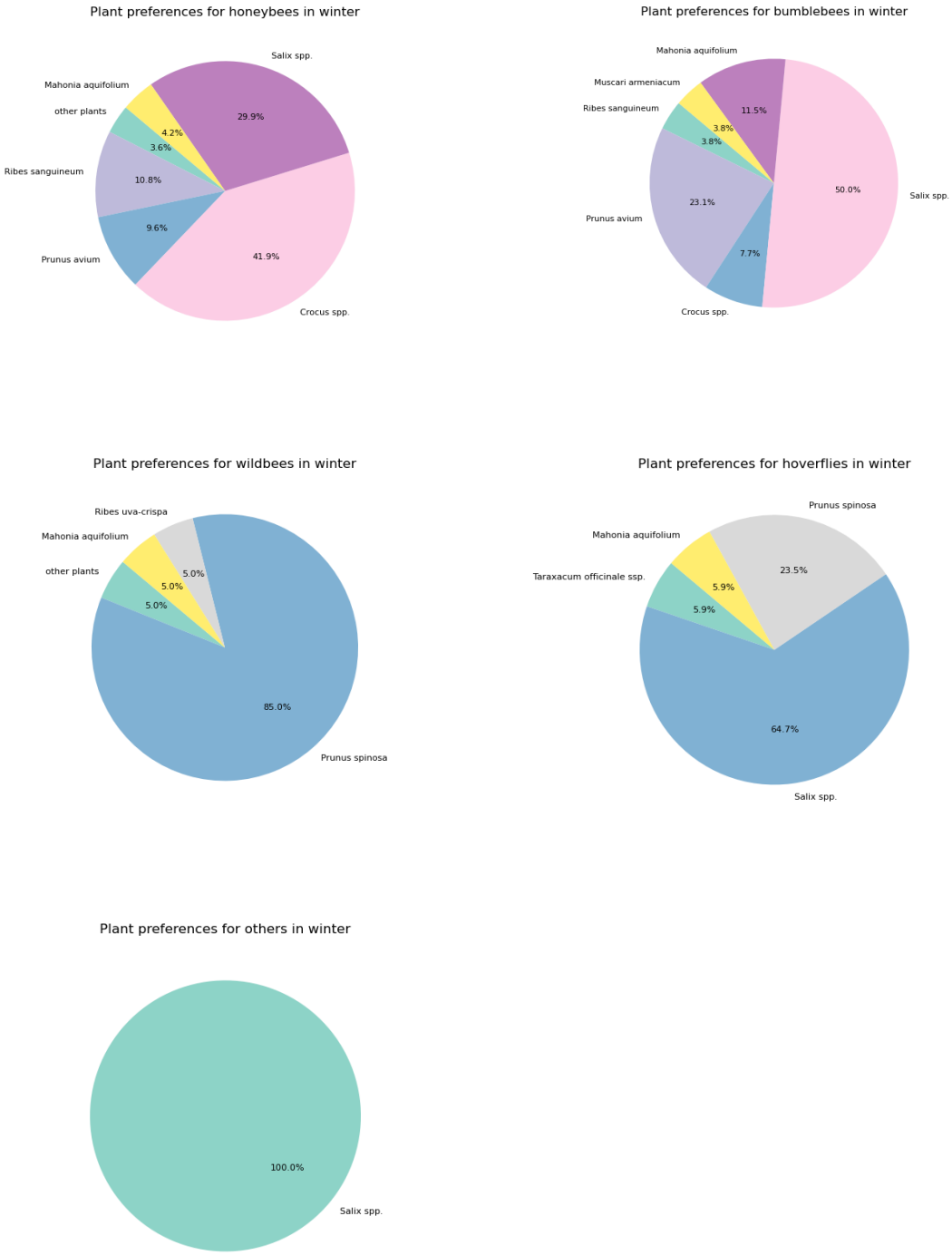


Figure 19, The percentage of HBs, BBs, SBs, HF and OI in winter 2024

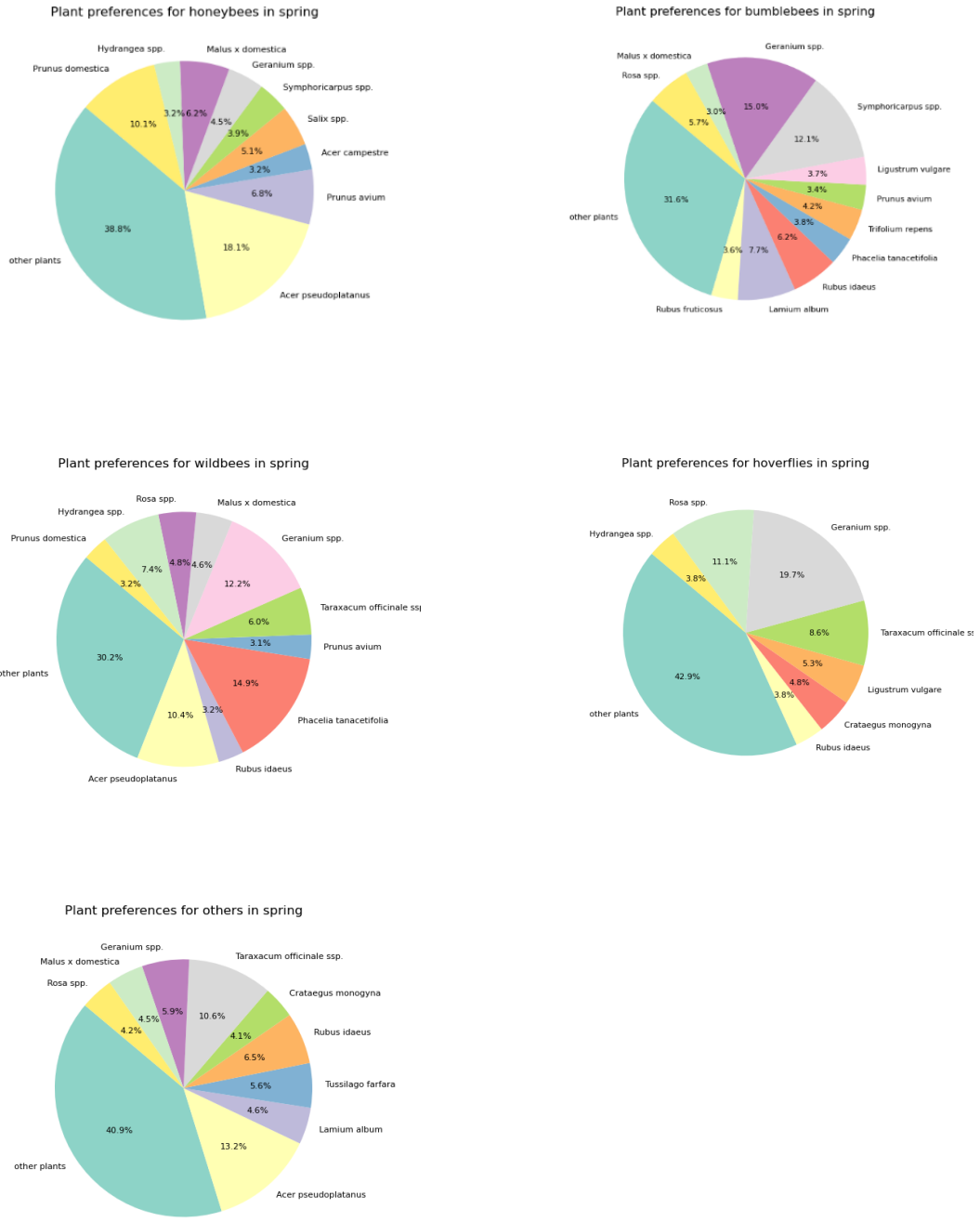
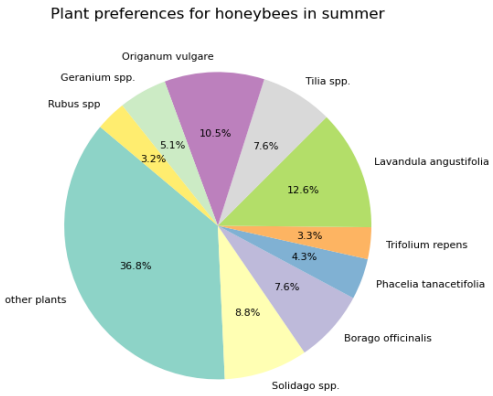
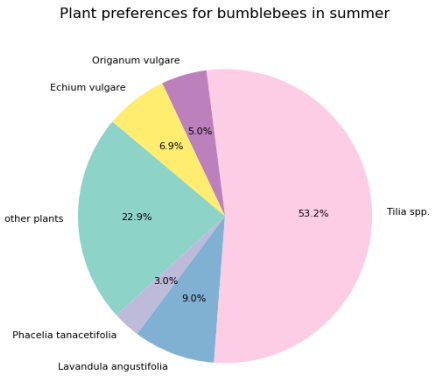
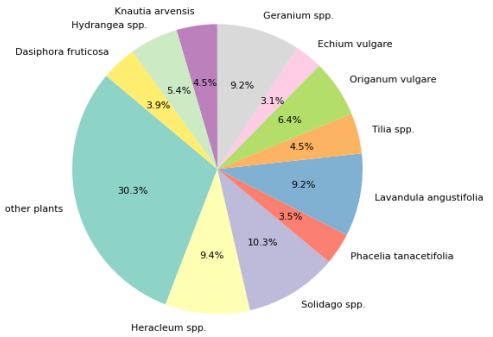
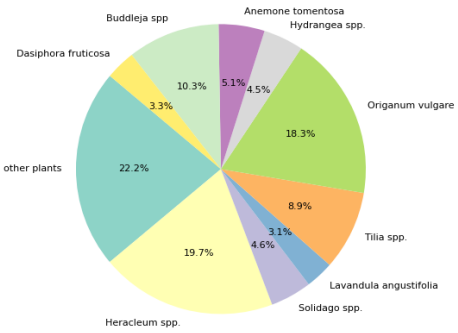


Figure 20. The percentage of HBs, BBs, SBs, HF, and OI in spring 2024









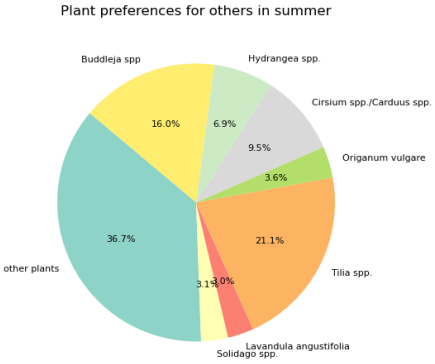


*Figure 21, The percentage of HBs, BBs, SBs, HF, and OI in **summer** 2024*

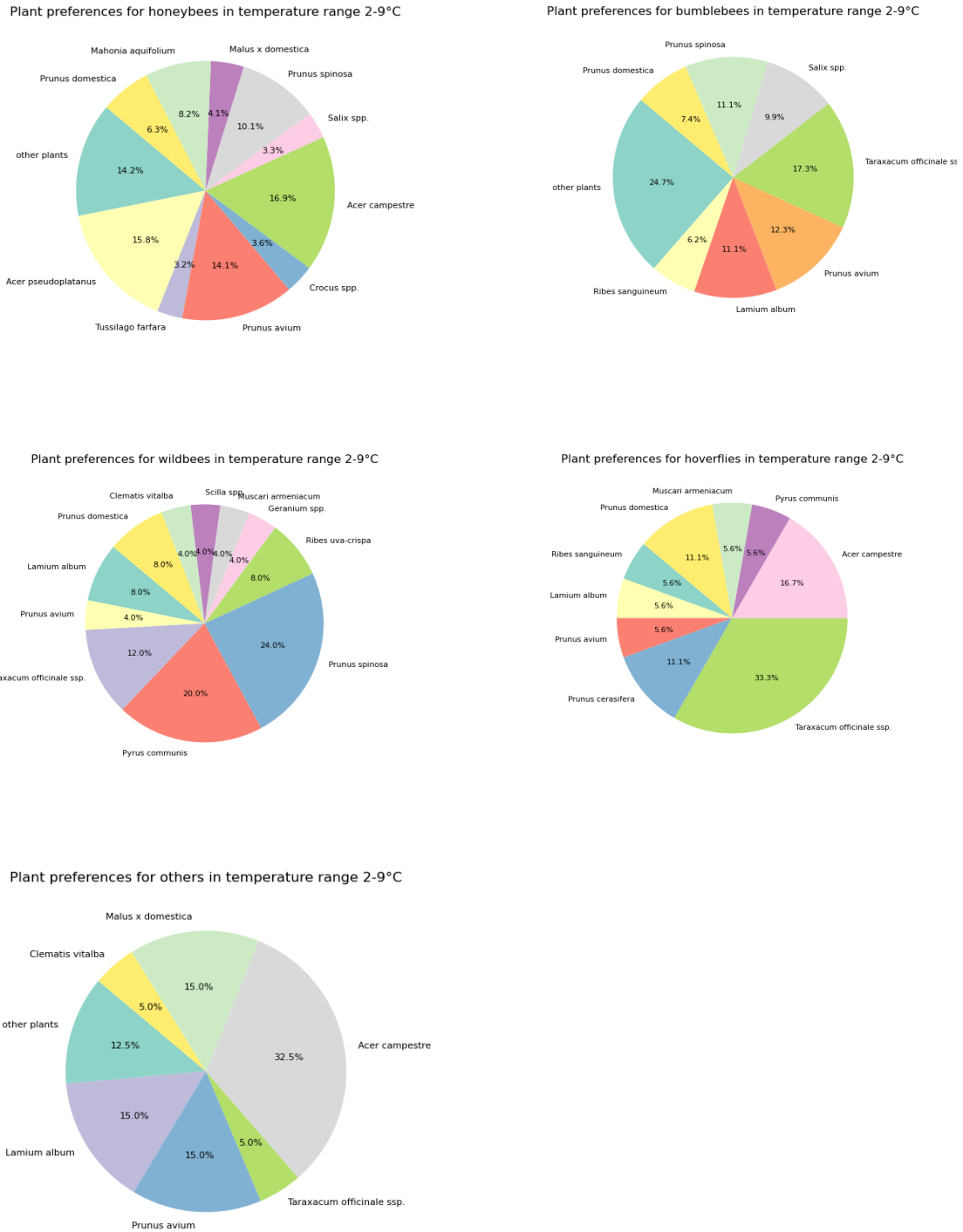


Figure 22. The preference of HBs, BBs, SBs, HF, and OI in the temperature range of 2 to 9 °C.

Figure 23. The preference of HBs, BBs, SBs, HF, and OI in the temperature range of 9 to 16 °C.

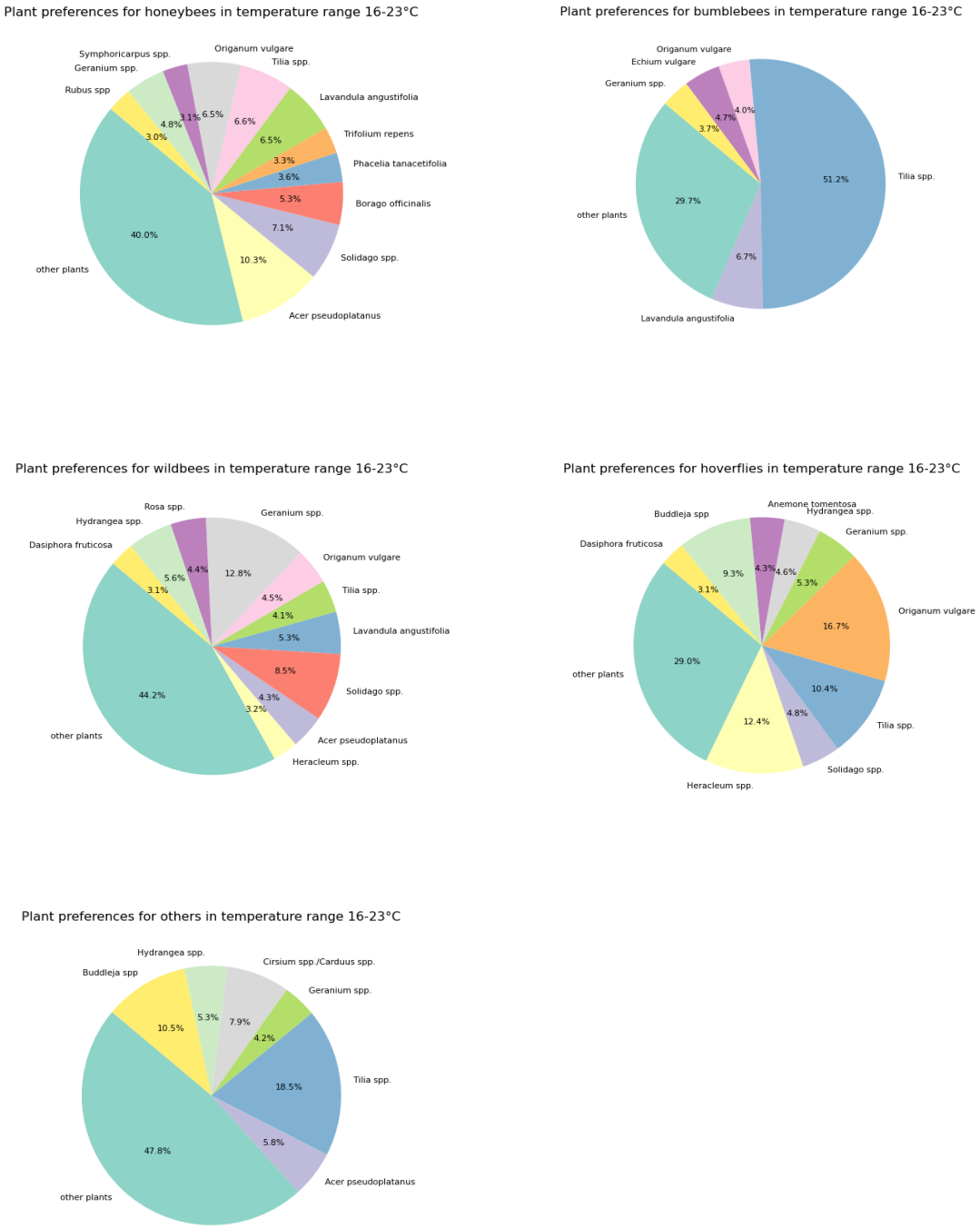


Figure 24. The preference of HBs, BBs, SBs, HF, and OI in the temperature range of 16 to 23 oC.

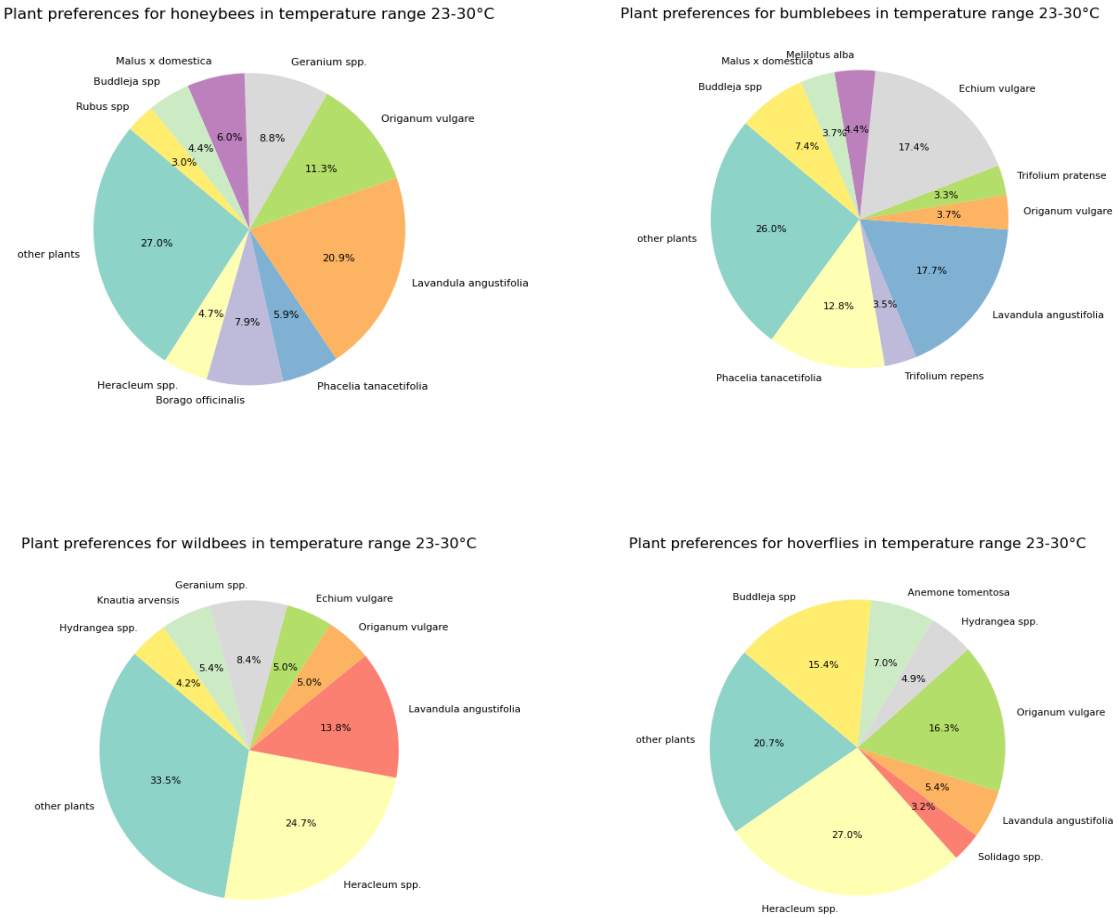


Figure 25. The preference of HBs, BBs, SBs, HF, and OI in the temperature range of 23 to 30 °C.

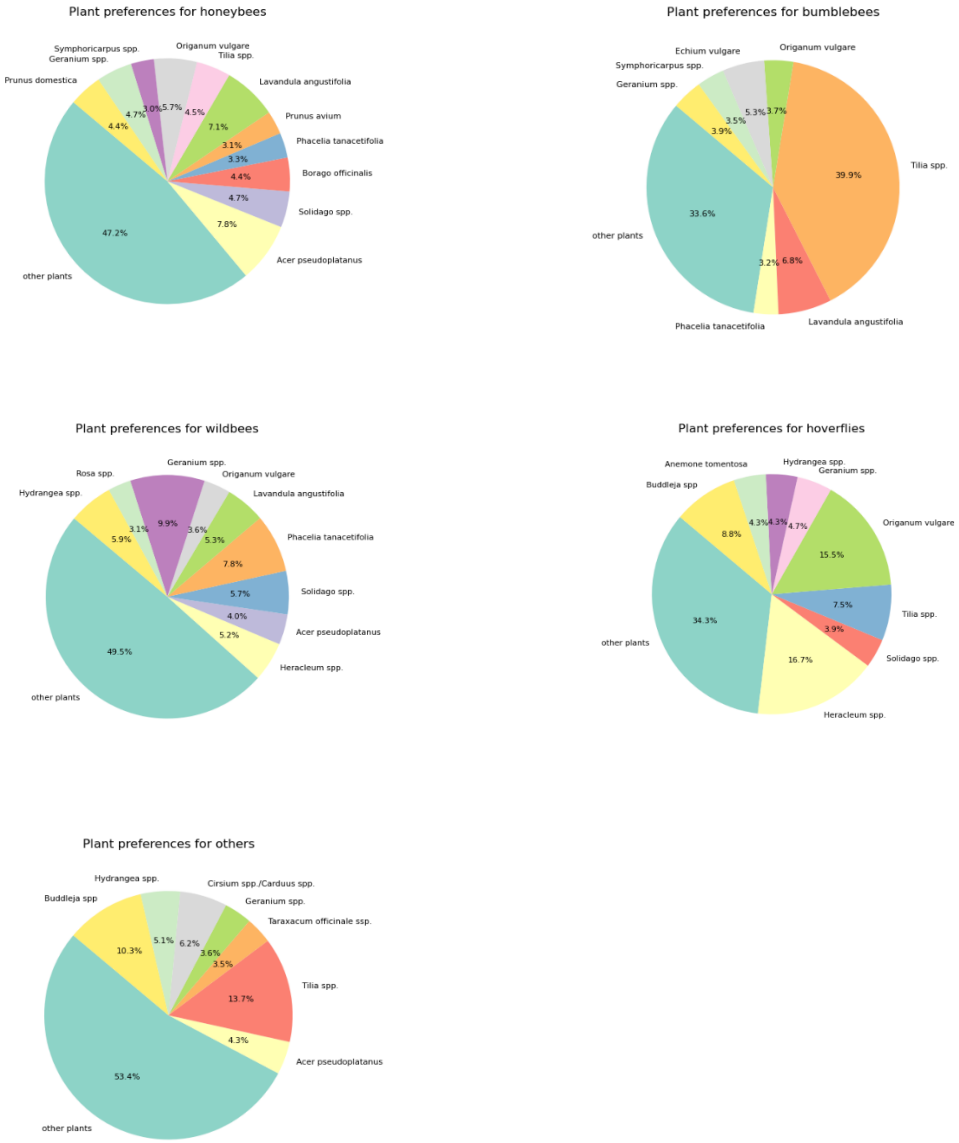
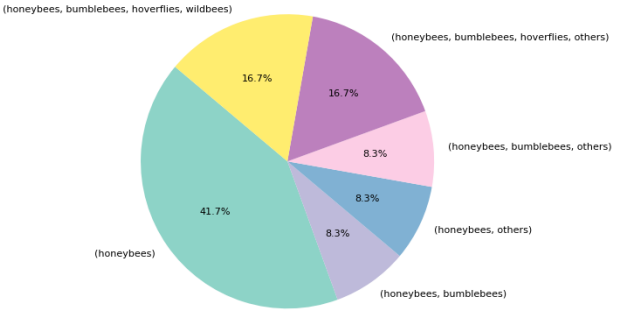
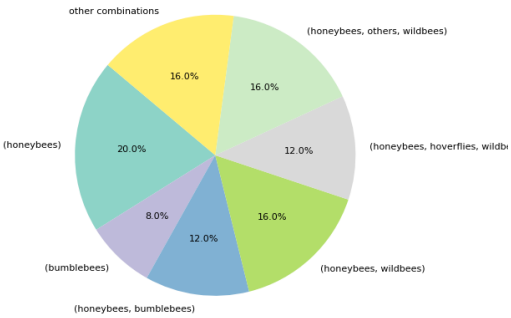


Figure 26. The overall plant preference of HBs, BBs, SBs, HF, and OI

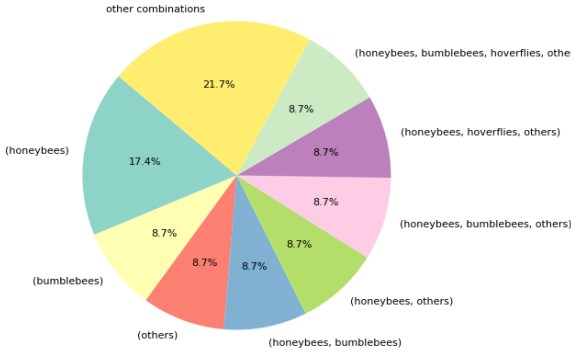
Frequency of pollinator combinations observed on Acer campestre



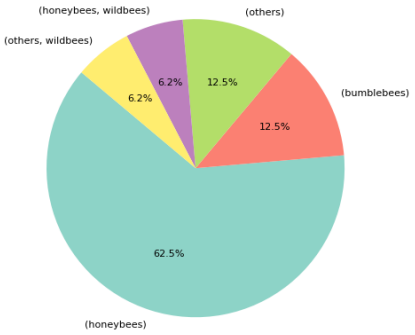
Frequency of pollinator combinations observed on Acer pseudoplatanus



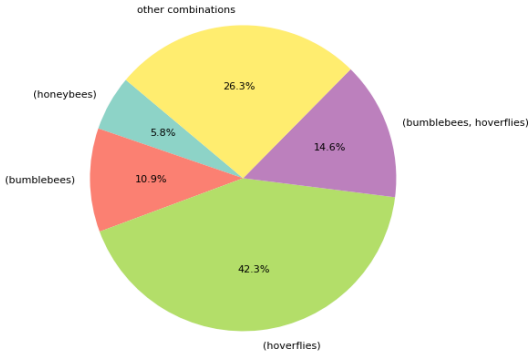
Frequency of pollinator combinations observed on Aesculus hippocastanum



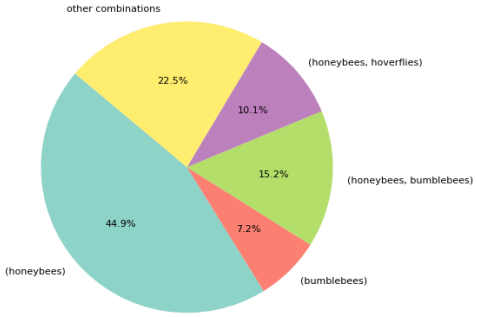
Frequency of pollinator combinations observed on Anemone nemorosa



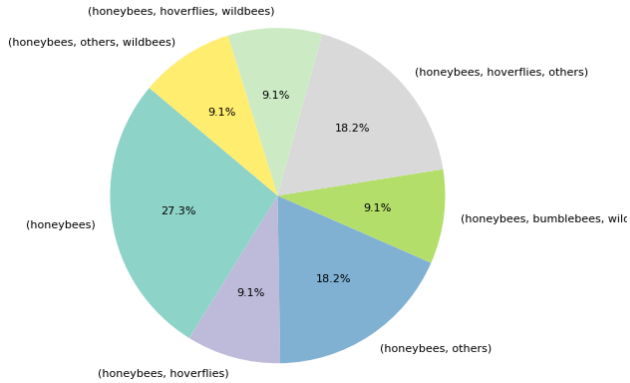
Frequency of pollinator combinations observed on Anemone tomentosa



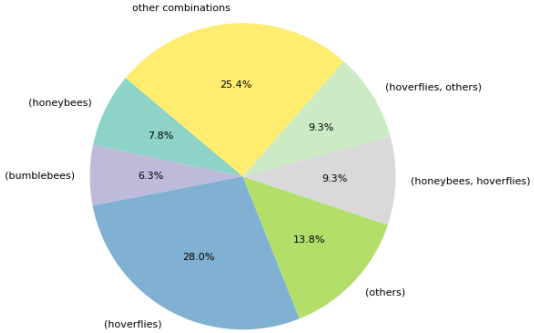
Frequency of pollinator combinations observed on Borago officinalis



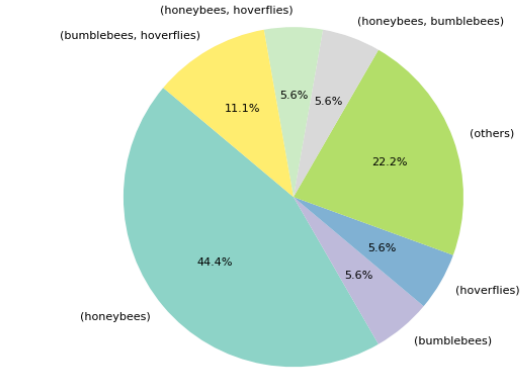
Frequency of pollinator combinations observed on Brassica napus



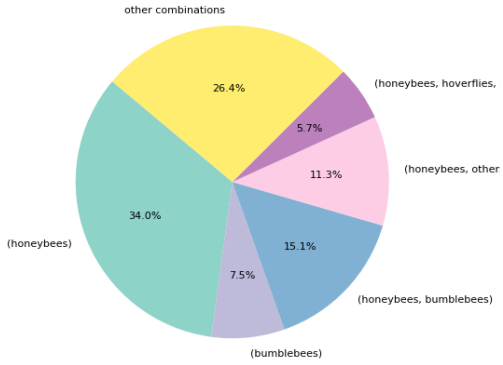
Frequency of pollinator combinations observed on Buddleja spp



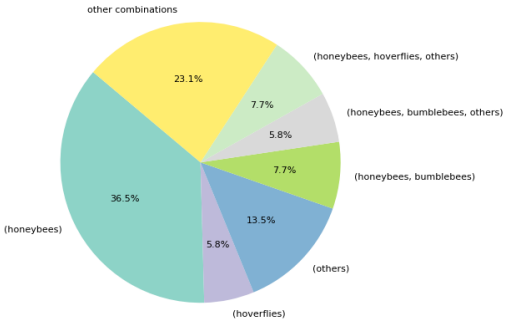
Frequency of pollinator combinations observed on Centaurea cyanus



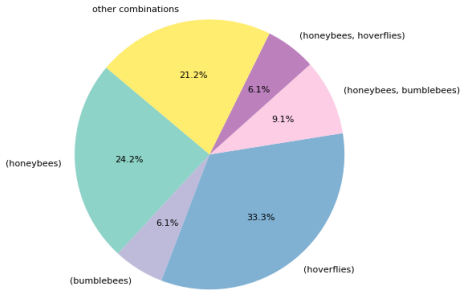
Frequency of pollinator combinations observed on Centaurea scabiosa



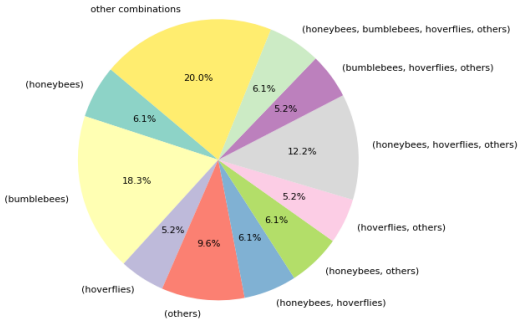
Frequency of pollinator combinations observed on Chamerion angustifolium



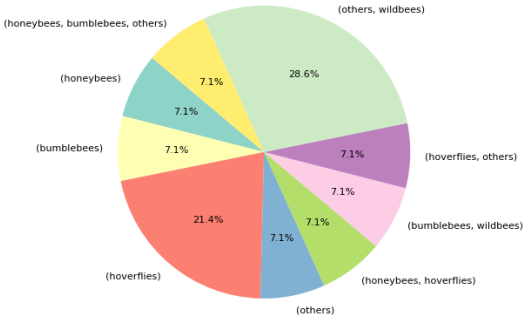
Frequency of pollinator combinations observed on Cichorium intybus



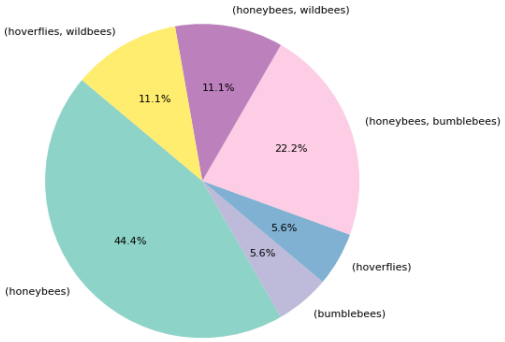
Frequency of pollinator combinations observed on Cirsium spp-Carduus spp



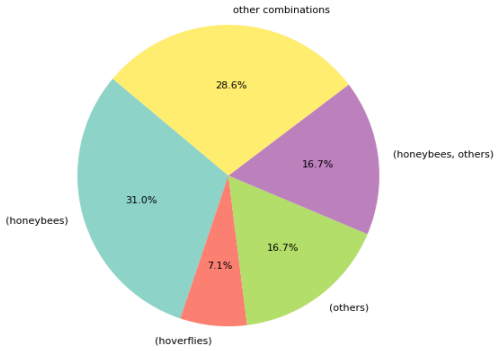
Frequency of pollinator combinations observed on Clematis vitalba



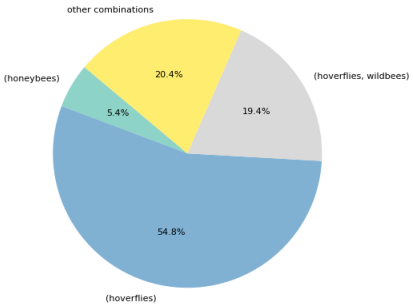
Frequency of pollinator combinations observed on Cotoneaster spp



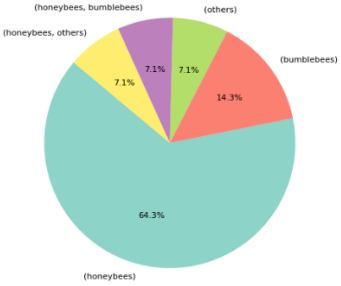
Frequency of pollinator combinations observed on Crataegus monogyna



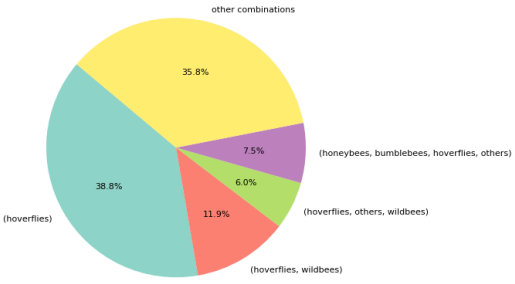
Frequency of pollinator combinations observed on Crepis spp



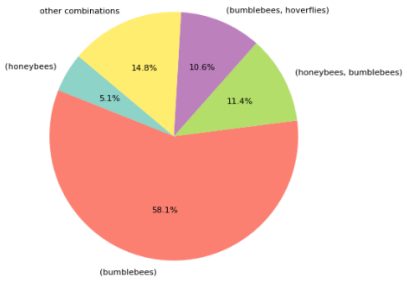
Frequency of pollinator combinations observed on Crocus spp



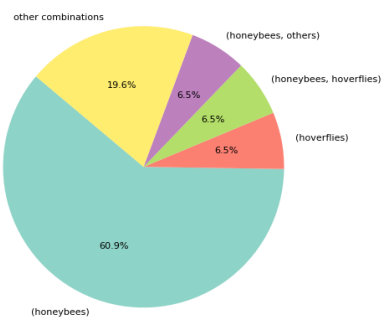
Frequency of pollinator combinations observed on Dasiphora fruticosa



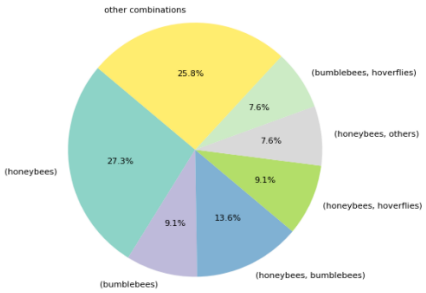
Frequency of pollinator combinations observed on Echium vulgare



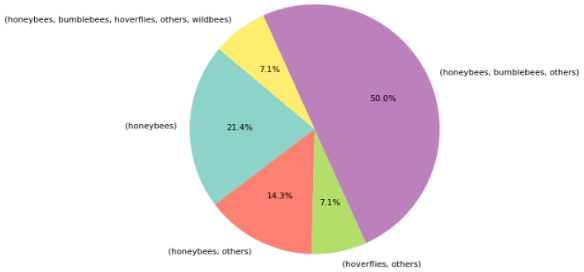
Frequency of pollinator combinations observed on Epilobium spp



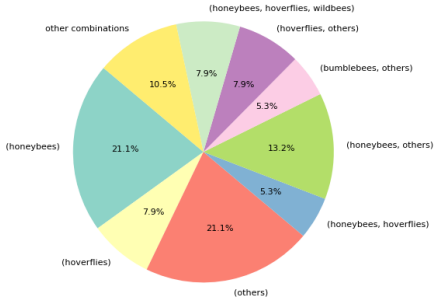
Frequency of pollinator combinations observed on Eupatorium cannabinum



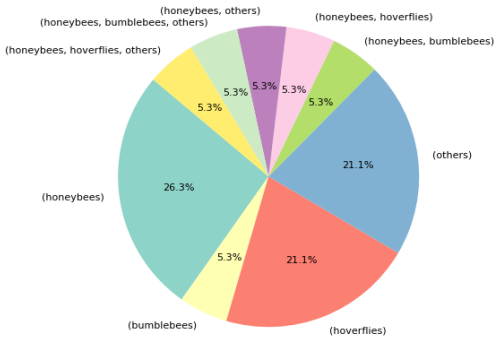
Frequency of pollinator combinations observed on Fagopyrum esculentum



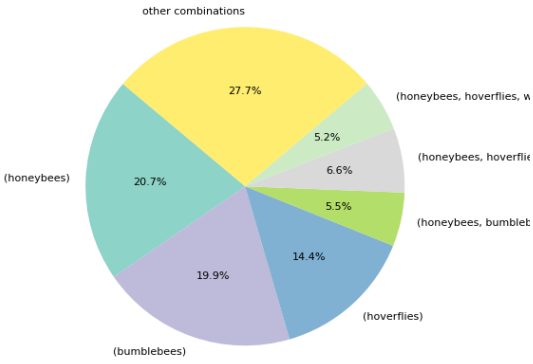
Frequency of pollinator combinations observed on Filipendula ulmaria



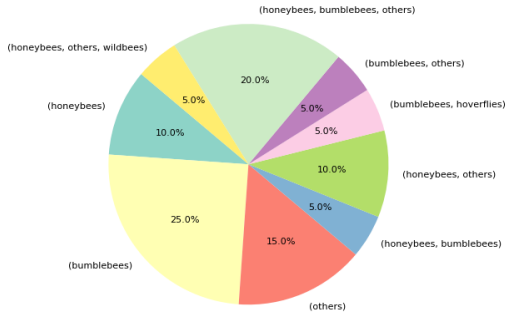
Frequency of pollinator combinations observed on Fragaria spp



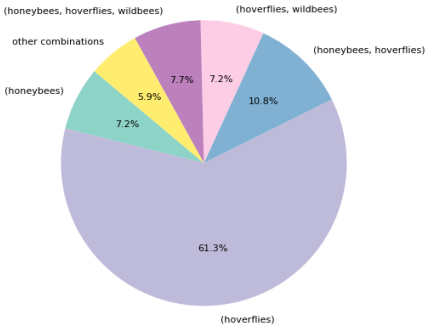
Frequency of pollinator combinations observed on Geranium spp



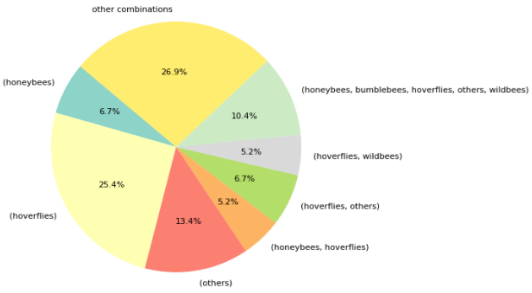
Frequency of pollinator combinations observed on Helianthus annuus



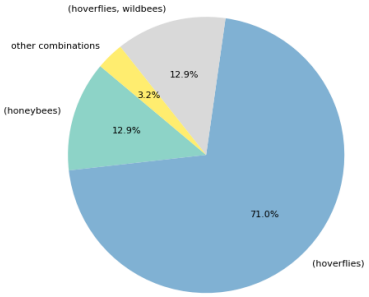
Frequency of pollinator combinations observed on Heracleum spp



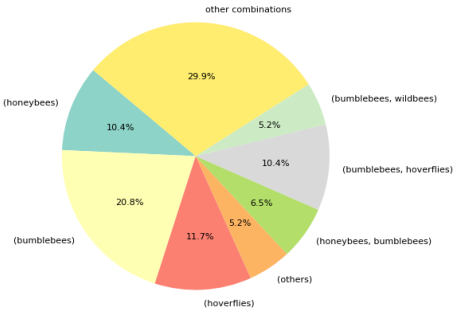
Frequency of pollinator combinations observed on Hydrangea spp



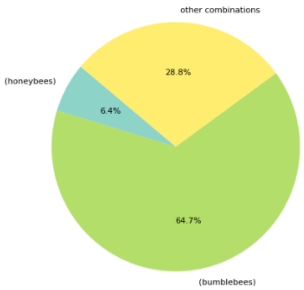
Frequency of pollinator combinations observed on Hypochaeris radicata



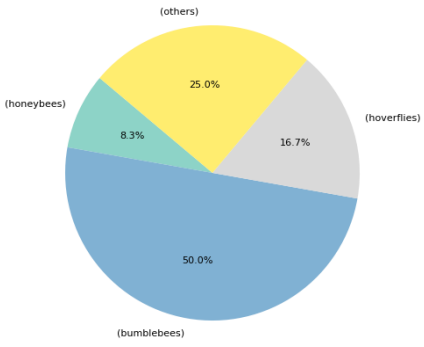
Frequency of pollinator combinations observed on Knautia arvensis



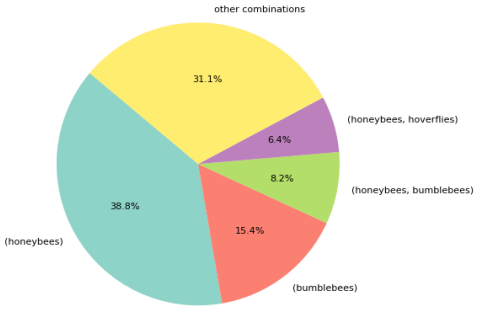
Frequency of pollinator combinations observed on Lamium album



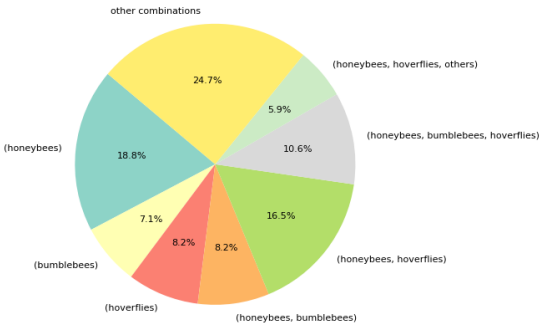
Frequency of pollinator combinations observed on Lamium purpureum



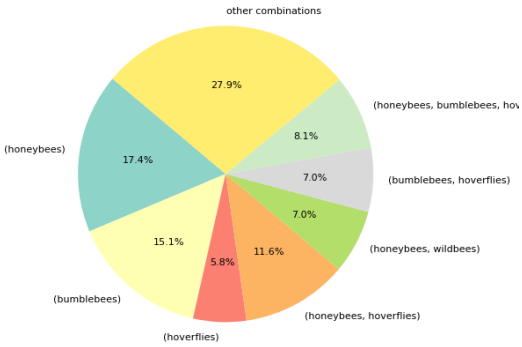
Frequency of pollinator combinations observed on Lavandula angustifolia



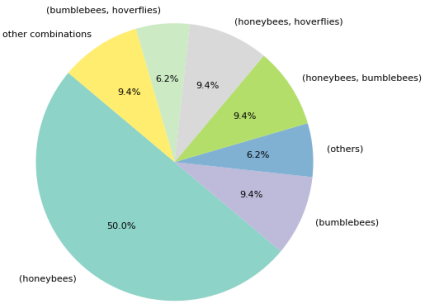
Frequency of pollinator combinations observed on Ligustrum vulgare



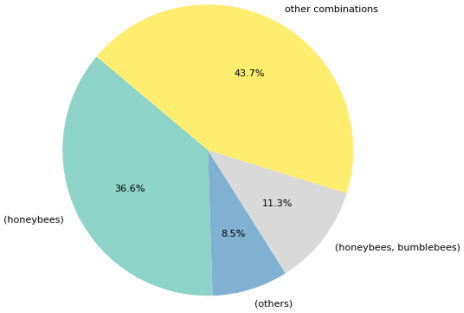
Frequency of pollinator combinations observed on Lythrum salicaria



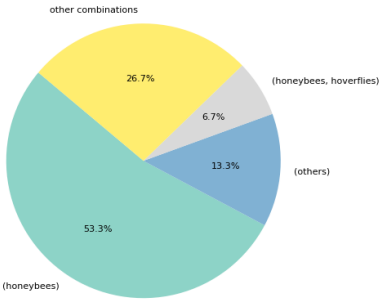
Frequency of pollinator combinations observed on Mahonia aquifolium



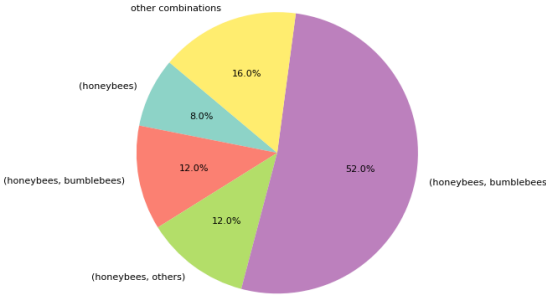
Frequency of pollinator combinations observed on Malus x domestica



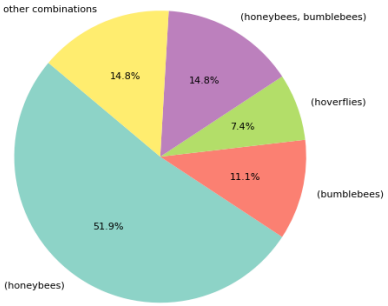
Frequency of pollinator combinations observed on Malva spp



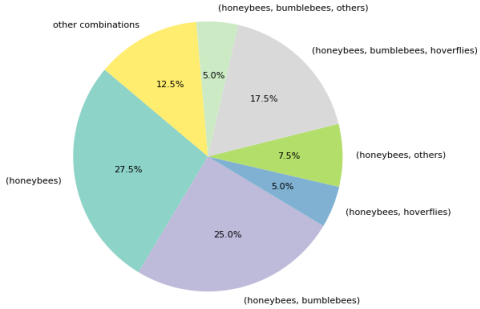
Frequency of pollinator combinations observed on Melilotus alba



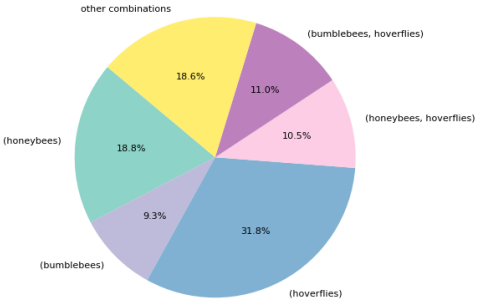
Frequency of pollinator combinations observed on Muscari armeniacum



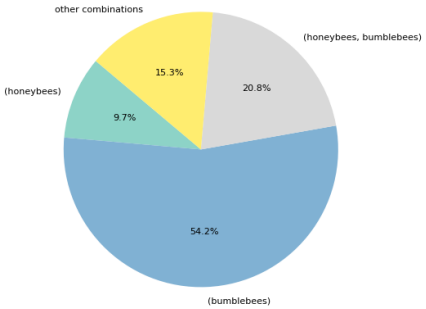
Frequency of pollinator combinations observed on Nepata spp



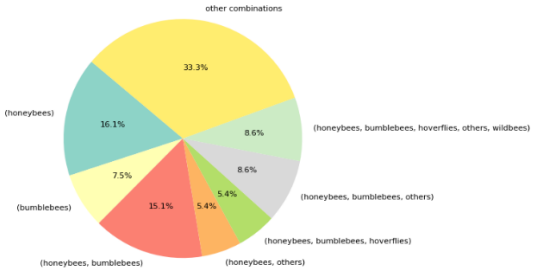
Frequency of pollinator combinations observed on Origanum vulgare



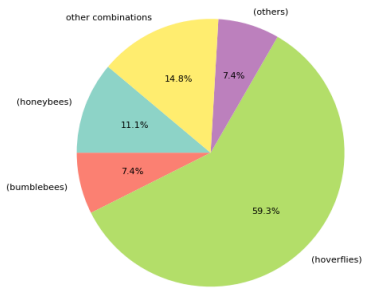
Frequency of pollinator combinations observed on Papaver spp



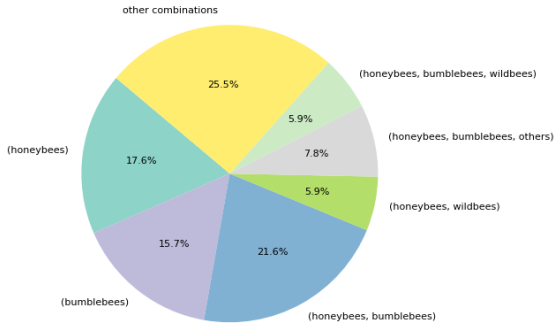
Frequency of pollinator combinations observed on Phacelia tanacetifolia



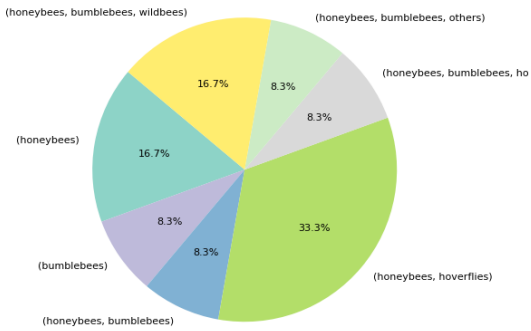
Frequency of pollinator combinations observed on Plantago spp



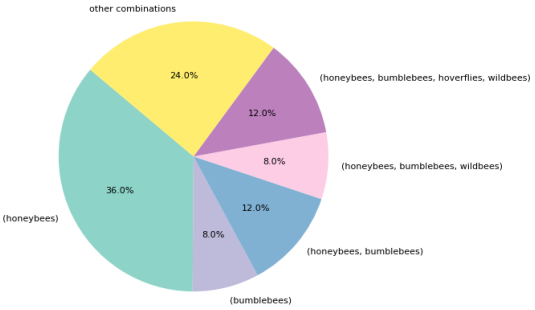
Frequency of pollinator combinations observed on Prunus avium



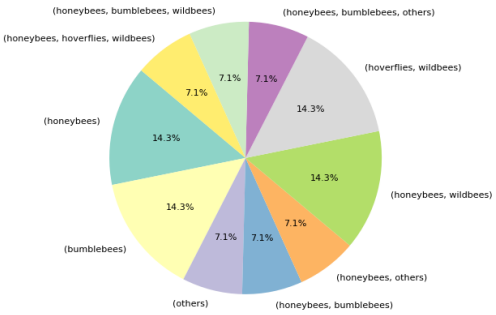
Frequency of pollinator combinations observed on Prunus cerasifera



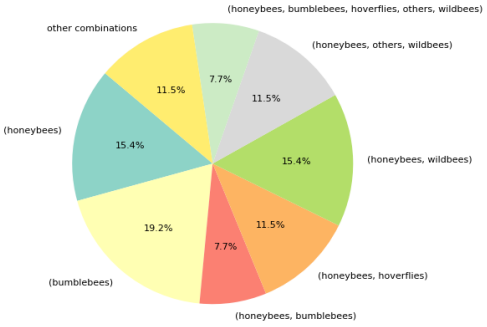
Frequency of pollinator combinations observed on Prunus domestica



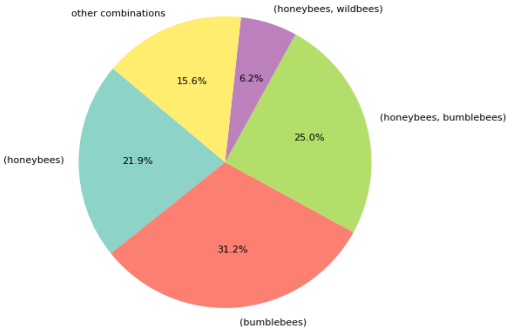
Frequency of pollinator combinations observed on Prunus spinosa



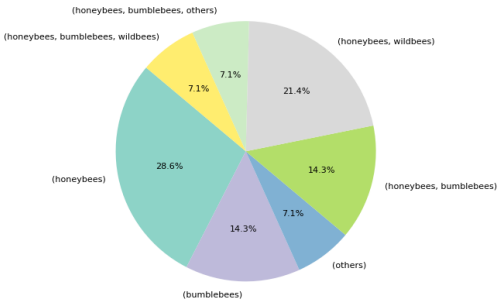
Frequency of pollinator combinations observed on Pyrus communis



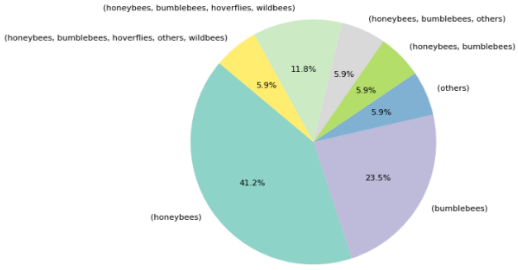
Frequency of pollinator combinations observed on Ribes sanguineum



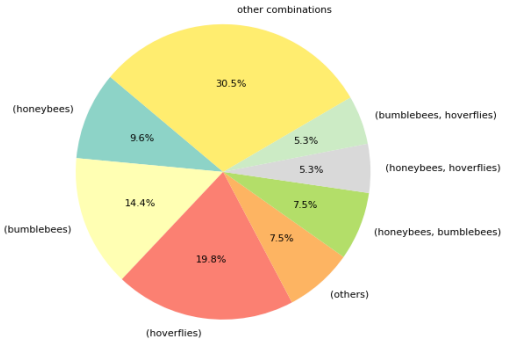
Frequency of pollinator combinations observed on Ribes uva-crispa



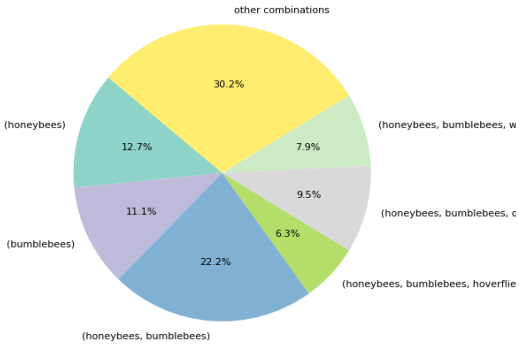
Frequency of pollinator combinations observed on Robinia pseudoacacia



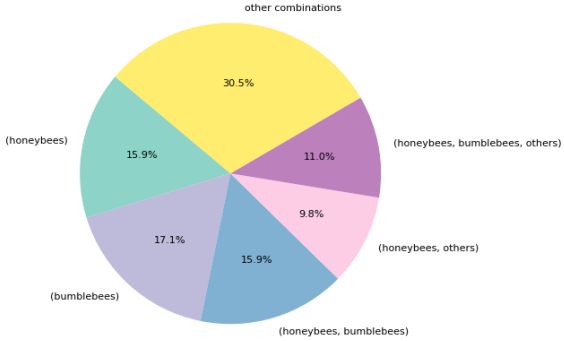
Frequency of pollinator combinations observed on Rosa spp



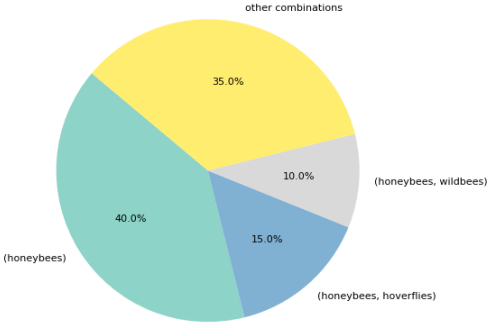
Frequency of pollinator combinations observed on Rubus fruticosus



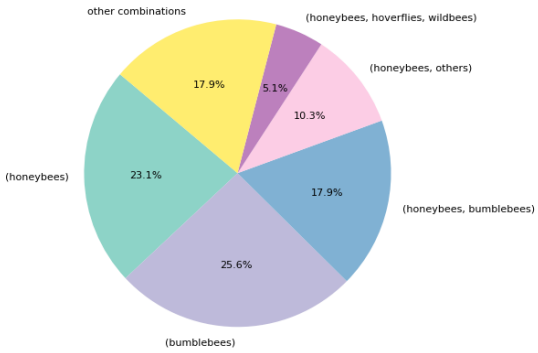
Frequency of pollinator combinations observed on Rubus idaeus



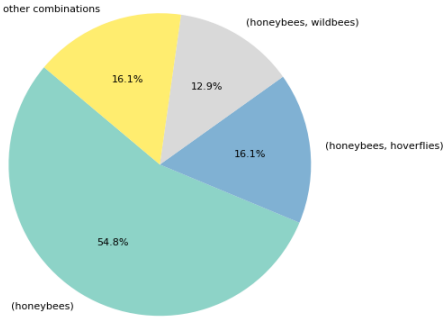
Frequency of pollinator combinations observed on Rubus spp



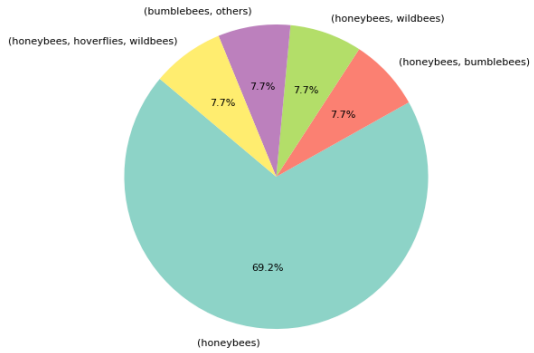
Frequency of pollinator combinations observed on Salix spp



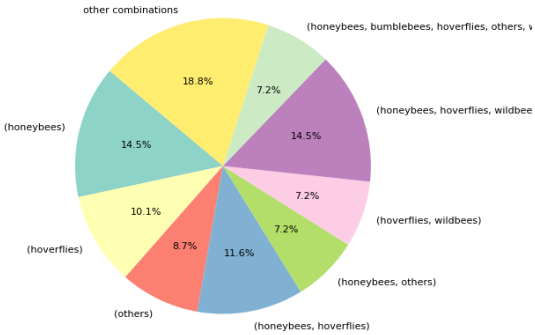
Frequency of pollinator combinations observed on Salvia spp



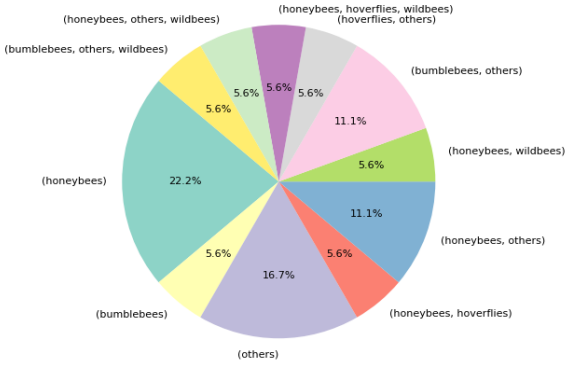
Frequency of pollinator combinations observed on Scilla spp



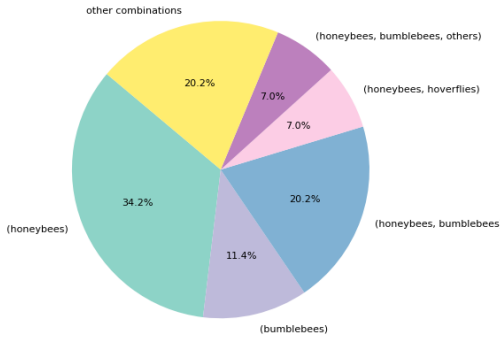
Frequency of pollinator combinations observed on Solidago spp



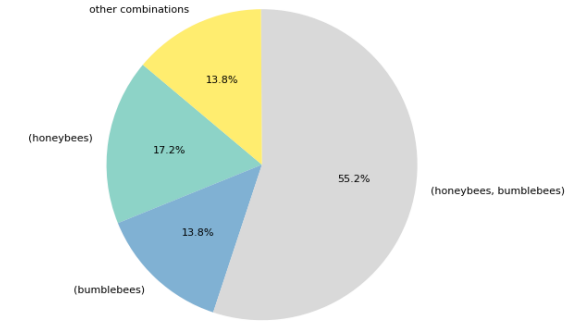
Frequency of pollinator combinations observed on Sorbus aucuparia



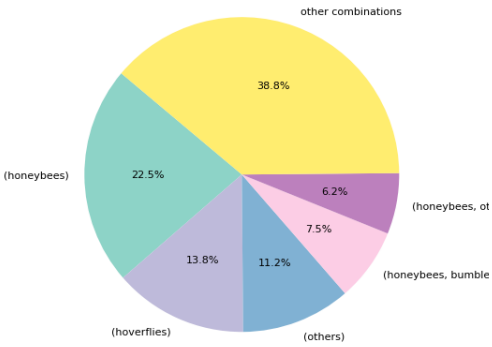
Frequency of pollinator combinations observed on Symphoricarpus spp



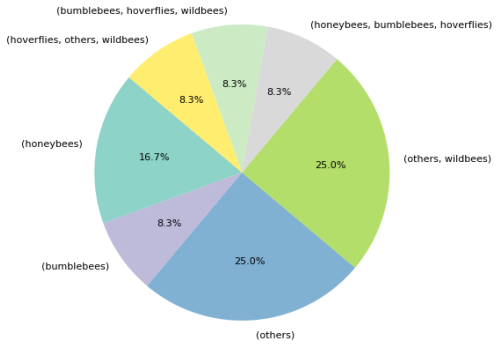
Frequency of pollinator combinations observed on Symphytum spp



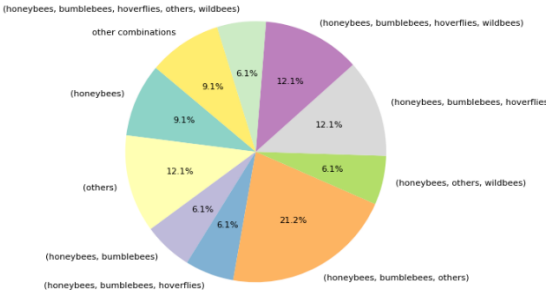
Frequency of pollinator combinations observed on Taraxacum officina



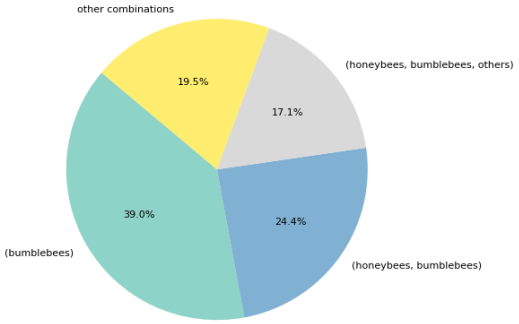
Frequency of pollinator combinations observed on Thymus vulgaris



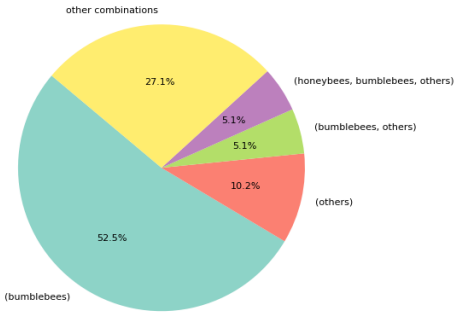
Frequency of pollinator combinations observed on Tilia spp



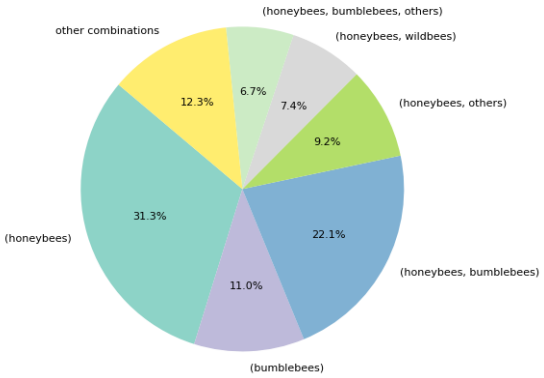
Frequency of pollinator combinations observed on Trifolium hybridum



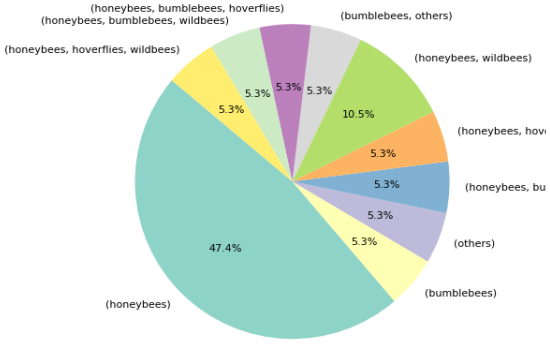
Frequency of pollinator combinations observed on Trifolium pratense



Frequency of pollinator combinations observed on Trifolium repens



Frequency of pollinator combinations observed on Tussilago farfar



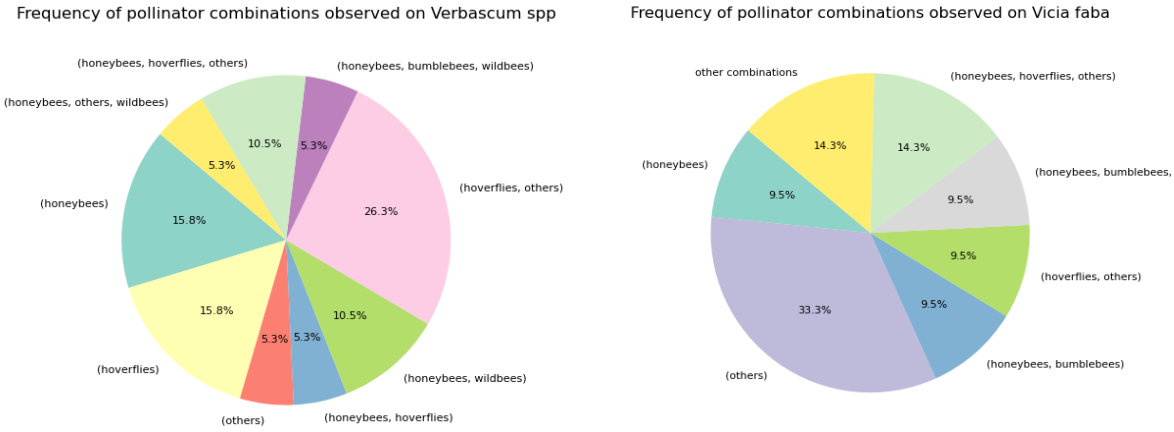
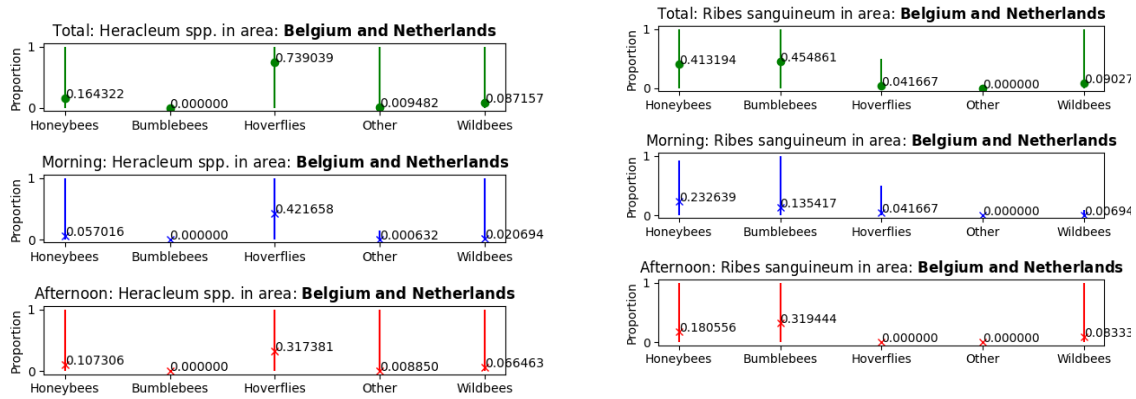
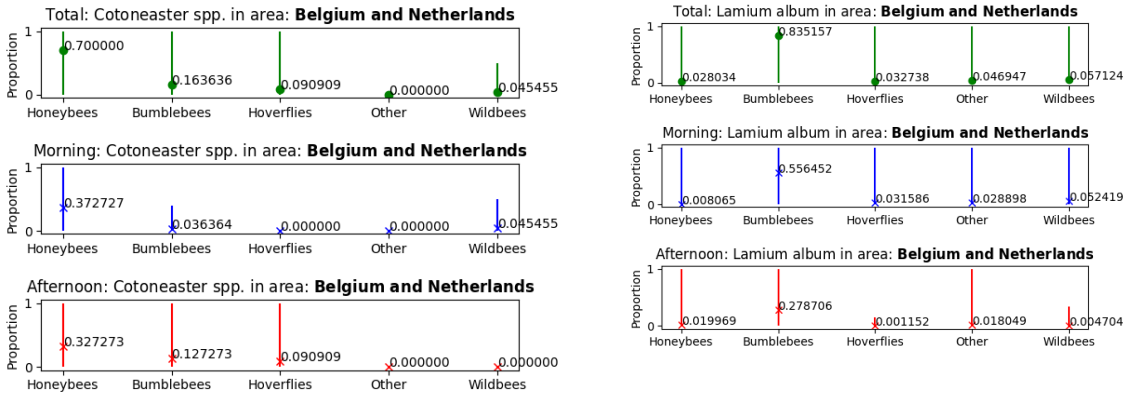
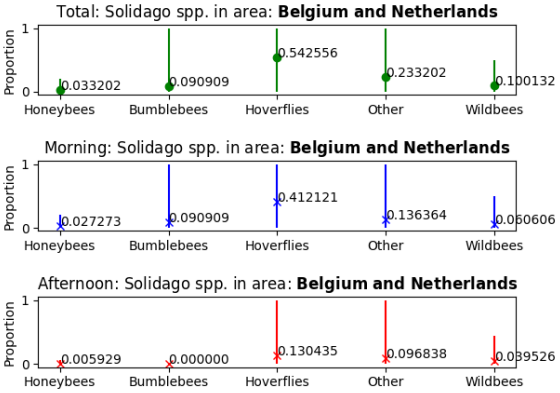
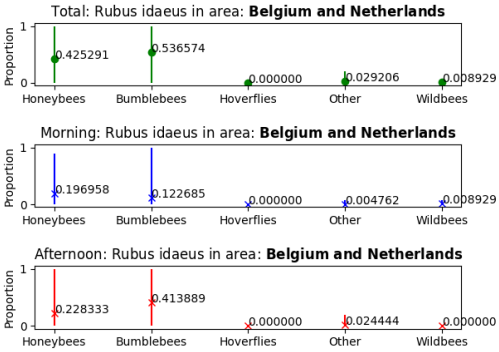


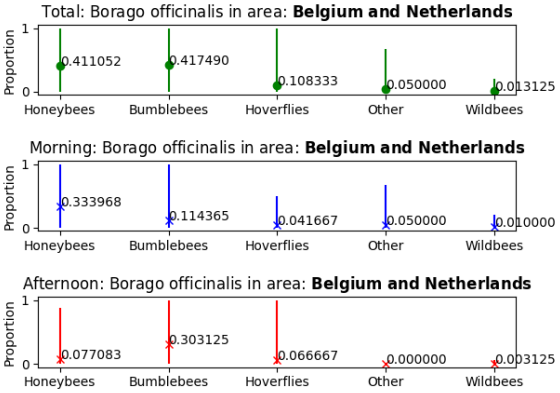
Figure 27. The combinations of HBs, BBs, SBs, HF, and OI observed in the 74 plant species

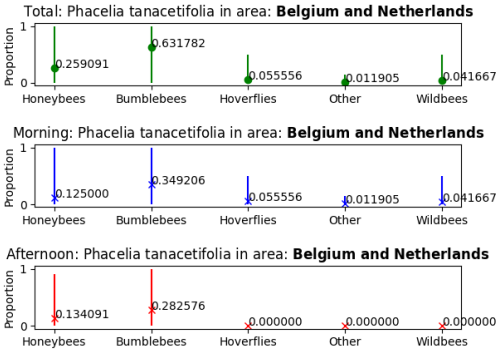


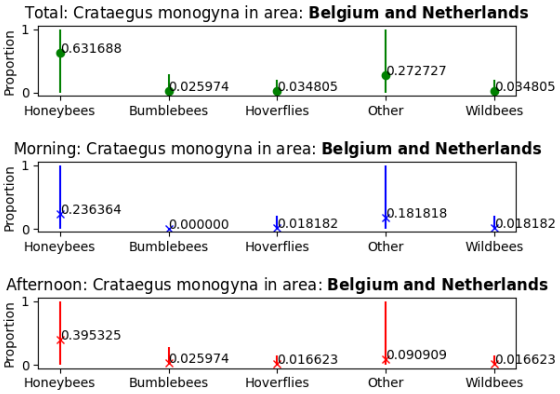


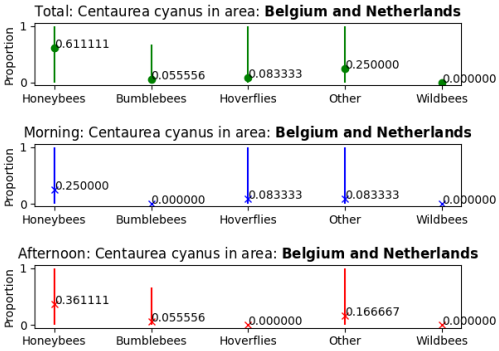

Total: Solidago spp. in area: **Belgium and Netherlands**
Proportion
0.033202
0.090909
0.542556
0.233202
0.100132
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Solidago spp. in area: **Belgium and Netherlands**
0.027273
0.090909
0.412121
0.136364
0.050606
Afternoon: Solidago spp. in area: **Belgium and Netherlands**
0.005929
0.000000
0.130435
0.096838
0.039526

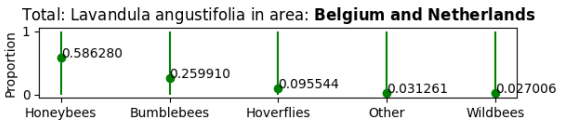

Total: Rubus idaeus in area: **Belgium and Netherlands**
Proportion
0.425291
0.536574
0.000000
0.029206
0.008929
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Rubus idaeus in area: **Belgium and Netherlands**
0.196958
0.122685
0.000000
0.004762
0.008929
Afternoon: Rubus idaeus in area: **Belgium and Netherlands**
0.228333
0.413889
0.000000
0.024444
0.000000

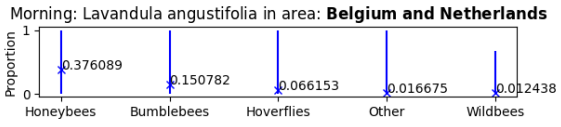

Total: Borago officinalis in area: **Belgium and Netherlands**
Proportion
0.411052
0.417490
0.108333
0.050000
0.013125
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Borago officinalis in area: **Belgium and Netherlands**
0.333968
0.114365
0.041667
0.050000
0.010000
Afternoon: Borago officinalis in area: **Belgium and Netherlands**
0.077083
0.303125
0.066667
0.000000
0.003125

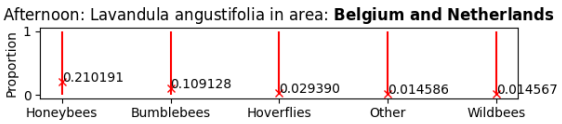

Total: Phacelia tanacetifolia in area: **Belgium and Netherlands**
Proportion
0.259091
0.631782
0.055556
0.011905
0.041667
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Phacelia tanacetifolia in area: **Belgium and Netherlands**
0.125000
0.349206
0.055556
0.011905
0.041667
Afternoon: Phacelia tanacetifolia in area: **Belgium and Netherlands**
0.134091
0.282576
0.000000
0.000000
0.000000

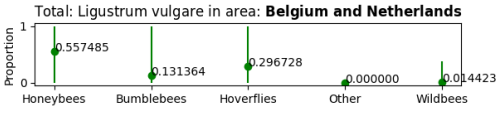

Total: Crataegus monogyna in area: **Belgium and Netherlands**
Proportion
0.631688
0.025974
0.034805
0.272727
0.034805
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Crataegus monogyna in area: **Belgium and Netherlands**
0.236364
0.000000
0.018182
0.181818
0.018182
Afternoon: Crataegus monogyna in area: **Belgium and Netherlands**
0.395325
0.025974
0.016623
0.090909
0.016623

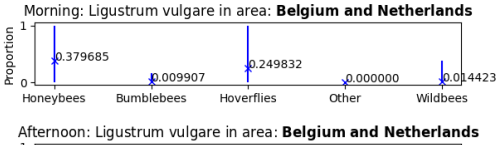

Total: Centaurea cyanus in area: **Belgium and Netherlands**
Proportion
0.611111
0.055556
0.083333
0.250000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Centaurea cyanus in area: **Belgium and Netherlands**
0.250000
0.000000
0.083333
0.083333
0.000000
Afternoon: Centaurea cyanus in area: **Belgium and Netherlands**
0.361111
0.055556
0.000000
0.166667
0.000000

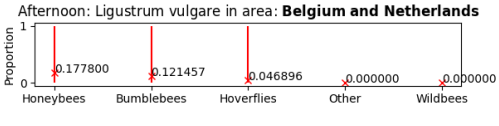

Total: Lavandula angustifolia in area: **Belgium and Netherlands**
Proportion
1
0
0.586280
0.259910
0.095544
0.031261
0.027006
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

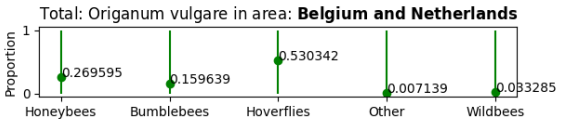

Morning: Lavandula angustifolia in area: **Belgium and Netherlands**
Proportion
1
0
0.376089
0.150782
0.066153
0.016675
0.012438
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

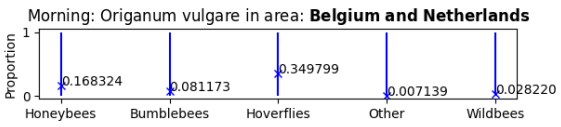

Afternoon: Lavandula angustifolia in area: **Belgium and Netherlands**
Proportion
1
0
0.210191
0.109128
0.029390
0.014586
0.014567
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

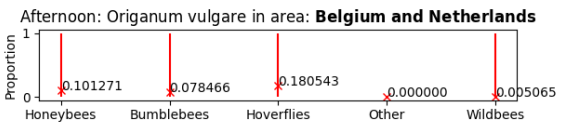

Total: Ligustrum vulgare in area: **Belgium and Netherlands**
Proportion
1
0
0.557485
0.131364
0.296728
0.000000
0.014423
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

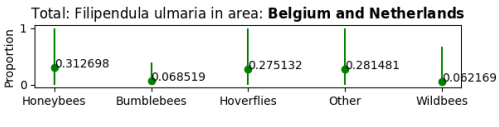

Morning: Ligustrum vulgare in area: **Belgium and Netherlands**
Proportion
1
0
0.379685
0.009907
0.249832
0.000000
0.014423
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

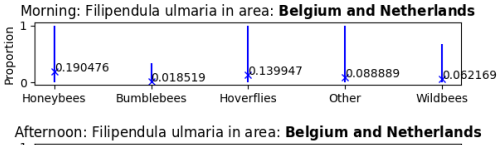

Afternoon: Ligustrum vulgare in area: **Belgium and Netherlands**
Proportion
1
0
0.177800
0.121457
0.046896
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

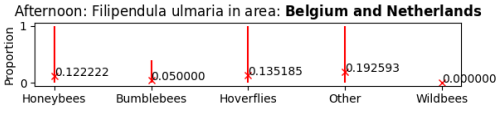

Total: Origanum vulgare in area: **Belgium and Netherlands**
Proportion
1
0
0.269595
0.159639
0.530342
0.007139
0.033285
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

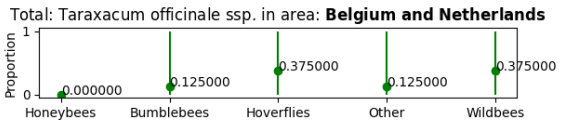

Morning: Origanum vulgare in area: **Belgium and Netherlands**
Proportion
1
0
0.168324
0.081173
0.349799
0.007139
0.028220
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

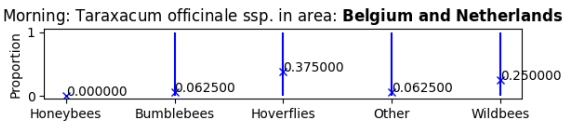

Afternoon: Origanum vulgare in area: **Belgium and Netherlands**
Proportion
1
0
0.101271
0.078466
0.180543
0.000000
0.005065
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

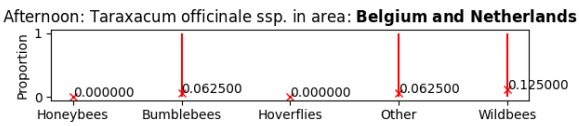

Total: Filipendula ulmaria in area: **Belgium and Netherlands**
Proportion
1
0
0.312698
0.068519
0.275132
0.281481
0.062169
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

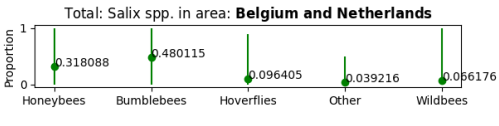

Morning: Filipendula ulmaria in area: **Belgium and Netherlands**
Proportion
1
0
0.190476
0.018519
0.139947
0.088889
0.062169
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

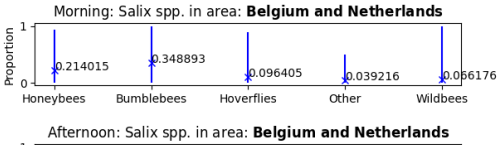

Afternoon: Filipendula ulmaria in area: **Belgium and Netherlands**
Proportion
1
0
0.122222
0.050000
0.135185
0.192593
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

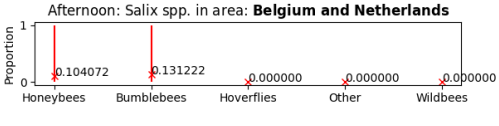

Total: Taraxacum officinale ssp. in area: **Belgium and Netherlands**
Proportion
1
0
0.000000
0.125000
0.375000
0.125000
0.375000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

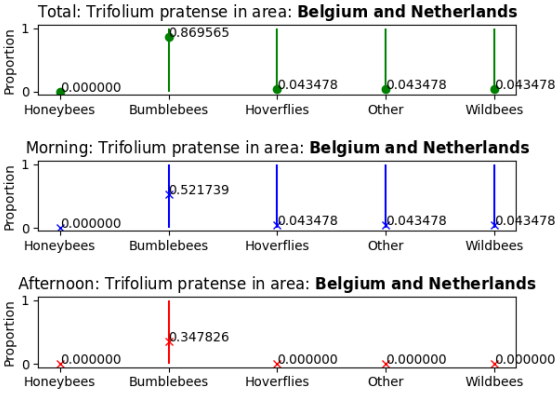

Morning: Taraxacum officinale ssp. in area: **Belgium and Netherlands**
Proportion
1
0
0.000000
0.062500
0.375000
0.062500
0.250000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Afternoon: Taraxacum officinale ssp. in area: **Belgium and Netherlands**
Proportion
1
0
0.000000
0.062500
0.000000
0.062500
0.125000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Salix spp. in area: **Belgium and Netherlands**
Proportion
1
0
0.318088
0.480115
0.096405
0.039216
0.066176
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

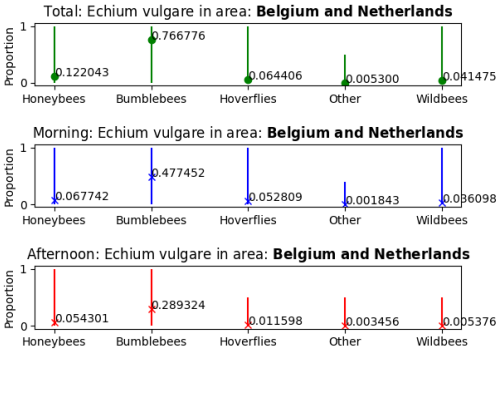

Morning: Salix spp. in area: **Belgium and Netherlands**
Proportion
1
0
0.214015
0.348893
0.096405
0.039216
0.066176
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Afternoon: Salix spp. in area: **Belgium and Netherlands**
Proportion
1
0
0.104072
0.131222
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Trifolium pratense in area: **Belgium and Netherlands**
Proportion
0.000000
0.869565
0.043478
0.043478
0.043478
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

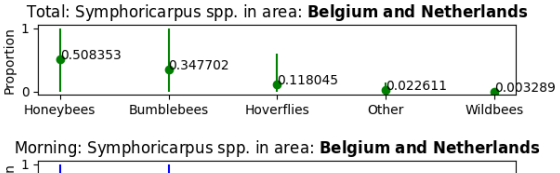
Morning: Trifolium pratense in area: **Belgium and Netherlands**
Proportion
0.000000
0.521739
0.043478
0.043478
0.043478
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

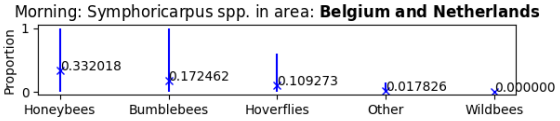
Afternoon: Trifolium pratense in area: **Belgium and Netherlands**
Proportion
0.000000
0.347826
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

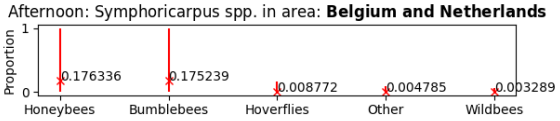

Total: Echium vulgare in area: **Belgium and Netherlands**
Proportion
0.122043
0.766776
0.064406
0.005300
0.041475
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

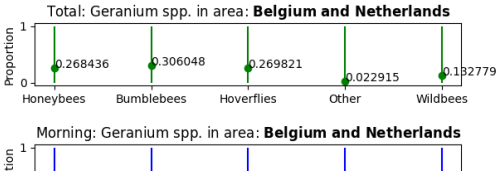
Morning: Echium vulgare in area: **Belgium and Netherlands**
Proportion
0.067742
0.477452
0.052809
0.001843
0.036098
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

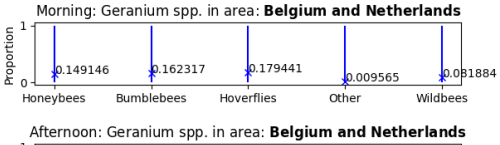
Afternoon: Echium vulgare in area: **Belgium and Netherlands**
Proportion
0.054301
0.289324
0.011598
0.003456
0.005376
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

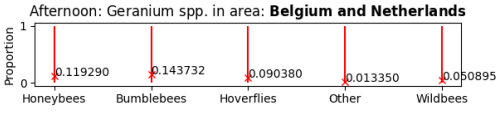

Total: Symphoricarpus spp. in area: **Belgium and Netherlands**
Proportion
0.508353
0.347702
0.118045
0.022611
0.003289
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

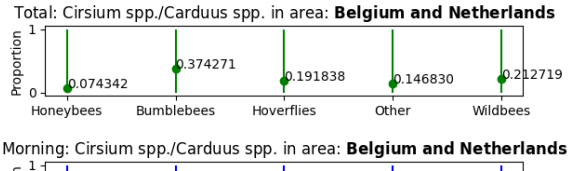

Morning: Symphoricarpus spp. in area: **Belgium and Netherlands**
Proportion
0.332018
0.172462
0.109273
0.017826
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

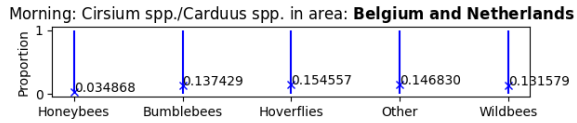

Afternoon: Symphoricarpus spp. in area: **Belgium and Netherlands**
Proportion
0.176336
0.175239
0.008772
0.004785
0.003289
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

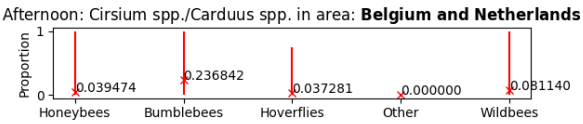

Total: Geranium spp. in area: **Belgium and Netherlands**
Proportion
0.268436
0.306048
0.269821
0.022915
0.132779
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

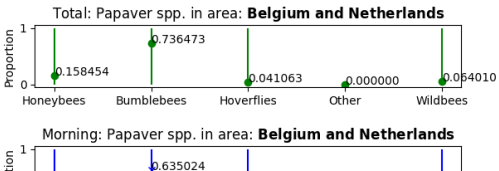

Morning: Geranium spp. in area: **Belgium and Netherlands**
Proportion
0.149146
0.162317
0.179441
0.009565
0.081884
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

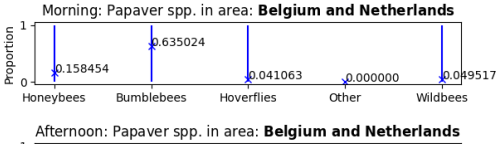

Afternoon: Geranium spp. in area: **Belgium and Netherlands**
Proportion
0.119290
0.143732
0.090380
0.013350
0.050895
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

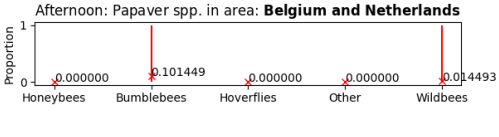

Total: Cirsium spp./Carduus spp. in area: **Belgium and Netherlands**
Proportion
0.074342
0.374271
0.191838
0.146830
0.212719
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

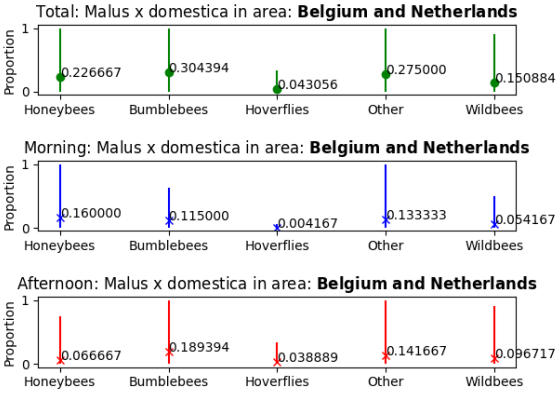

Morning: Cirsium spp./Carduus spp. in area: **Belgium and Netherlands**
Proportion
0.034868
0.137429
0.154557
0.146830
0.131579
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

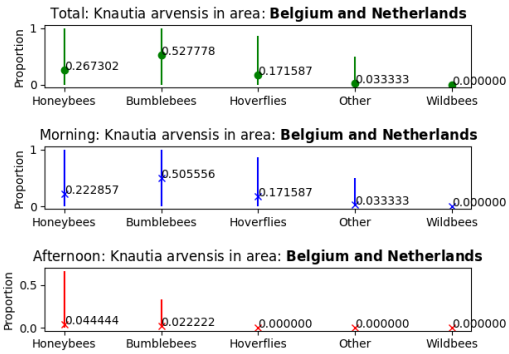

Afternoon: Cirsium spp./Carduus spp. in area: **Belgium and Netherlands**
Proportion
0.039474
0.236842
0.037281
0.000000
0.081140
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

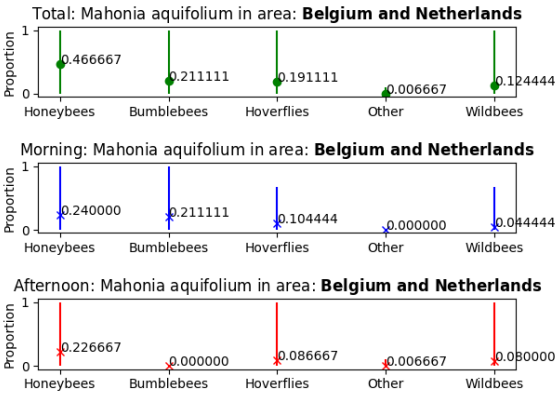

Total: Papaver spp. in area: **Belgium and Netherlands**
Proportion
0.158454
0.736473
0.041063
0.000000
0.064010
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

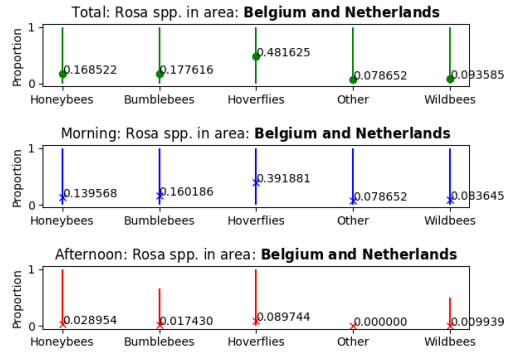

Morning: Papaver spp. in area: **Belgium and Netherlands**
Proportion
0.158454
0.635024
0.041063
0.000000
0.049517
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

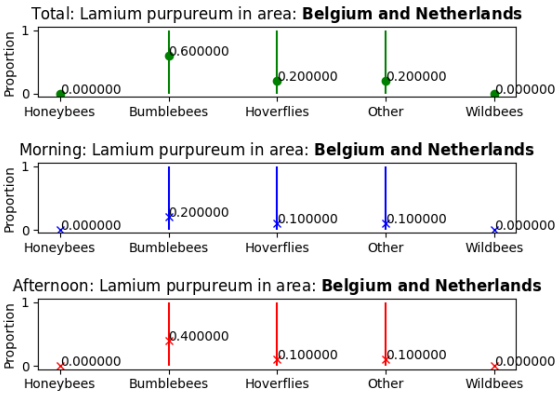

Afternoon: Papaver spp. in area: **Belgium and Netherlands**
Proportion
0.000000
0.101449
0.000000
0.000000
0.014493
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

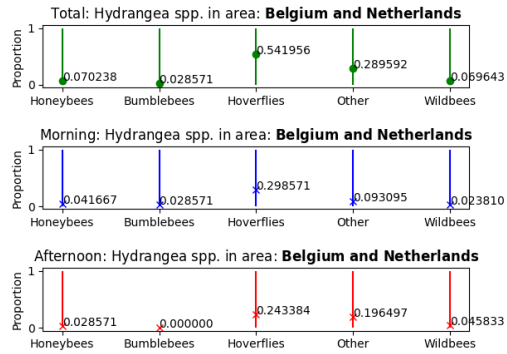

Total: Malus x domestica in area: **Belgium and Netherlands**
Proportion
0.226667
0.304394
0.043056
0.275000
0.150884
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Malus x domestica in area: **Belgium and Netherlands**
0.160000
0.115000
0.004167
0.133333
0.054167
Afternoon: Malus x domestica in area: **Belgium and Netherlands**
0.066667
0.189394
0.038889
0.141667
0.096717


Total: Knautia arvensis in area: **Belgium and Netherlands**
Proportion
0.267302
0.527778
0.171587
0.033333
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Knautia arvensis in area: **Belgium and Netherlands**
0.222857
0.505556
0.171587
0.033333
0.000000
Afternoon: Knautia arvensis in area: **Belgium and Netherlands**
0.044444
0.022222
0.000000
0.000000
0.000000


Total: Mahonia aquifolium in area: **Belgium and Netherlands**
Proportion
0.466667
0.211111
0.191111
0.006667
0.124444
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Mahonia aquifolium in area: **Belgium and Netherlands**
0.240000
0.211111
0.104444
0.000000
0.044444
Afternoon: Mahonia aquifolium in area: **Belgium and Netherlands**
0.226667
0.000000
0.086667
0.006667
0.080000


Total: Rosa spp. in area: **Belgium and Netherlands**
Proportion
0.168522
0.177616
0.481625
0.078652
0.093585
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Rosa spp. in area: **Belgium and Netherlands**
0.139568
0.160186
0.391881
0.078652
0.083645
Afternoon: Rosa spp. in area: **Belgium and Netherlands**
0.028954
0.017430
0.089744
0.000000
0.009939


Total: Lamium purpureum in area: **Belgium and Netherlands**
Proportion
0.000000
0.600000
0.200000
0.200000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Lamium purpureum in area: **Belgium and Netherlands**
0.000000
0.200000
0.100000
0.100000
0.000000
Afternoon: Lamium purpureum in area: **Belgium and Netherlands**
0.000000
0.400000
0.100000
0.100000
0.000000


Total: Hydrangea spp. in area: **Belgium and Netherlands**
Proportion
0.070238
0.028571
0.541956
0.289592
0.069643
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Hydrangea spp. in area: **Belgium and Netherlands**
0.041667
0.028571
0.298571
0.093095
0.023810
Afternoon: Hydrangea spp. in area: **Belgium and Netherlands**
0.028571
0.000000
0.243384
0.196497
0.045833

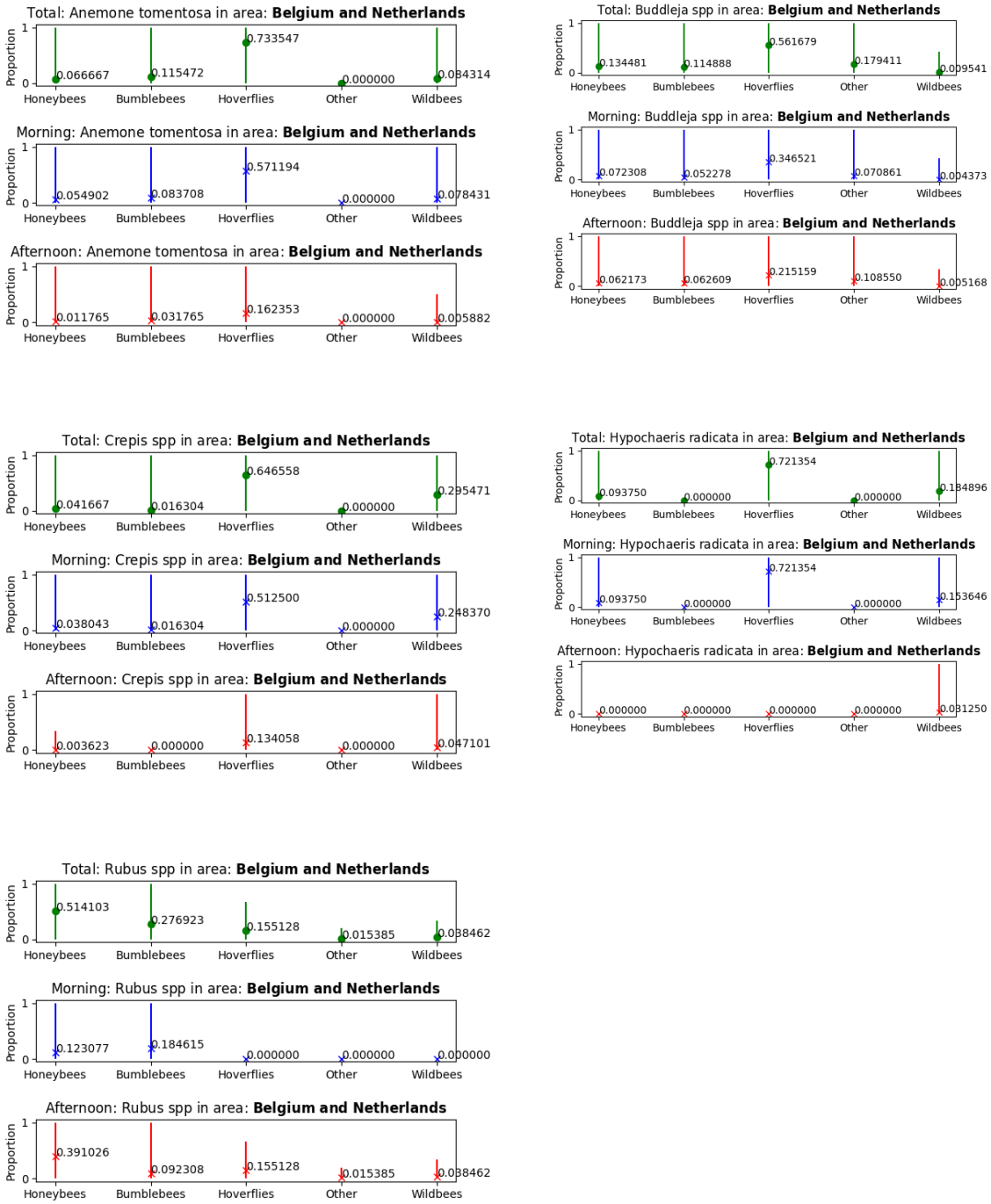
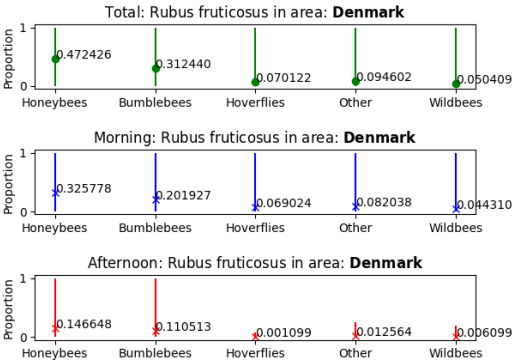
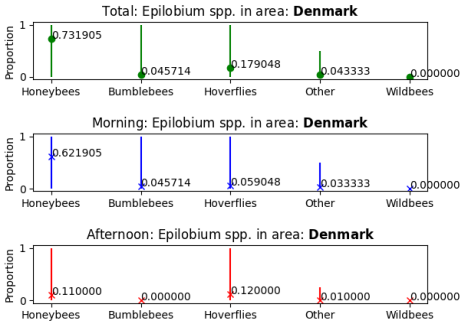
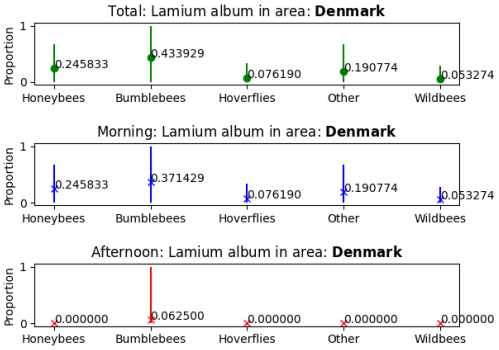
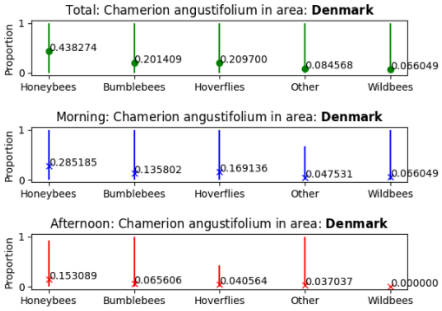


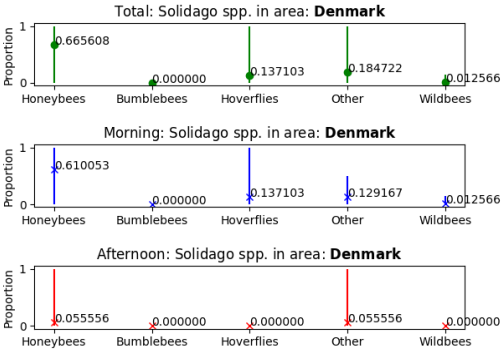
Figure 28. The mean and spread of the overall-, morning- and afternoon preferences of HB, BB, SB, HF, and OI in Belgium and the Netherlands

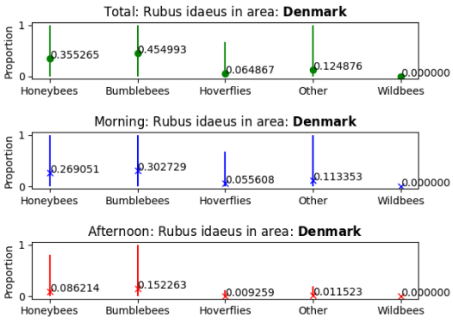

Total: Rubus fruticosus in area: **Denmark**
Proportion
0.472426
0.312440
0.070122
0.094602
0.050409
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Rubus fruticosus in area: **Denmark**
Proportion
0.325778
0.201927
0.069024
0.082038
0.044310
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Rubus fruticosus in area: **Denmark**
Proportion
0.146648
0.110513
0.001099
0.012564
0.006099
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

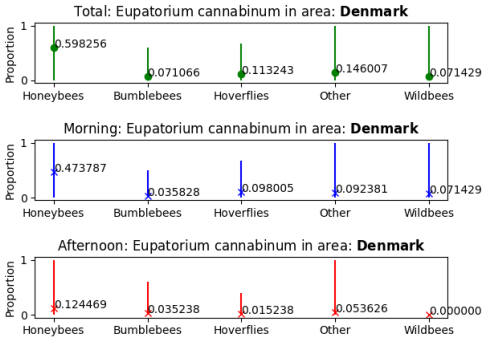

Total: Epilobium spp. in area: **Denmark**
Proportion
0.731905
0.045714
0.179048
0.043333
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Epilobium spp. in area: **Denmark**
Proportion
0.621905
0.045714
0.059048
0.033333
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Epilobium spp. in area: **Denmark**
Proportion
0.110000
0.000000
0.120000
0.010000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

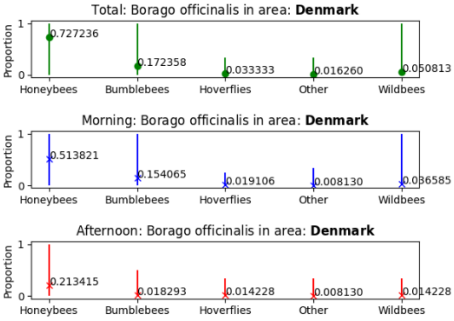

Total: Lamium album in area: **Denmark**
Proportion
0.245833
0.433929
0.076190
0.190774
0.053274
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Lamium album in area: **Denmark**
Proportion
0.245833
0.371429
0.076190
0.190774
0.053274
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Lamium album in area: **Denmark**
Proportion
0.000000
0.062500
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

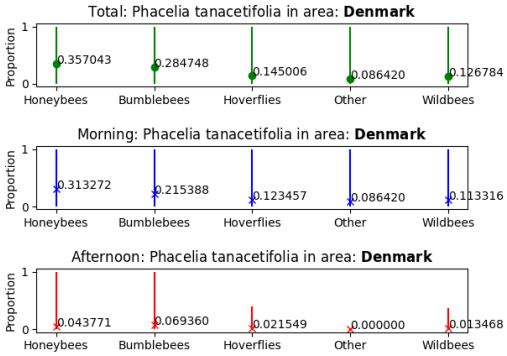

Total: Chamerion angustifolium in area: **Denmark**
Proportion
0.438274
0.201409
0.209700
0.084568
0.056049
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Chamerion angustifolium in area: **Denmark**
Proportion
0.285185
0.135802
0.169136
0.047531
0.056049
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Chamerion angustifolium in area: **Denmark**
Proportion
0.153089
0.065606
0.040564
0.037037
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Solidago spp. in area: **Denmark**
Proportion
0.665608
0.000000
0.137103
0.184722
0.012566
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Solidago spp. in area: **Denmark**
Proportion
0.610053
0.000000
0.137103
0.129167
0.012566
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Solidago spp. in area: **Denmark**
Proportion
0.055556
0.000000
0.000000
0.055556
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Rubus idaeus in area: **Denmark**
Proportion
0.355265
0.454993
0.064867
0.124876
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Rubus idaeus in area: **Denmark**
Proportion
0.269051
0.302729
0.055608
0.113353
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Rubus idaeus in area: **Denmark**
Proportion
0.086214
0.152263
0.009259
0.011523
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

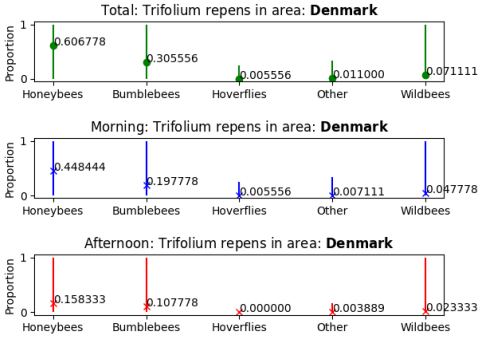

Total: Eupatorium cannabinum in area: **Denmark**
Proportion
0.598256
0.071066
0.113243
0.146007
0.071429
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Eupatorium cannabinum in area: **Denmark**
Proportion
0.473787
0.035828
0.098005
0.092381
0.071429
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Eupatorium cannabinum in area: **Denmark**
Proportion
0.124469
0.035238
0.015238
0.053626
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Borago officinalis in area: **Denmark**
Proportion
0.727236
0.172358
0.033333
0.016260
0.050813
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Borago officinalis in area: **Denmark**
Proportion
0.513821
0.154065
0.019106
0.008130
0.036585
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Borago officinalis in area: **Denmark**
Proportion
0.213415
0.018293
0.014228
0.008130
0.014228
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Phacelia tanacetifolia in area: **Denmark**
Proportion
0.357043
0.284748
0.145006
0.086420
0.126784
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

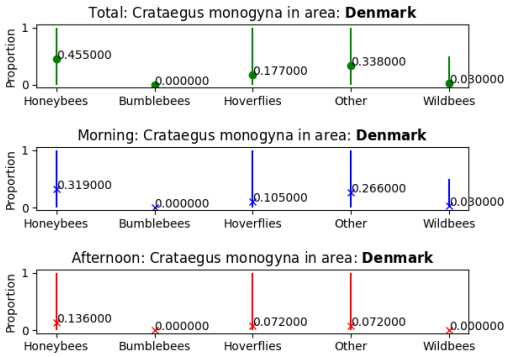
Morning: Phacelia tanacetifolia in area: **Denmark**
Proportion
0.313272
0.215388
0.123457
0.086420
0.113316
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Phacelia tanacetifolia in area: **Denmark**
Proportion
0.043771
0.069360
0.021549
0.000000
0.013468
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Trifolium repens in area: **Denmark**
Proportion
0.606778
0.305556
0.005556
0.011000
0.071111
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

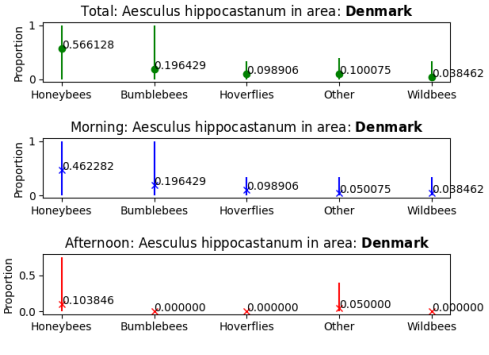
Morning: Trifolium repens in area: **Denmark**
Proportion
0.448444
0.197778
0.005556
0.007111
0.047778
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Trifolium repens in area: **Denmark**
Proportion
0.158333
0.107778
0.000000
0.003889
0.023333
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Crataegus monogyna in area: **Denmark**
Proportion
0.455000
0.000000
0.177000
0.338000
0.030000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

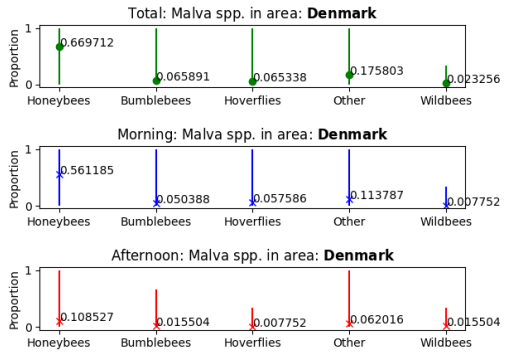
Morning: Crataegus monogyna in area: **Denmark**
Proportion
0.319000
0.000000
0.105000
0.266000
0.030000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Crataegus monogyna in area: **Denmark**
Proportion
0.136000
0.000000
0.072000
0.072000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Aesculus hippocastanum in area: **Denmark**
Proportion
0.566128
0.196429
0.098906
0.100075
0.038462
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

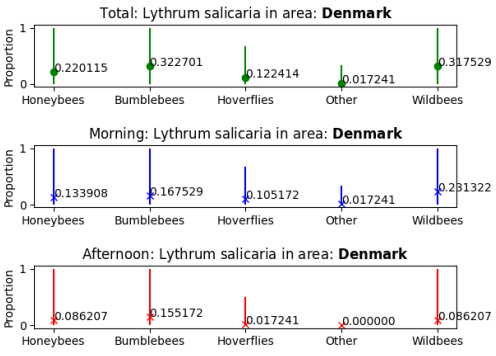
Morning: Aesculus hippocastanum in area: **Denmark**
Proportion
0.462282
0.196429
0.098906
0.050075
0.038462
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Aesculus hippocastanum in area: **Denmark**
Proportion
0.103846
0.000000
0.000000
0.050000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Malva spp. in area: **Denmark**
Proportion
0.669712
0.065891
0.065338
0.175803
0.023256
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

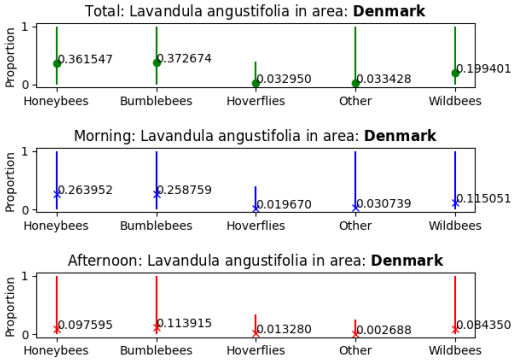
Morning: Malva spp. in area: **Denmark**
Proportion
0.561185
0.050388
0.057586
0.113787
0.007752
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Malva spp. in area: **Denmark**
Proportion
0.108527
0.015504
0.007752
0.062016
0.015504
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Lythrum salicaria in area: **Denmark**
Proportion
0.220115
0.322701
0.122414
0.017241
0.317529
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

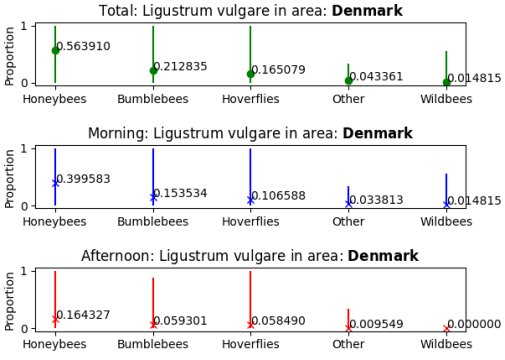
Morning: Lythrum salicaria in area: **Denmark**
Proportion
0.133908
0.167529
0.105172
0.017241
0.231322
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Lythrum salicaria in area: **Denmark**
Proportion
0.086207
0.155172
0.017241
0.000000
0.086207
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Lavandula angustifolia in area: **Denmark**
Proportion
0.361547
0.372674
0.032950
0.033428
0.199401
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

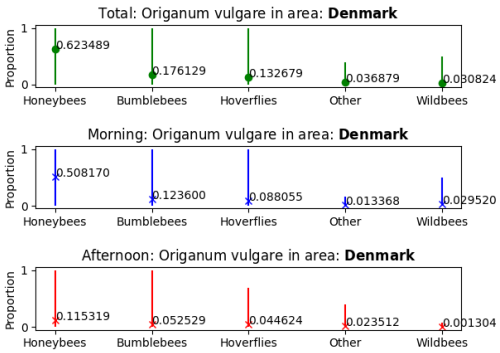
Morning: Lavandula angustifolia in area: **Denmark**
Proportion
0.263952
0.258759
0.019670
0.030739
0.115051
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

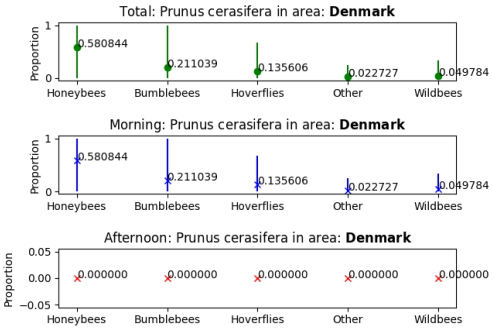
Afternoon: Lavandula angustifolia in area: **Denmark**
Proportion
0.097595
0.113915
0.013280
0.002688
0.084350
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

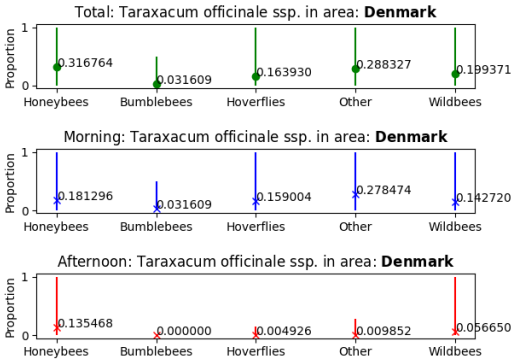

Total: Ligustrum vulgare in area: **Denmark**
Proportion
0.563910
0.212835
0.165079
0.043361
0.014815
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

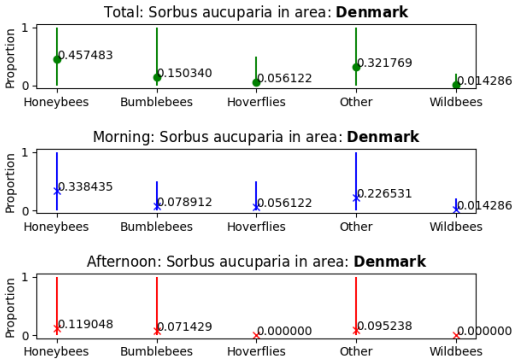
Morning: Ligustrum vulgare in area: **Denmark**
Proportion
0.399583
0.153534
0.106588
0.033813
0.014815
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

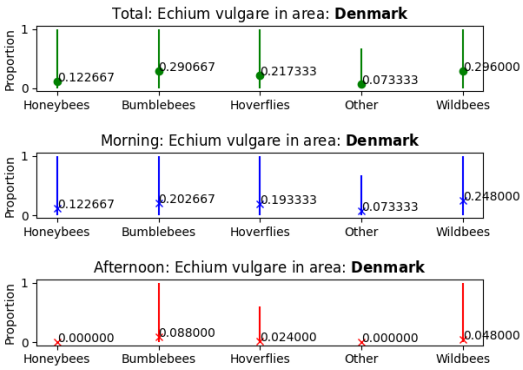
Afternoon: Ligustrum vulgare in area: **Denmark**
Proportion
0.164327
0.059301
0.058490
0.009549
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

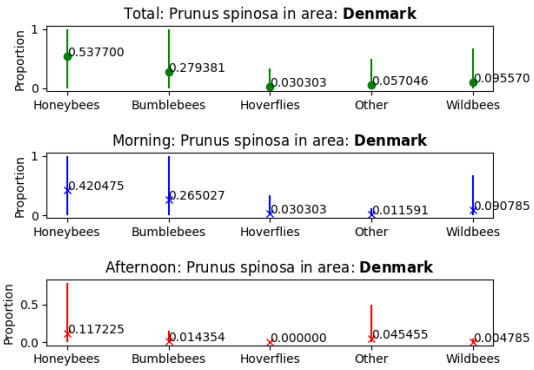

Total: Origanum vulgare in area: **Denmark**
Proportion
0.623489
0.176129
0.132679
0.036879
0.030824
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Origanum vulgare in area: **Denmark**
Proportion
0.508170
0.123600
0.088055
0.013368
0.029520
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Origanum vulgare in area: **Denmark**
Proportion
0.115319
0.052529
0.044624
0.023512
0.001304
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

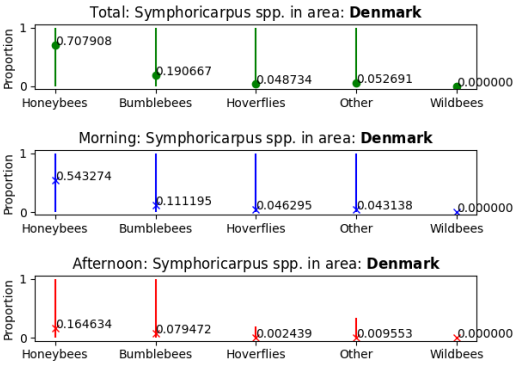

Total: Prunus cerasifera in area: **Denmark**
Proportion
0.580844
0.211039
0.135606
0.022727
0.049784
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Prunus cerasifera in area: **Denmark**
Proportion
0.580844
0.211039
0.135606
0.022727
0.049784
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Prunus cerasifera in area: **Denmark**
Proportion
0.000000
0.000000
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

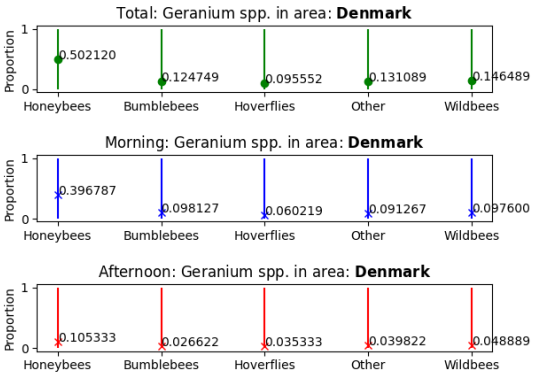

Total: Taraxacum officinale ssp. in area: **Denmark**
Proportion
0.316764
0.031609
0.163930
0.288327
0.199371
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Taraxacum officinale ssp. in area: **Denmark**
Proportion
0.181296
0.031609
0.159004
0.278474
0.142720
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Taraxacum officinale ssp. in area: **Denmark**
Proportion
0.135468
0.000000
0.004926
0.009852
0.056650
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

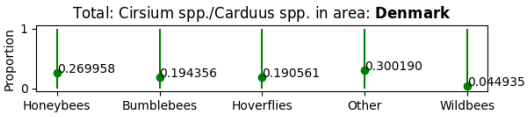

Total: Sorbus aucuparia in area: **Denmark**
Proportion
0.457483
0.150340
0.056122
0.321769
0.014286
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Sorbus aucuparia in area: **Denmark**
Proportion
0.338435
0.078912
0.056122
0.226531
0.014286
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Sorbus aucuparia in area: **Denmark**
Proportion
0.119048
0.071429
0.000000
0.095238
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

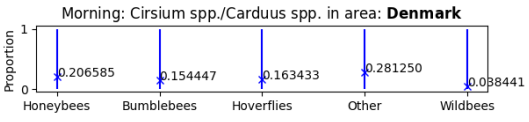

Total: Echium vulgare in area: **Denmark**
Proportion
0.122667
0.290667
0.217333
0.073333
0.296000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Echium vulgare in area: **Denmark**
Proportion
0.122667
0.202667
0.193333
0.073333
0.248000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Echium vulgare in area: **Denmark**
Proportion
0.000000
0.088000
0.024000
0.000000
0.048000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

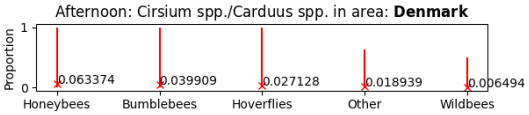

Total: Prunus spinosa in area: **Denmark**
Proportion
0.537700
0.279381
0.030303
0.057046
0.095570
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Prunus spinosa in area: **Denmark**
Proportion
0.420475
0.265027
0.030303
0.011591
0.090785
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Prunus spinosa in area: **Denmark**
Proportion
0.117225
0.014354
0.000000
0.045455
0.004785
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

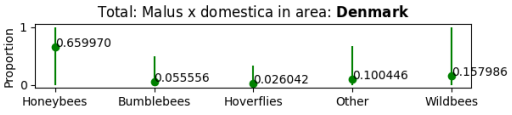

Total: Symphoricarpus spp. in area: **Denmark**
Proportion
0.707908
0.190667
0.048734
0.052691
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Symphoricarpus spp. in area: **Denmark**
Proportion
0.543274
0.111195
0.046295
0.043138
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Symphoricarpus spp. in area: **Denmark**
Proportion
0.164634
0.079472
0.002439
0.009553
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

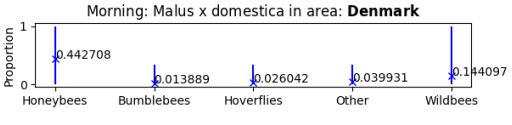

Total: Geranium spp. in area: **Denmark**
Proportion
0.502120
0.124749
0.095552
0.131089
0.146489
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Morning: Geranium spp. in area: **Denmark**
Proportion
0.396787
0.098127
0.060219
0.091267
0.097600
Honeybees
Bumblebees
Hoverflies
Other
Wildbees
Afternoon: Geranium spp. in area: **Denmark**
Proportion
0.105333
0.026622
0.035333
0.039822
0.048889
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

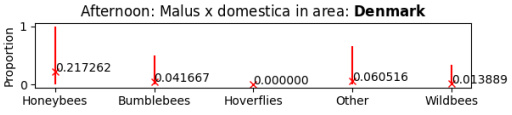

Total: Cirsium spp./Carduus spp. in area: **Denmark**
Proportion
0.269958
0.194356
0.190561
0.300190
0.044935
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

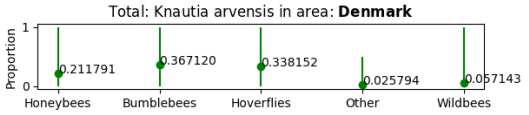

Morning: Cirsium spp./Carduus spp. in area: **Denmark**
Proportion
0.206585
0.154447
0.163433
0.281250
0.038441
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

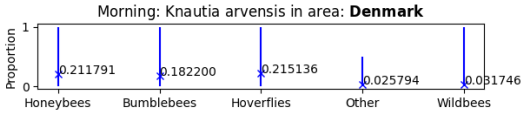

Afternoon: Cirsium spp./Carduus spp. in area: **Denmark**
Proportion
0.063374
0.039909
0.027128
0.018939
0.006494
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

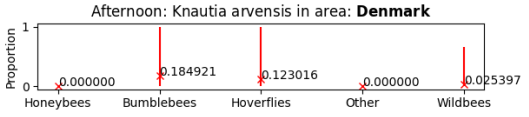

Total: Malus x domestica in area: **Denmark**
Proportion
0.659970
0.055556
0.026042
0.100446
0.157986
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

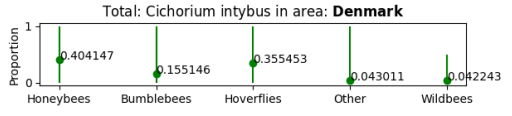

Morning: Malus x domestica in area: **Denmark**
Proportion
0.442708
0.013889
0.026042
0.039931
0.144097
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

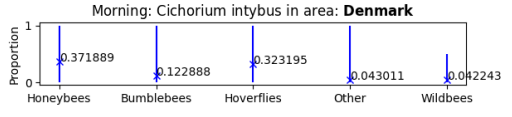

Afternoon: Malus x domestica in area: **Denmark**
Proportion
0.217262
0.041667
0.000000
0.060516
0.013889
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

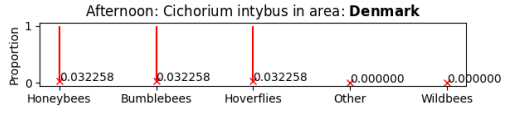

Total: Knautia arvensis in area: **Denmark**
Proportion
0.211791
0.367120
0.338152
0.025794
0.057143
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

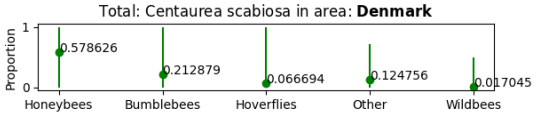

Morning: Knautia arvensis in area: **Denmark**
Proportion
0.211791
0.182200
0.215136
0.025794
0.031746
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

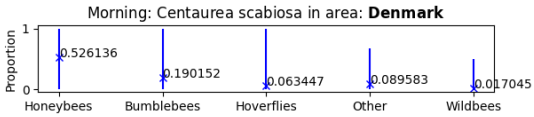

Afternoon: Knautia arvensis in area: **Denmark**
Proportion
0.000000
0.184921
0.123016
0.000000
0.025397
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

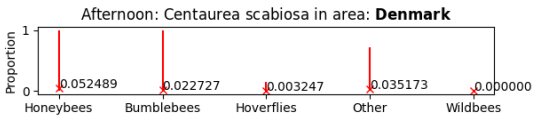

Total: Cichorium intybus in area: **Denmark**
Proportion
0.404147
0.155146
0.355453
0.043011
0.042243
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

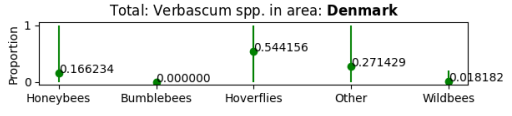

Morning: Cichorium intybus in area: **Denmark**
Proportion
0.371889
0.122888
0.323195
0.043011
0.042243
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

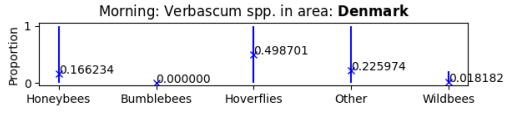

Afternoon: Cichorium intybus in area: **Denmark**
Proportion
0.032258
0.032258
0.032258
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

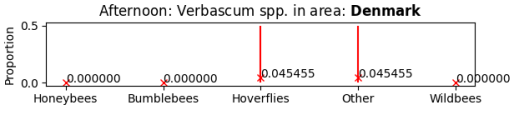

Total: Centaurea scabiosa in area: **Denmark**
Proportion
0.578626
0.212879
0.066694
0.124756
0.017045
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

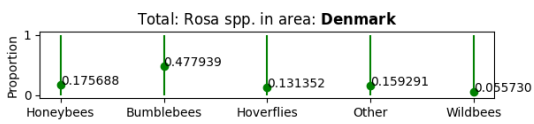

Morning: Centaurea scabiosa in area: **Denmark**
Proportion
0.526136
0.190152
0.063447
0.089583
0.017045
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

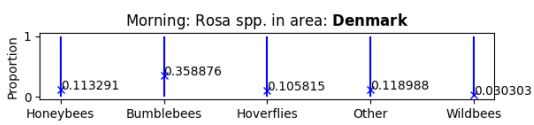

Afternoon: Centaurea scabiosa in area: **Denmark**
Proportion
0.052489
0.022727
0.003247
0.035173
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

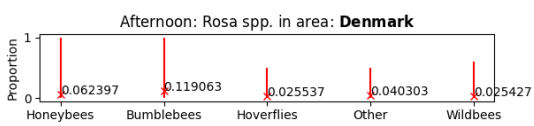

Total: Verbascum spp. in area: **Denmark**
Proportion
0.166234
0.000000
0.544156
0.271429
0.018182
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

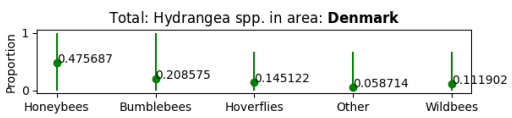

Morning: Verbascum spp. in area: **Denmark**
Proportion
0.166234
0.000000
0.498701
0.225974
0.018182
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

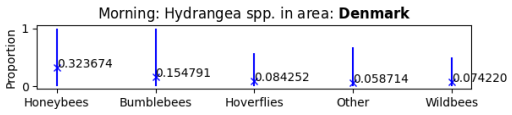

Afternoon: Verbascum spp. in area: **Denmark**
Proportion
0.000000
0.000000
0.045455
0.045455
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

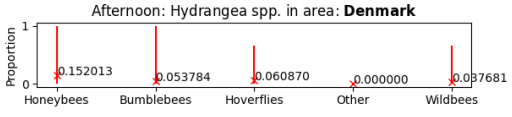

Total: Rosa spp. in area: **Denmark**
Proportion
0.175688
0.477939
0.131352
0.159291
0.055730
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Morning: Rosa spp. in area: **Denmark**
Proportion
0.113291
0.358876
0.105815
0.118988
0.030303
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Afternoon: Rosa spp. in area: **Denmark**
Proportion
0.062397
0.119063
0.025537
0.040303
0.025427
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Hydrangea spp. in area: **Denmark**
Proportion
0.475687
0.208575
0.145122
0.058714
0.111902
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Morning: Hydrangea spp. in area: **Denmark**
Proportion
0.323674
0.154791
0.084252
0.058714
0.074220
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Afternoon: Hydrangea spp. in area: **Denmark**
Proportion
0.152013
0.053784
0.060870
0.000000
0.037681
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

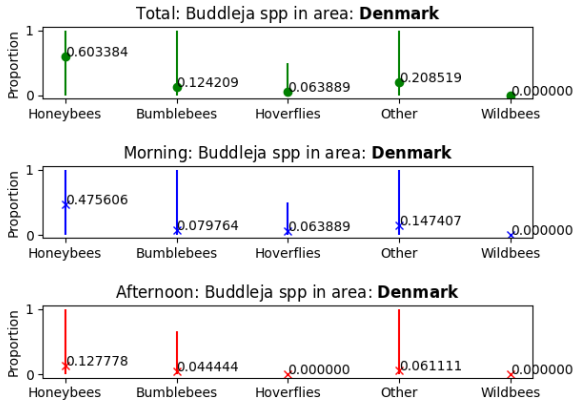
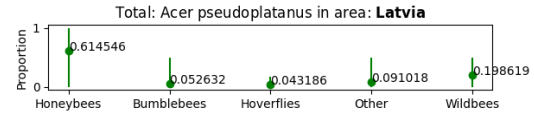
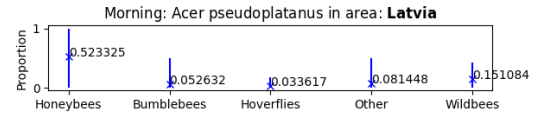
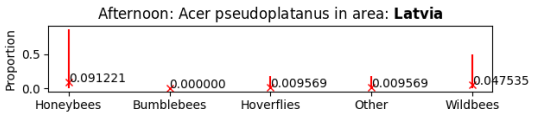
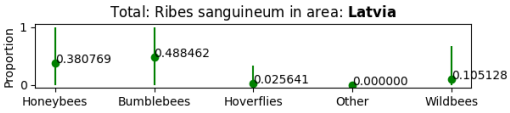


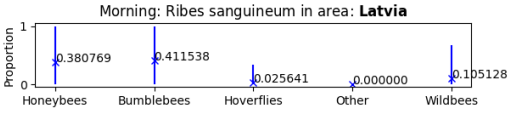
Figure 29. The mean and spread of the overall-, morning- and afternoon preferences of HB, BB, SB, HF, and OI in Denmark

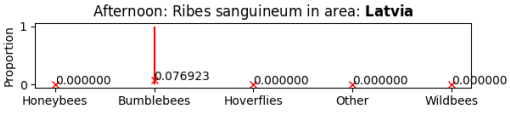

Total: Acer pseudoplatanus in area: Latvia
Proportion
0.614546
0.052632
0.043186
0.091018
0.198619
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

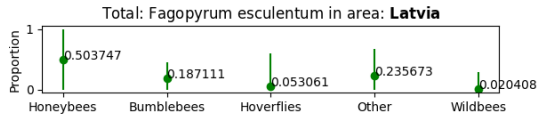

Morning: Acer pseudoplatanus in area: Latvia
Proportion
0.523325
0.052632
0.033617
0.081448
0.151084
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

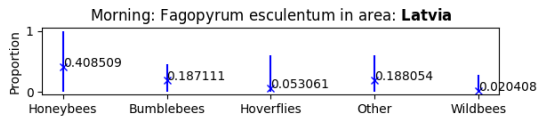

Afternoon: Acer pseudoplatanus in area: Latvia
Proportion
0.091221
0.000000
0.009569
0.009569
0.047535
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

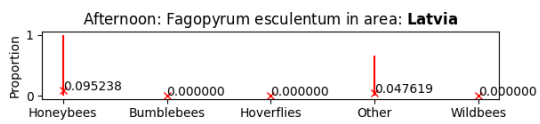

Total: Ribes sanguineum in area: Latvia
Proportion
0.380769
0.488462
0.025641
0.000000
0.105128
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

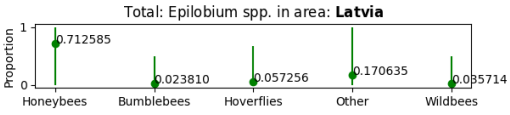

Morning: Ribes sanguineum in area: Latvia
Proportion
0.380769
0.411538
0.025641
0.000000
0.105128
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

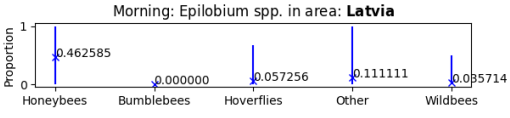

Afternoon: Ribes sanguineum in area: Latvia
Proportion
0.000000
0.076923
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

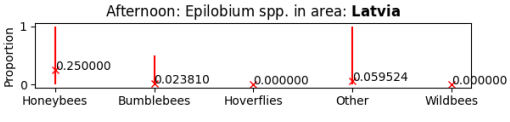

Total: Fagopyrum esculentum in area: Latvia
Proportion
0.503747
0.187111
0.053061
0.235673
0.020408
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

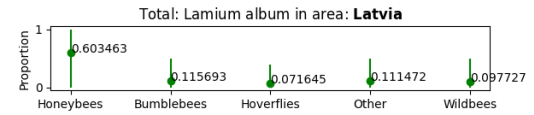

Morning: Fagopyrum esculentum in area: Latvia
Proportion
0.408509
0.187111
0.053061
0.188054
0.020408
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

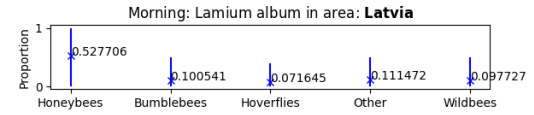

Afternoon: Fagopyrum esculentum in area: Latvia
Proportion
0.095238
0.000000
0.000000
0.047619
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

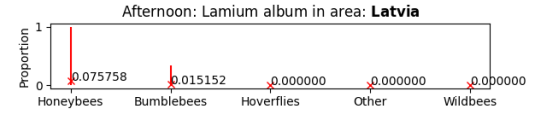

Total: Epilobium spp. in area: Latvia
Proportion
0.712585
0.023810
0.057256
0.170635
0.035714
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

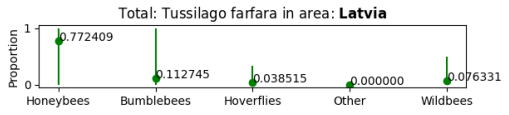

Morning: Epilobium spp. in area: Latvia
Proportion
0.462585
0.000000
0.057256
0.111111
0.035714
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

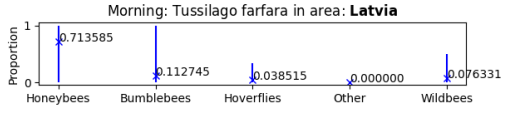

Afternoon: Epilobium spp. in area: Latvia
Proportion
0.250000
0.023810
0.000000
0.059524
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

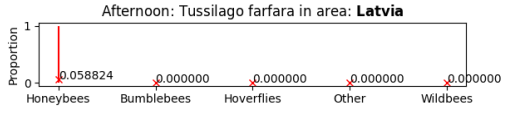

Total: Lamium album in area: Latvia
Proportion
0.603463
0.115693
0.071645
0.111472
0.097727
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

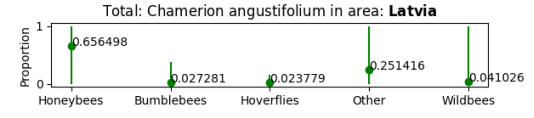

Morning: Lamium album in area: Latvia
Proportion
0.527706
0.100541
0.071645
0.111472
0.097727
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

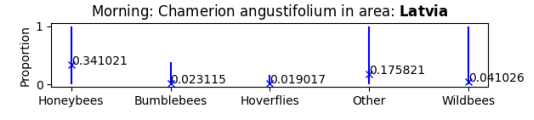

Afternoon: Lamium album in area: Latvia
Proportion
0.075758
0.015152
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

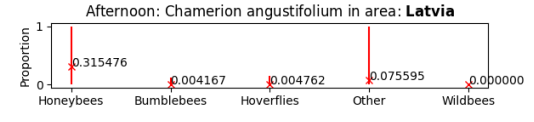

Total: Tussilago farfara in area: Latvia
Proportion
0.772409
0.112745
0.038515
0.000000
0.076331
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

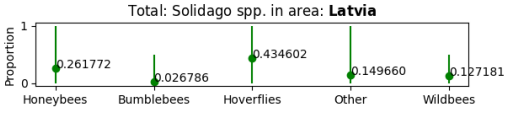

Morning: Tussilago farfara in area: Latvia
Proportion
0.713585
0.112745
0.038515
0.000000
0.076331
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

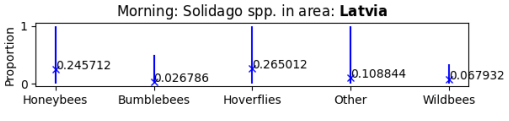

Afternoon: Tussilago farfara in area: Latvia
Proportion
0.058824
0.000000
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

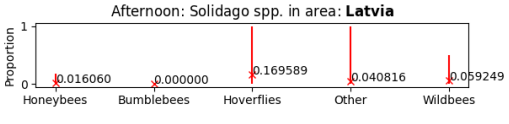

Total: Chamerion angustifolium in area: Latvia
Proportion
0.656498
0.027281
0.023779
0.251416
0.041026
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

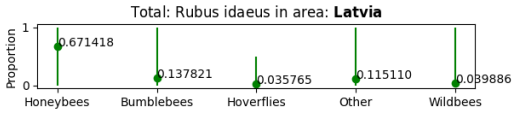

Morning: Chamerion angustifolium in area: Latvia
Proportion
0.341021
0.023115
0.019017
0.175821
0.041026
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

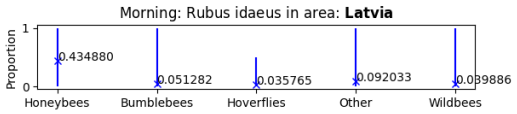

Afternoon: Chamerion angustifolium in area: Latvia
Proportion
0.315476
0.004167
0.004762
0.075595
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

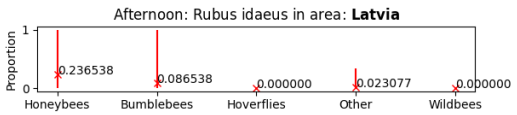

Total: Solidago spp. in area: Latvia
Proportion
0.261772
0.026786
0.434602
0.149660
0.127181
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

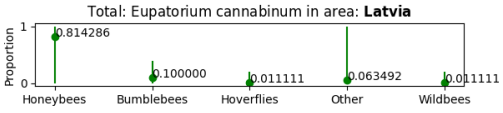

Morning: Solidago spp. in area: Latvia
Proportion
0.245712
0.026786
0.265012
0.108844
0.067932
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

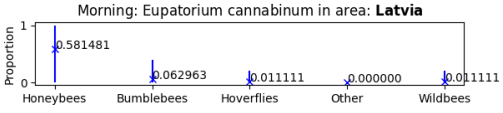

Afternoon: Solidago spp. in area: Latvia
Proportion
0.016060
0.000000
0.169589
0.040816
0.059249
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

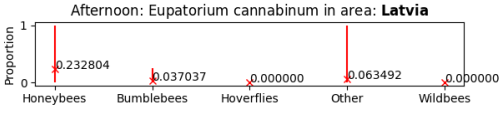

Total: Rubus idaeus in area: **Latvia**
Proportion
0.671418
0.137821
0.035765
0.115110
0.039886
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

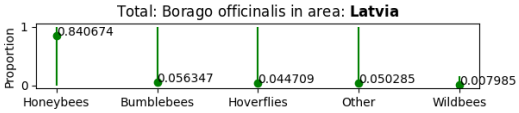

Morning: Rubus idaeus in area: **Latvia**
Proportion
0.434880
0.051282
0.035765
0.092033
0.039886
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

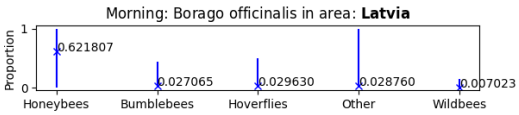

Afternoon: Rubus idaeus in area: **Latvia**
Proportion
0.236538
0.086538
0.000000
0.023077
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

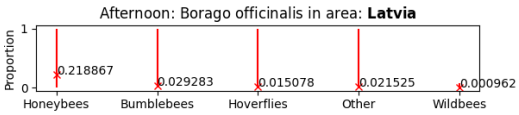

Total: Eupatorium cannabinum in area: **Latvia**
Proportion
0.814286
0.100000
0.011111
0.063492
0.011111
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

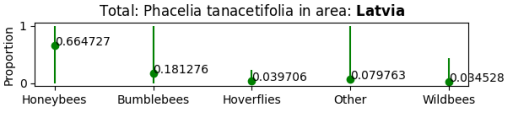

Morning: Eupatorium cannabinum in area: **Latvia**
Proportion
0.581481
0.062963
0.011111
0.000000
0.011111
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

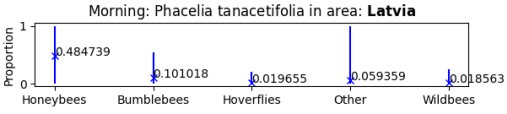

Afternoon: Eupatorium cannabinum in area: **Latvia**
Proportion
0.232804
0.037037
0.000000
0.063492
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

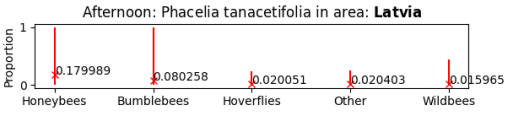

Total: Borago officinalis in area: **Latvia**
Proportion
0.840674
0.056347
0.044709
0.050285
0.007985
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

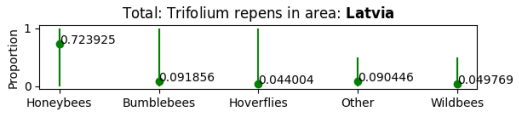

Morning: Borago officinalis in area: **Latvia**
Proportion
0.621807
0.027065
0.029630
0.028760
0.007023
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

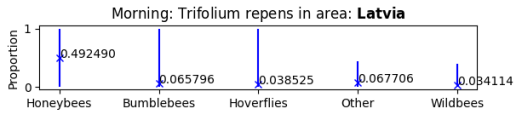

Afternoon: Borago officinalis in area: **Latvia**
Proportion
0.218867
0.029283
0.015078
0.021525
0.000962
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

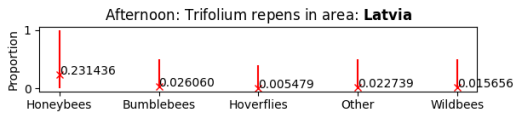

Total: Phacelia tanacetifolia in area: **Latvia**
Proportion
0.664727
0.181276
0.039706
0.079763
0.034528
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

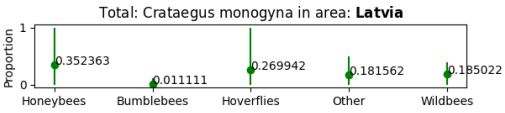

Morning: Phacelia tanacetifolia in area: **Latvia**
Proportion
0.484739
0.101018
0.019655
0.059359
0.018563
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

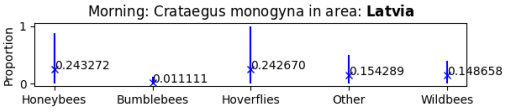

Afternoon: Phacelia tanacetifolia in area: **Latvia**
Proportion
0.179989
0.080258
0.020051
0.020403
0.015965
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

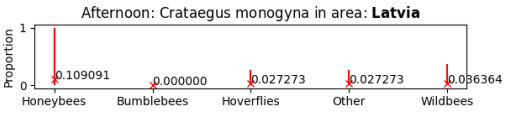

Total: Trifolium repens in area: **Latvia**
Proportion
0.723925
0.091856
0.044004
0.090446
0.049769
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

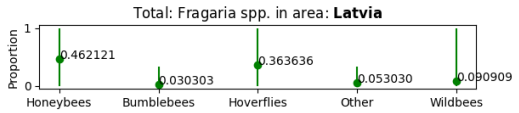

Morning: Trifolium repens in area: **Latvia**
Proportion
0.492490
0.065796
0.038525
0.067706
0.034114
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

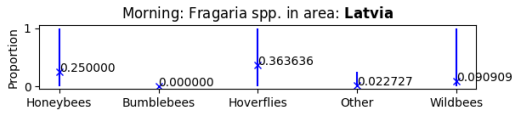

Afternoon: Trifolium repens in area: **Latvia**
Proportion
0.231436
0.026060
0.005479
0.022739
0.015656
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

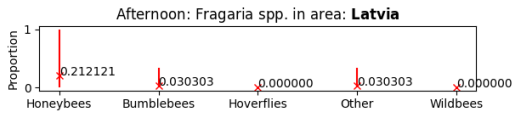

Total: Crataegus monogyna in area: **Latvia**
Proportion
0.352363
0.011111
0.269942
0.181562
0.185022
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

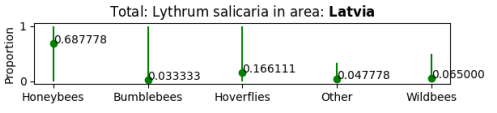

Morning: Crataegus monogyna in area: **Latvia**
Proportion
0.243272
0.011111
0.242670
0.154289
0.148658
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

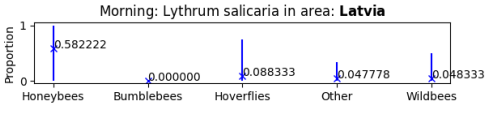

Afternoon: Crataegus monogyna in area: **Latvia**
Proportion
0.109091
0.000000
0.027273
0.027273
0.036364
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

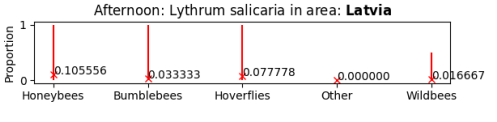

Total: Fragaria spp. in area: **Latvia**
Proportion
0.462121
0.030303
0.363636
0.053030
0.090909
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

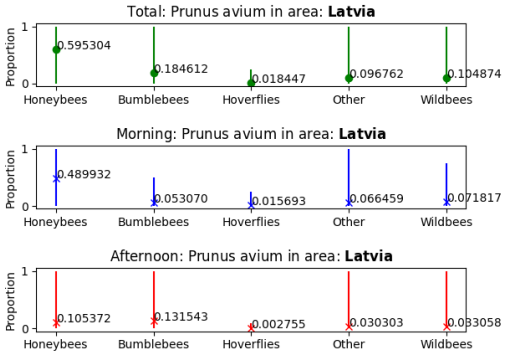

Morning: Fragaria spp. in area: **Latvia**
Proportion
0.250000
0.000000
0.363636
0.022727
0.090909
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Afternoon: Fragaria spp. in area: **Latvia**
Proportion
0.212121
0.030303
0.000000
0.030303
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Lythrum salicaria in area: **Latvia**
Proportion
0.687778
0.033333
0.166111
0.047778
0.065000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

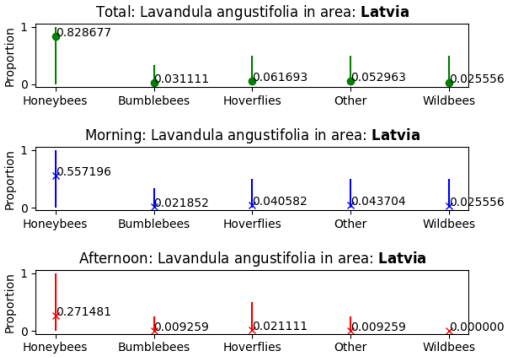

Morning: Lythrum salicaria in area: **Latvia**
Proportion
0.582222
0.000000
0.088333
0.047778
0.048333
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Afternoon: Lythrum salicaria in area: **Latvia**
Proportion
0.105556
0.033333
0.077778
0.000000
0.016667
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Prunus avium in area: **Latvia**
Proportion
0.595304
0.184612
0.018447
0.096762
0.104874
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

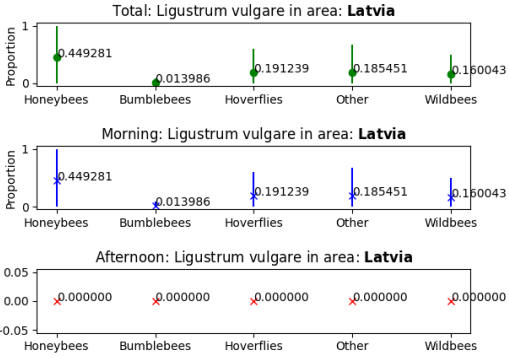
Morning: Prunus avium in area: **Latvia**
Proportion
0.489932
0.053070
0.015693
0.066459
0.071817
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Prunus avium in area: **Latvia**
Proportion
0.105372
0.131543
0.002755
0.030303
0.033058
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Lavandula angustifolia in area: **Latvia**
Proportion
0.828677
0.031111
0.061693
0.052963
0.025556
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

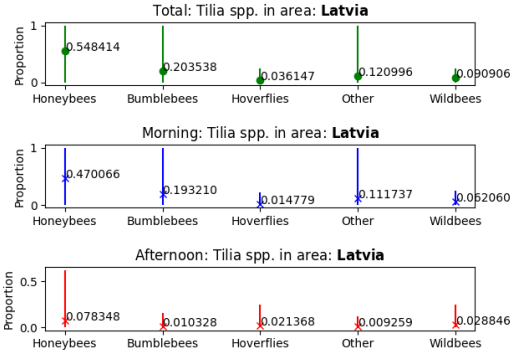
Morning: Lavandula angustifolia in area: **Latvia**
Proportion
0.557196
0.021852
0.040582
0.043704
0.025556
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Lavandula angustifolia in area: **Latvia**
Proportion
0.271481
0.009259
0.021111
0.009259
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Ligustrum vulgare in area: **Latvia**
Proportion
0.449281
0.013986
0.191239
0.185451
0.160043
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

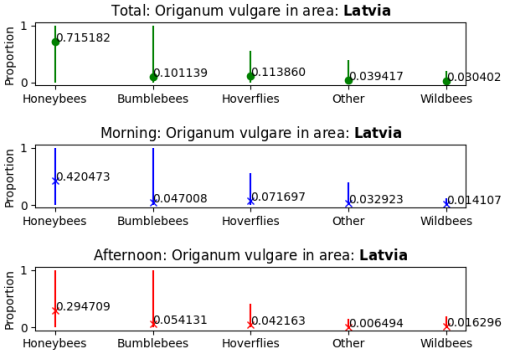
Morning: Ligustrum vulgare in area: **Latvia**
Proportion
0.449281
0.013986
0.191239
0.185451
0.160043
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Ligustrum vulgare in area: **Latvia**
Proportion
0.05
0.00
−0.05
0.000000
0.000000
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Tilia spp. in area: **Latvia**
Proportion
0.548414
0.203538
0.036147
0.120996
0.090906
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

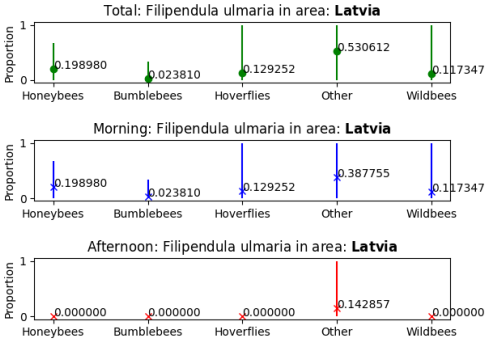
Morning: Tilia spp. in area: **Latvia**
Proportion
0.470066
0.193210
0.014779
0.111737
0.062060
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Tilia spp. in area: **Latvia**
Proportion
0.5
0.0
0.078348
0.010328
0.021368
0.009259
0.028846
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Origanum vulgare in area: **Latvia**
Proportion
0.715182
0.101139
0.113860
0.039417
0.030402
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

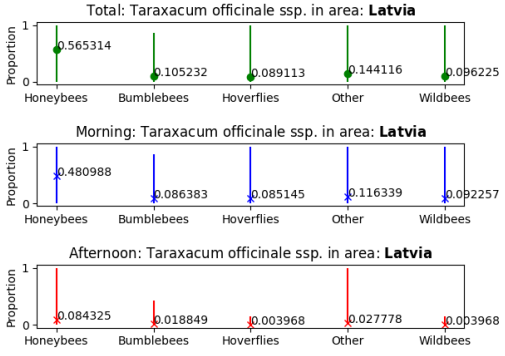
Morning: Origanum vulgare in area: **Latvia**
Proportion
0.420473
0.047008
0.071697
0.032923
0.014107
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Origanum vulgare in area: **Latvia**
Proportion
0.294709
0.054131
0.042163
0.006494
0.016296
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Filipendula ulmaria in area: **Latvia**
Proportion
0.198980
0.023810
0.129252
0.530612
0.117347
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

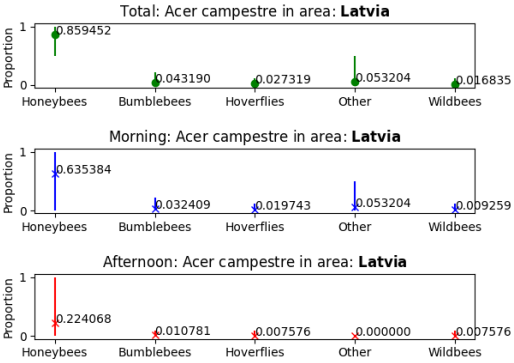
Morning: Filipendula ulmaria in area: **Latvia**
Proportion
0.198980
0.023810
0.129252
0.387755
0.117347
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Afternoon: Filipendula ulmaria in area: **Latvia**
Proportion
0.000000
0.000000
0.000000
0.142857
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Taraxacum officinale ssp. in area: **Latvia**
Proportion
0.565314
0.105232
0.089113
0.144116
0.096225
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

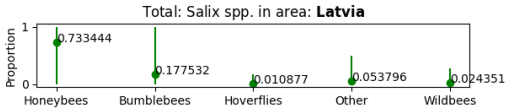
Morning: Taraxacum officinale ssp. in area: **Latvia**
Proportion
0.480988
0.086383
0.085145
0.116339
0.092257
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

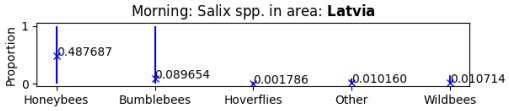
Afternoon: Taraxacum officinale ssp. in area: **Latvia**
Proportion
0.084325
0.018849
0.003968
0.027778
0.003968
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

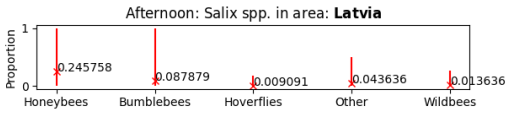

Total: Acer campestre in area: **Latvia**
Proportion
0.859452
0.043190
0.027319
0.053204
0.016835
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

Morning: Acer campestre in area: **Latvia**
Proportion
0.635384
0.032409
0.019743
0.053204
0.009259
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

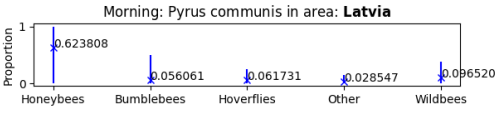
Afternoon: Acer campestre in area: **Latvia**
Proportion
0.224068
0.010781
0.007576
0.000000
0.007576
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

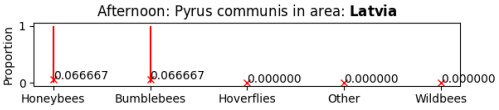

Total: Salix spp. in area: **Latvia**
Proportion
1
0
0.733444
0.177532
0.010877
0.053796
0.024351
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

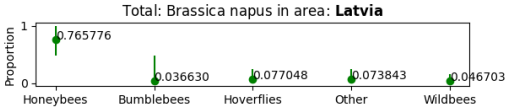

Morning: Salix spp. in area: **Latvia**
Proportion
1
0
0.487687
0.089654
0.001786
0.010160
0.010714
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

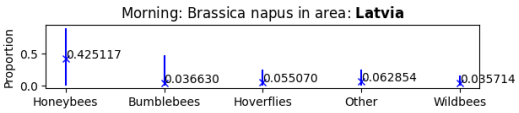

Afternoon: Salix spp. in area: **Latvia**
Proportion
1
0
0.245758
0.087879
0.009091
0.043636
0.013636
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

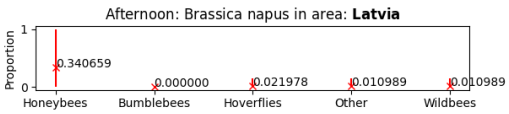

Total: Pyrus communis in area: **Latvia**
Proportion
1
0
0.690474
0.122727
0.061731
0.028547
0.096520
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

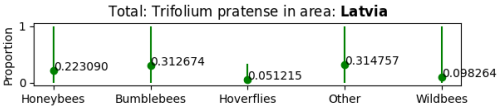

Morning: Pyrus communis in area: **Latvia**
Proportion
1
0
0.623808
0.056061
0.061731
0.028547
0.096520
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

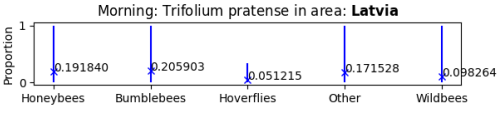

Afternoon: Pyrus communis in area: **Latvia**
Proportion
1
0
0.066667
0.066667
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

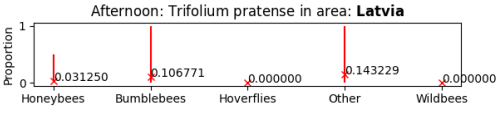

Total: Brassica napus in area: **Latvia**
Proportion
1
0
0.765776
0.036630
0.077048
0.073843
0.046703
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

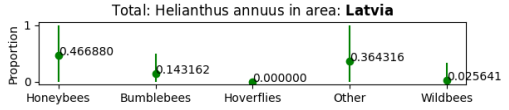

Morning: Brassica napus in area: **Latvia**
Proportion
0.5
0.0
0.425117
0.036630
0.055070
0.062854
0.035714
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

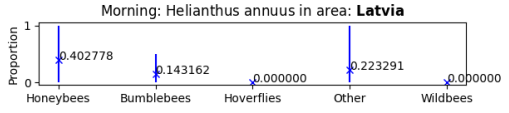

Afternoon: Brassica napus in area: **Latvia**
Proportion
1
0
0.340659
0.000000
0.021978
0.010989
0.010989
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

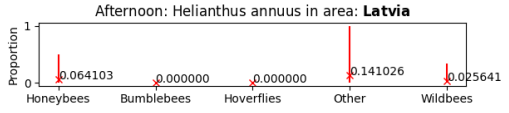

Total: Trifolium pratense in area: **Latvia**
Proportion
1
0
0.223090
0.312674
0.051215
0.314757
0.098264
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

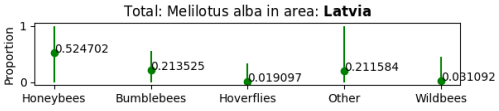

Morning: Trifolium pratense in area: **Latvia**
Proportion
1
0
0.191840
0.205903
0.051215
0.171528
0.098264
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

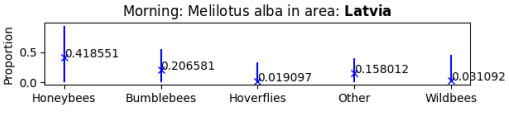

Afternoon: Trifolium pratense in area: **Latvia**
Proportion
1
0
0.031250
0.106771
0.000000
0.143229
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

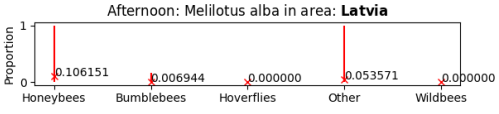

Total: Helianthus annuus in area: **Latvia**
Proportion
1
0
0.466880
0.143162
0.000000
0.364316
0.025641
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

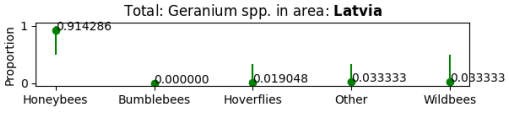

Morning: Helianthus annuus in area: **Latvia**
Proportion
1
0
0.402778
0.143162
0.000000
0.223291
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

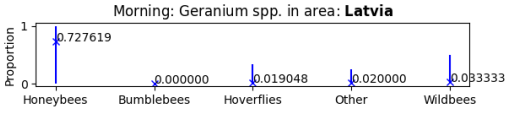

Afternoon: Helianthus annuus in area: **Latvia**
Proportion
1
0
0.064103
0.000000
0.000000
0.141026
0.025641
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

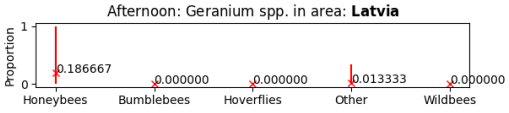

Total: Melilotus alba in area: **Latvia**
Proportion
1
0
0.524702
0.213525
0.019097
0.211584
0.031092
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

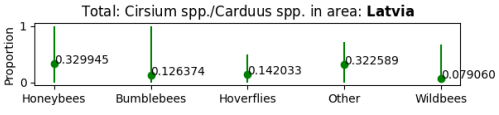

Morning: Melilotus alba in area: **Latvia**
Proportion
0.5
0.0
0.418551
0.206581
0.019097
0.158012
0.031092
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

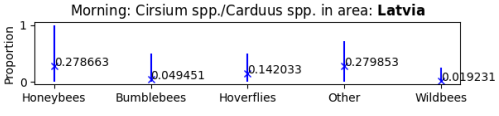

Afternoon: Melilotus alba in area: **Latvia**
Proportion
1
0
0.106151
0.006944
0.000000
0.053571
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

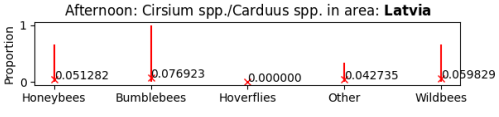

Total: Geranium spp. in area: **Latvia**
Proportion
1
0
0.914286
0.000000
0.019048
0.033333
0.033333
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

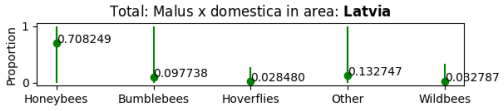

Morning: Geranium spp. in area: **Latvia**
Proportion
1
0
0.727619
0.000000
0.019048
0.020000
0.033333
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

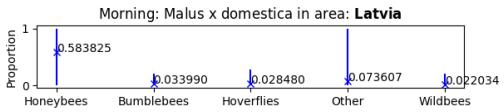

Afternoon: Geranium spp. in area: **Latvia**
Proportion
1
0
0.186667
0.000000
0.000000
0.013333
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

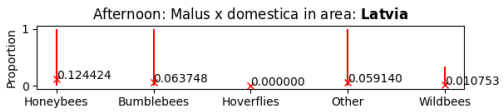

Total: Cirsium spp./Carduus spp. in area: **Latvia**
Proportion
1
0
0.329945
0.126374
0.142033
0.322589
0.079060
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

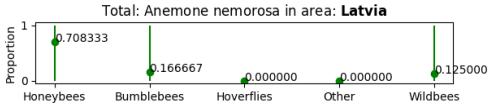

Morning: Cirsium spp./Carduus spp. in area: **Latvia**
Proportion
1
0
0.278663
0.049451
0.142033
0.279853
0.019231
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

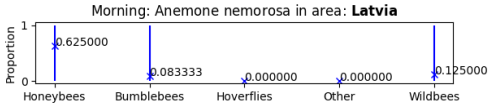

Afternoon: Cirsium spp./Carduus spp. in area: **Latvia**
Proportion
1
0
0.051282
0.076923
0.000000
0.042735
0.059829
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

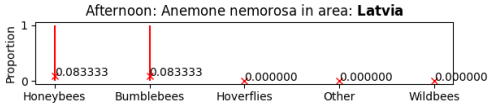

Total: Malus x domestica in area: **Latvia**
Proportion
1
0
0.708249
0.097738
0.028480
0.132747
0.032787
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

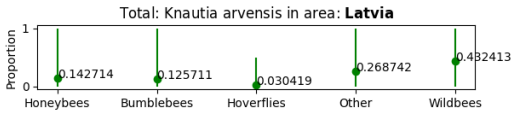

Morning: Malus x domestica in area: **Latvia**
Proportion
1
0
0.583825
0.033990
0.028480
0.073607
0.022034
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

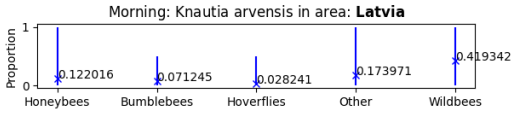

Afternoon: Malus x domestica in area: **Latvia**
Proportion
1
0
0.124424
0.063748
0.000000
0.059140
0.010753
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

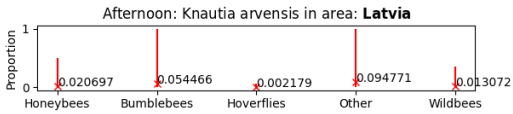

Total: Anemone nemorosa in area: **Latvia**
Proportion
1
0
0.708333
0.166667
0.000000
0.000000
0.125000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

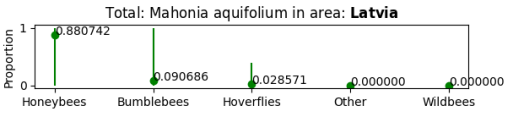

Morning: Anemone nemorosa in area: **Latvia**
Proportion
1
0
0.625000
0.083333
0.000000
0.000000
0.125000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

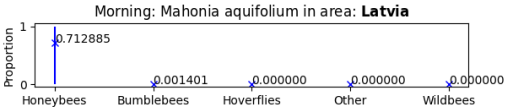

Afternoon: Anemone nemorosa in area: **Latvia**
Proportion
1
0
0.083333
0.083333
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

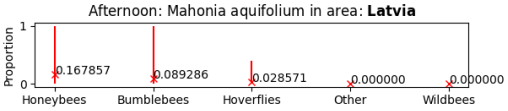

Total: Knautia arvensis in area: **Latvia**
Proportion
1
0
0.142714
0.125711
0.030419
0.268742
0.432413
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

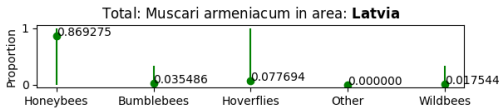

Morning: Knautia arvensis in area: **Latvia**
Proportion
1
0
0.122016
0.071245
0.028241
0.173971
0.419342
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

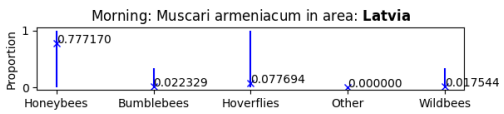

Afternoon: Knautia arvensis in area: **Latvia**
Proportion
1
0
0.020697
0.054466
0.002179
0.094771
0.013072
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

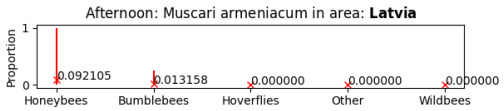

Total: Mahonia aquifolium in area: **Latvia**
Proportion
1
0
0.880742
0.090686
0.028571
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

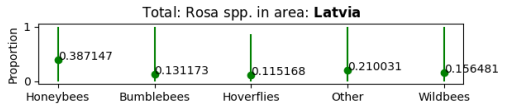

Morning: Mahonia aquifolium in area: **Latvia**
Proportion
1
0
0.712885
0.001401
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

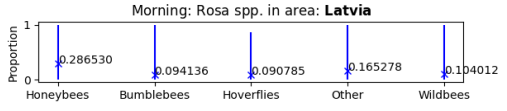

Afternoon: Mahonia aquifolium in area: **Latvia**
Proportion
1
0
0.167857
0.089286
0.028571
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

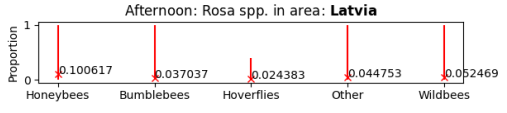

Total: Muscari armeniacum in area: **Latvia**
Proportion
1
0
0.869275
0.035486
0.077694
0.000000
0.017544
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

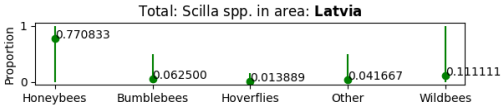

Morning: Muscari armeniacum in area: **Latvia**
Proportion
1
0
0.777170
0.022329
0.077694
0.000000
0.017544
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

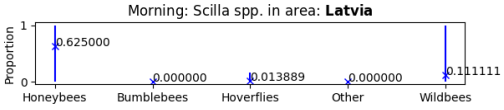

Afternoon: Muscari armeniacum in area: **Latvia**
Proportion
1
0
0.092105
0.013158
0.000000
0.000000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

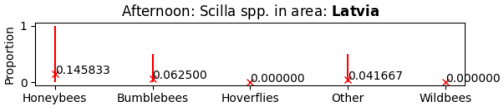

Total: Rosa spp. in area: **Latvia**
Proportion
1
0
0.387147
0.131173
0.115168
0.210031
0.156481
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

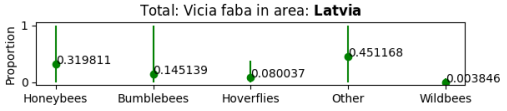

Morning: Rosa spp. in area: **Latvia**
Proportion
1
0
0.286530
0.094136
0.090785
0.165278
0.104012
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

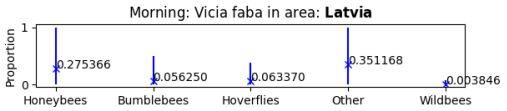

Afternoon: Rosa spp. in area: **Latvia**
Proportion
1
0
0.100617
0.037037
0.024383
0.044753
0.052469
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

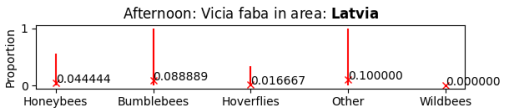

Total: Scilla spp. in area: **Latvia**
Proportion
1
0
0.770833
0.062500
0.013889
0.041667
0.111111
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Morning: Scilla spp. in area: **Latvia**
Proportion
1
0
0.625000
0.000000
0.013889
0.000000
0.111111
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Afternoon: Scilla spp. in area: **Latvia**
Proportion
1
0
0.145833
0.062500
0.000000
0.041667
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Total: Vicia faba in area: **Latvia**
Proportion
1
0
0.319811
0.145139
0.080037
0.451168
0.003846
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Morning: Vicia faba in area: **Latvia**
Proportion
1
0
0.275366
0.056250
0.063370
0.351168
0.003846
Honeybees
Bumblebees
Hoverflies
Other
Wildbees


Afternoon: Vicia faba in area: **Latvia**
Proportion
1
0
0.044444
0.088889
0.016667
0.100000
0.000000
Honeybees
Bumblebees
Hoverflies
Other
Wildbees

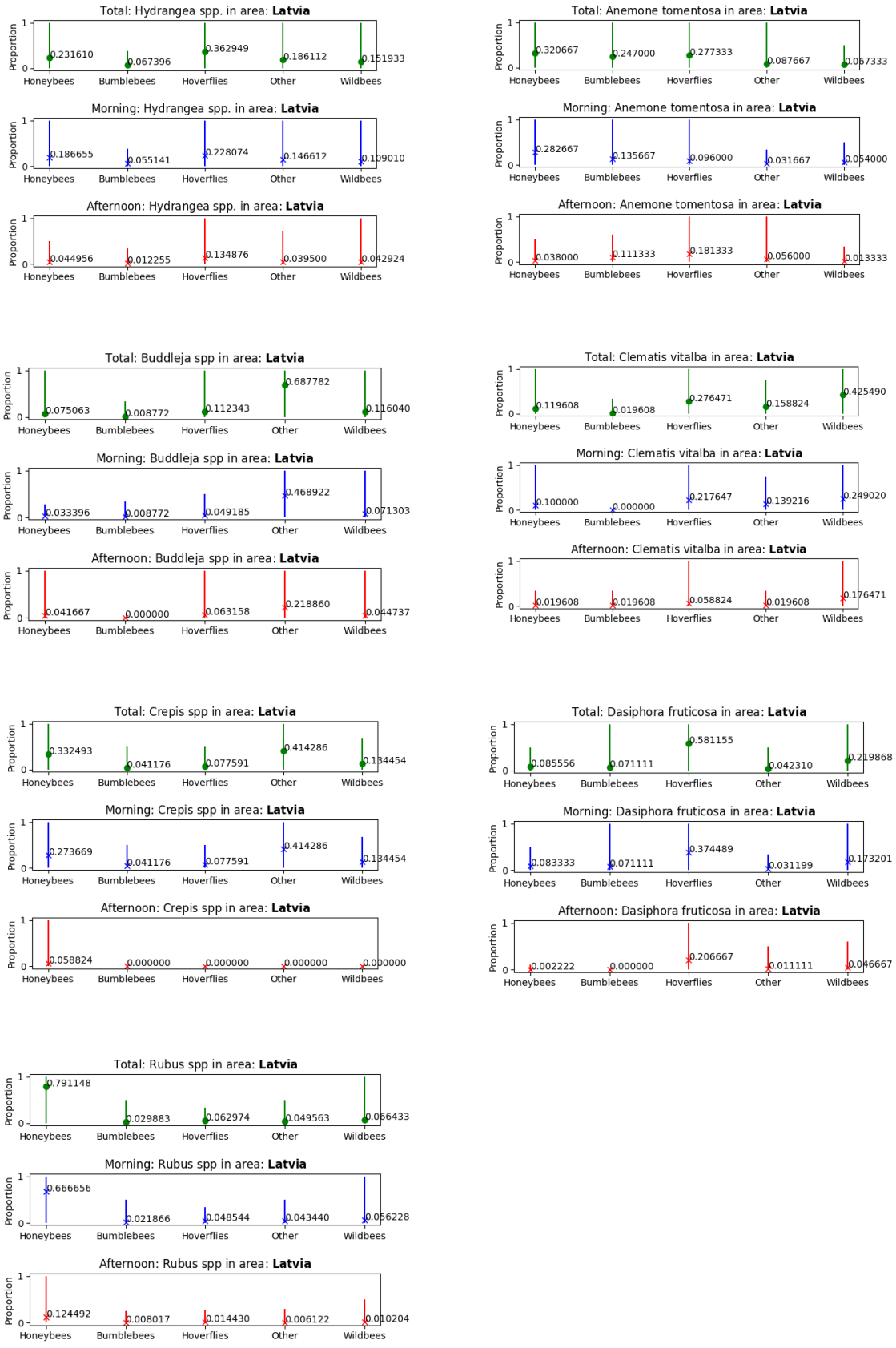


Figure 30. The mean and spread of the overall-, morning- and afternoon preferences of HB, BB, SB, HF, and OI in Latvia

Pollinator ratios in Europe, the Netherlands/Belgium, Denmark and Latvia

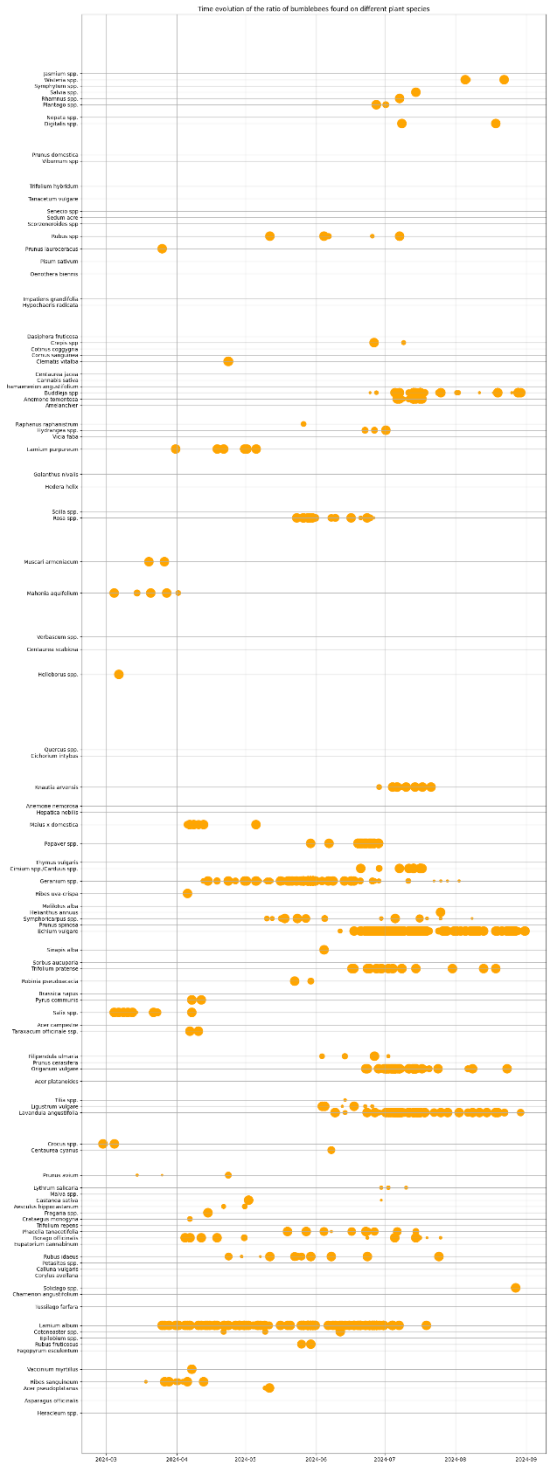
In the Figures 31 to 34 the plants and their pollinating insects are shown, showing the overlap in food sources aand their relative abundance represented by the size of the dot.

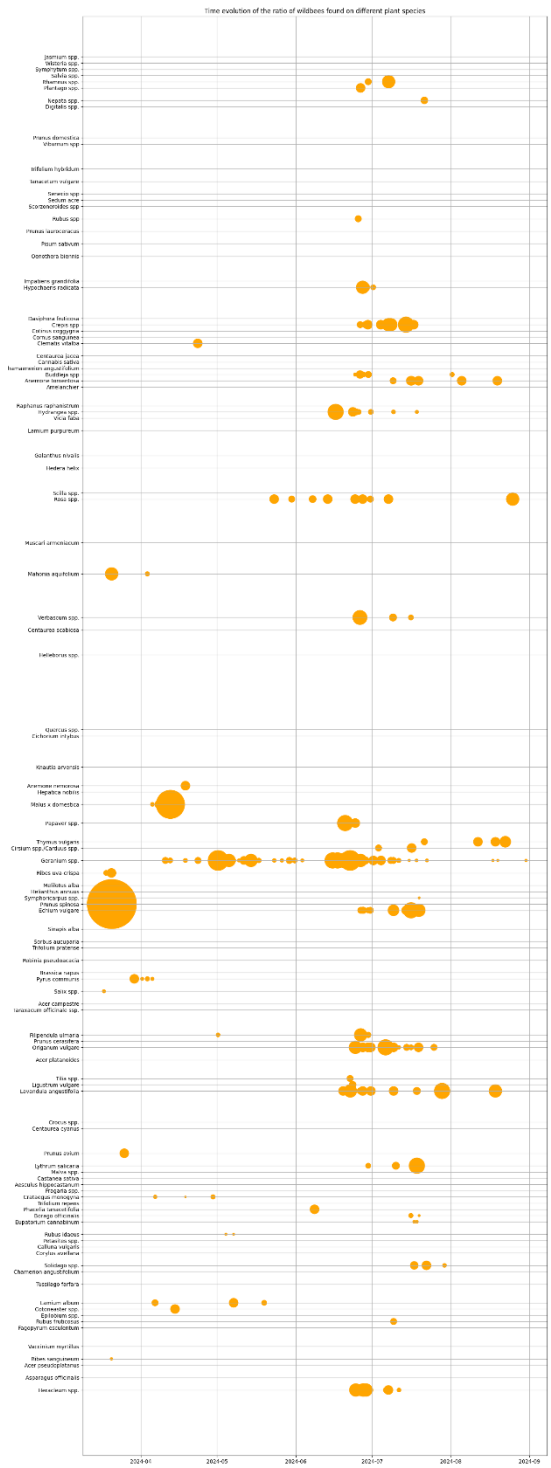

Time evolution of the ratio of wildbees found on different plant species


Time evolution of the ratio of hoverflies found on different plant species

Figure 31, Pollinator ratios in time: Europe. The size of the dots show the number of insects recorded.


Time evolution of the ratio of honeybees found on different plant species


Time evolution of the ratio of bumblebees found on different plant species


Time evolution of the ratio of wildbees found on different plant species


Time evolution of the ratio of hoverflies found on different plant species

Figure 32, Pollinator ratios in time: the Netherlands - Belgium. The size of the dots shows the number of insects recorded.


Time evolution of the ratio of honeybees found on different plant species


Time evolution of the ratio of bumblebees found on different plant species


Time evolution of the ratio of wildbees found on different plant species
2024-05
2024-06
2024-07
2024-08
2024-09


Time evolution of the ratio of hoverflies found on different plant species
2024-04
2024-05
2024-06
2024-07
2024-08
2024-09

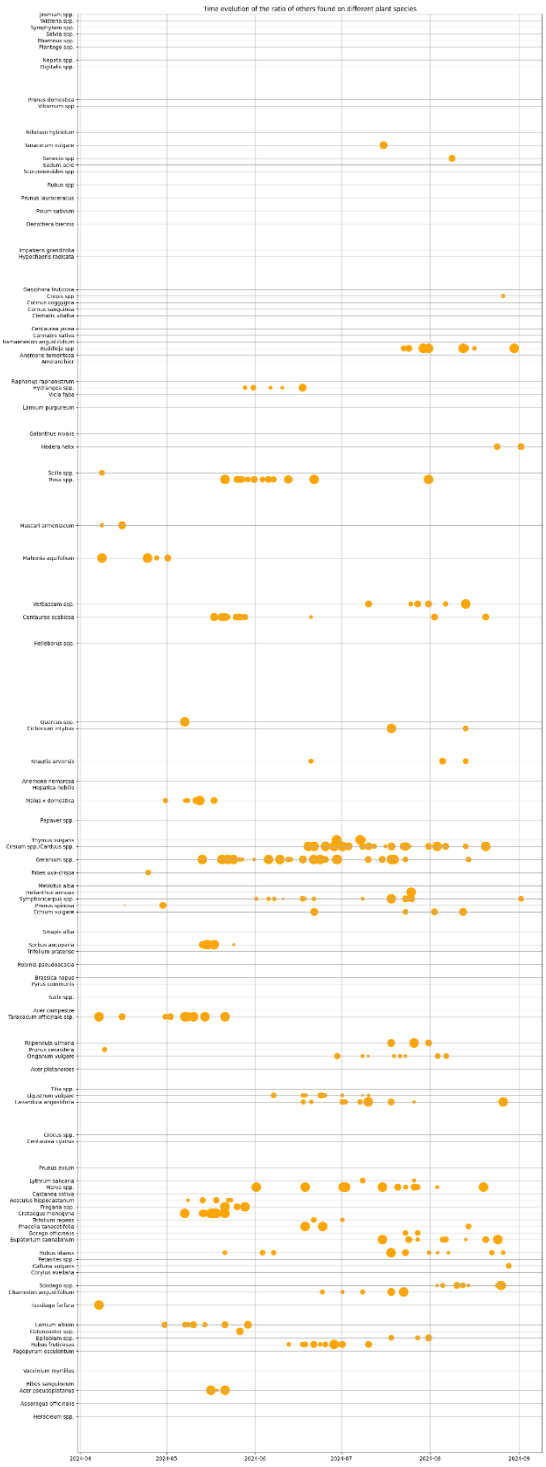
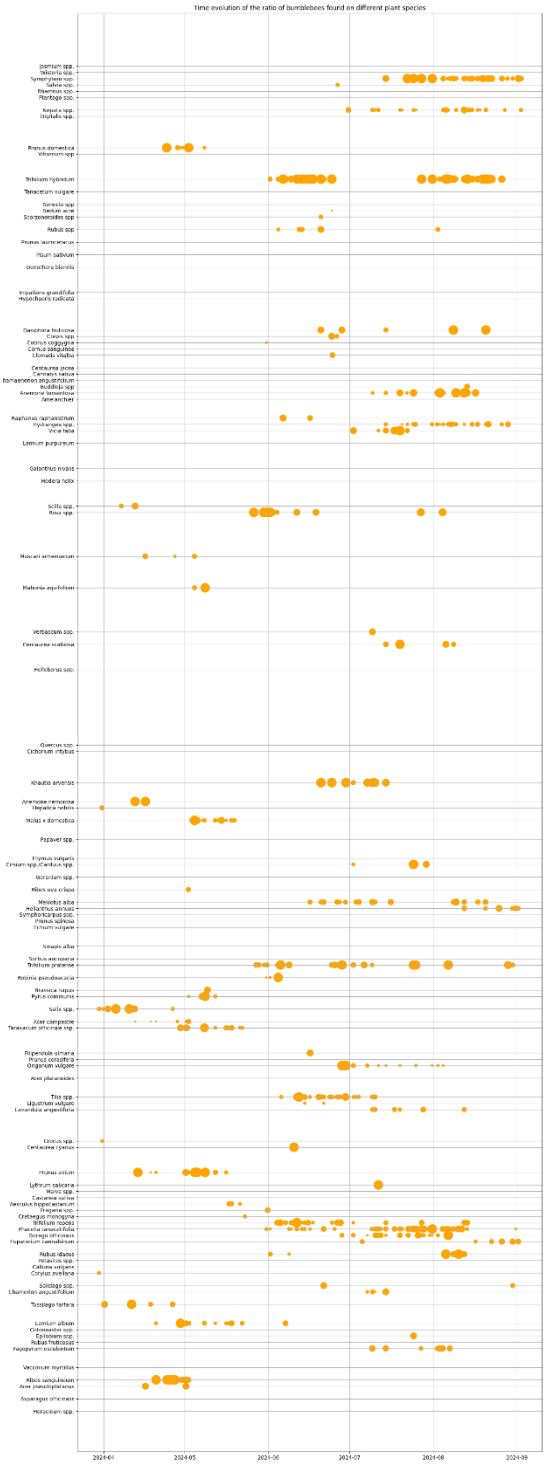


Figure 33, Pollinator ratios in time: Denmark. The size of the dots shows the number of insects recorded.


Time evolution of the ratio of honeybees found on different plant species
2024-04
2024-05
2024-06
2024-07
2024-08
2024-09


Time evolution of the ratio of bumblebees found on different plant species
2024-04
2024-05
2024-06
2024-07
2024-08
2024-09

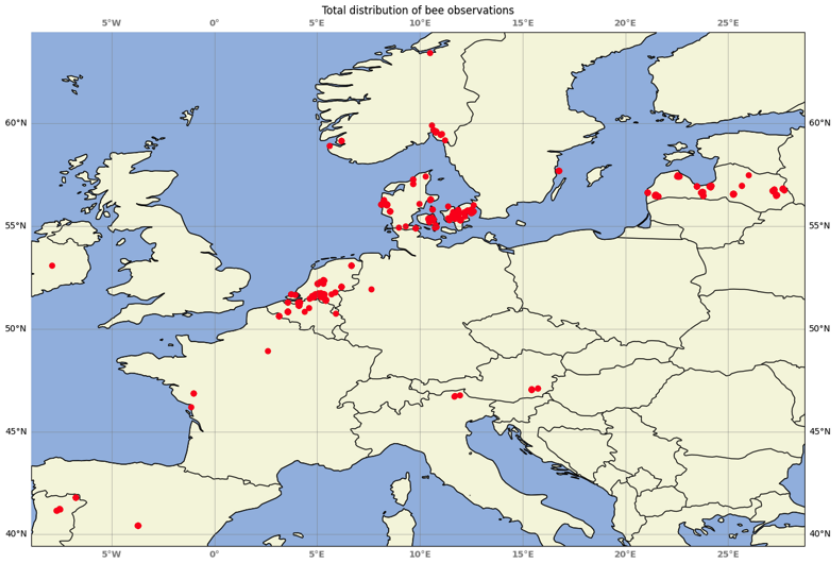

Time evolution of the ratio of wildbees found on different plant species
Jasminum spp.
Veronica spp.
Symphytum spp.
Salvia spp.
Rhamnus spp.
Plantago spp.
Impatiens spp.
Digitalis spp.
Prunus domestica
Viburnum spp.
Trifolium hybridum
Tanacetum vulgare
Senecio spp.
Sedum acre
Scorzoneroides spp.
Rubus spp.
Prunus laurocerasus
Pisum sativum
Oenothera biennis
Impatiens grandiflora
Hypochaeris radicata
Dasiphora fruticosa
Crocus spp.
Corylus coggygria
Cornus sanguinea
Clematis vitalba
Centaurea jacea
Cornus sativa
Hamamelis angustifolium
Buddleja spp.
Aronia x prunifolia
Amelanchier
Raphanus raphanistrum
Hydrangea spp.
Vicia faba
Lamium purpureum
Galanthus nivalis
Hedera helix
Scilla spp.
Rosa spp.
Muscari armeniacum
Mahonia aquifolium
Verbascum spp.
Centaurea scabiosa
Helleborus spp.
Quercus spp.
Cichorium intybus
Knautia arvensis
Anemone nemorosa
Hepatica nobilis
Malus x domestica
Papaver spp.
Prunus subgen.
Cirsium spp./Carduus spp.
Geranium spp.
Ribes uva-crispa
Melilotus alba
Helianthus annuus
Symphoricarpos spp.
Prunus spinosa
Echium vulgare
Sinapis alba
Sorbus aucuparia
Trifolium pratense
Prunus pseudocerasus
Brassica napus
Pyrus communis
Salix spp.
Acer campestre
Taraxacum officinale ssp.
Hippocrepis emerus
Prunus cerasifera
Origanum vulgare
Acer platanoides
Tilia spp.
Ligustrum vulgare
Lavandula angustifolia
Cirsium spp.
Centaurea cyanus
Prunus avium
Lythrum salicaria
Malus spp.
Castanea sativa
Aesculus hippocastanum
Fragaria spp.
Crataegus monogyna
Trifolium repens
Phacelia tanacetifolia
Borago officinalis
Eupatorium cannabinum
Rubus idaeus
Reseda spp.
Calluna vulgaris
Corylus avellana
Solidago spp.
Chamerion angustifolium
Tussilago farfara
Lamium album
Odontostomis spp.
Epilobium spp.
Rubus fruticosus
Fagopyrum esculentum
Vaccinium myrtillus
Ribes sanguineum
Acer pseudoplatanus
Asparagus officinalis
Heracleum spp.
2024-04
2024-05
2024-06
2024-07
2024-08
2024-09

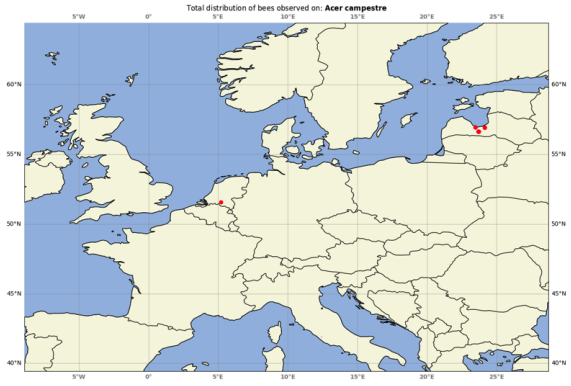

Time evolution of the ratio of hoverflies found on different plant species
Jasminum spp.
Veronica spp.
Symphytum spp.
Salvia spp.
Rhamnus spp.
Plantago spp.
Impatiens spp.
Digitalis spp.
Prunus domestica
Viburnum spp.
Trifolium hybridum
Tanacetum vulgare
Senecio spp.
Sedum acre
Scorzoneroides spp.
Rubus spp.
Prunus laurocerasus
Pisum sativum
Oenothera biennis
Impatiens grandiflora
Hypochaeris radicata
Dasiphora fruticosa
Crocus spp.
Corylus coggygria
Cornus sanguinea
Clematis vitalba
Centaurea jacea
Cornus sativa
Hamamelis angustifolium
Buddleja spp.
Aronia x prunifolia
Amelanchier
Raphanus raphanistrum
Hydrangea spp.
Vicia faba
Lamium purpureum
Galanthus nivalis
Hedera helix
Scilla spp.
Rosa spp.
Muscari armeniacum
Mahonia aquifolium
Verbascum spp.
Centaurea scabiosa
Helleborus spp.
Quercus spp.
Cichorium intybus
Knautia arvensis
Anemone nemorosa
Hepatica nobilis
Malus x domestica
Papaver spp.
Prunus subgen.
Cirsium spp./Carduus spp.
Geranium spp.
Ribes uva-crispa
Melilotus alba
Helianthus annuus
Symphoricarpos spp.
Prunus spinosa
Echium vulgare
Sinapis alba
Sorbus aucuparia
Trifolium pratense
Prunus pseudocerasus
Brassica napus
Pyrus communis
Salix spp.
Acer campestre
Taraxacum officinale ssp.
Hippocrepis emerus
Prunus cerasifera
Origanum vulgare
Acer platanoides
Tilia spp.
Ligustrum vulgare
Lavandula angustifolia
Cirsium spp.
Centaurea cyanus
Prunus avium
Lythrum salicaria
Malus spp.
Castanea sativa
Aesculus hippocastanum
Fragaria spp.
Crataegus monogyna
Trifolium repens
Phacelia tanacetifolia
Borago officinalis
Eupatorium cannabinum
Rubus idaeus
Reseda spp.
Calluna vulgaris
Corylus avellana
Solidago spp.
Chamerion angustifolium
Tussilago farfara
Lamium album
Odontostomis spp.
Epilobium spp.
Rubus fruticosus
Fagopyrum esculentum
Vaccinium myrtillus
Ribes sanguineum
Acer pseudoplatanus
Asparagus officinalis
Heracleum spp.
2024-04
2024-05
2024-06
2024-07
2024-08
2024-09

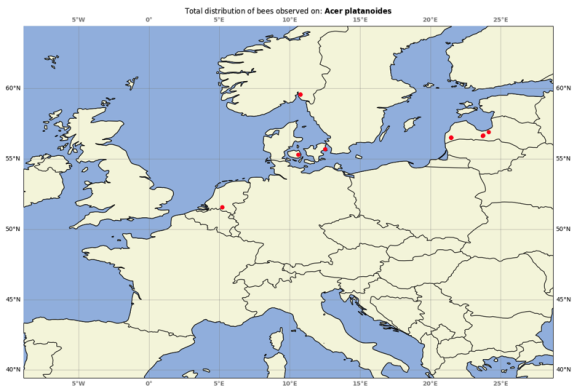
Figure 34, Pollinator ratios in time: Latvia. The size of the dots shows the number of insects recorded.

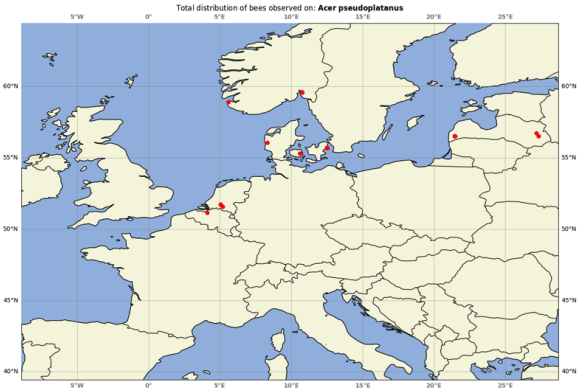
Observation maps plant species

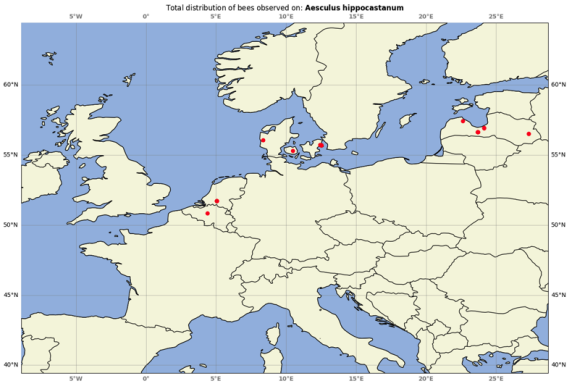
In Map 1, the maps of the EU are presented with red dots of the locations where specific plants and the visiting pollinating insects are recorded

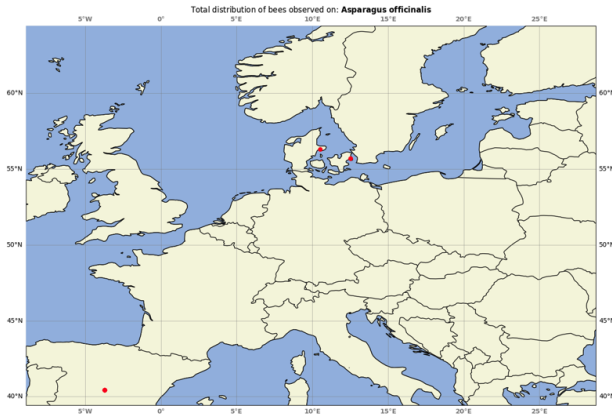


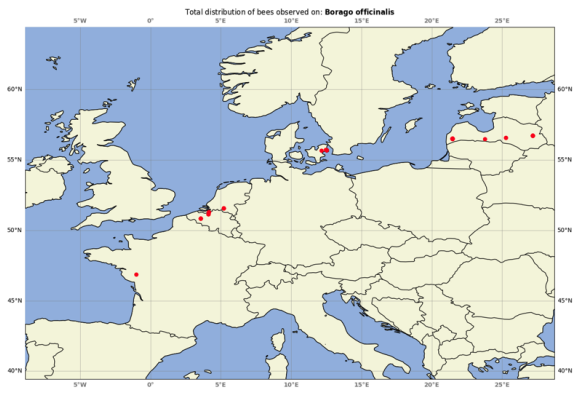


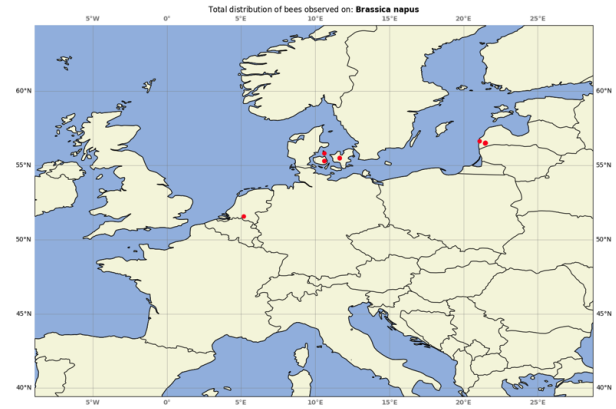


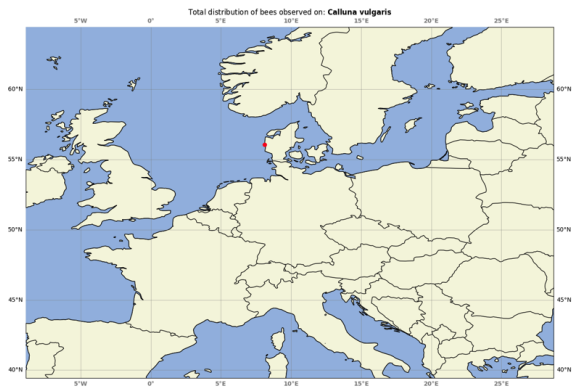


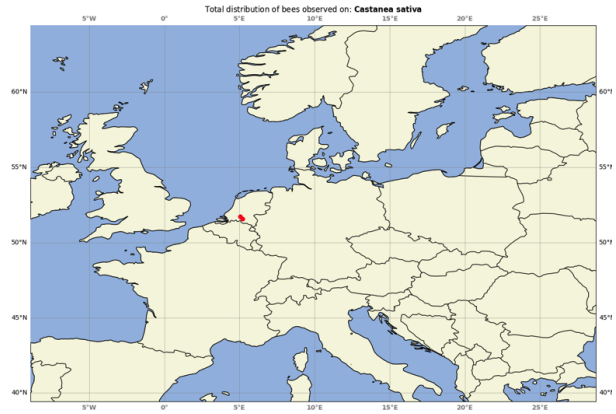



Total distribution of bees observed on: Asparagus officinalis

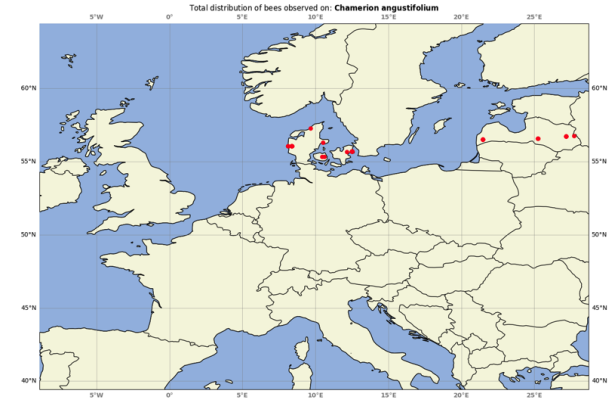

Total distribution of bees observed on: Borago officinalis


Total distribution of bees observed on: Brassica napus


Total distribution of bees observed on: Calluna vulgaris

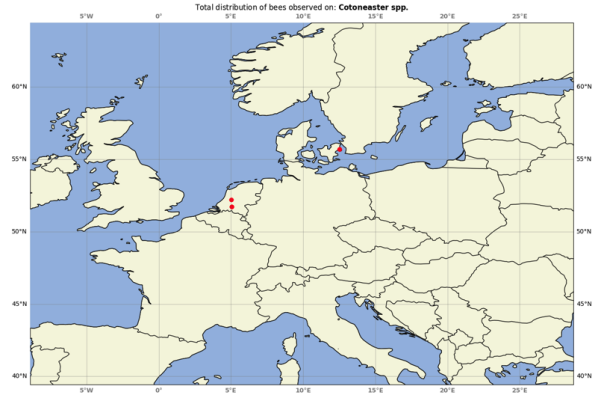

Total distribution of bees observed on: Castanea sativa


Total distribution of bees observed on: Centaurea cyanus

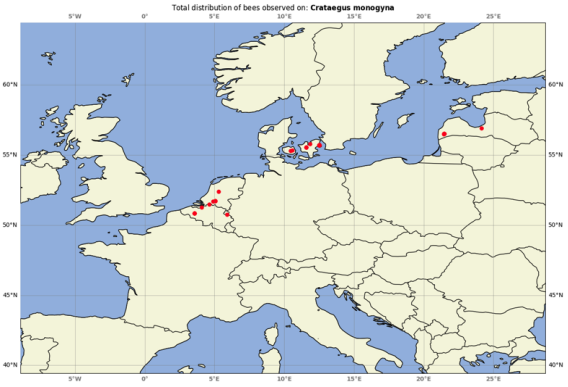

Total distribution of bees observed on: Chamerion angustifolium


Total distribution of bees observed on: Corylus avellana

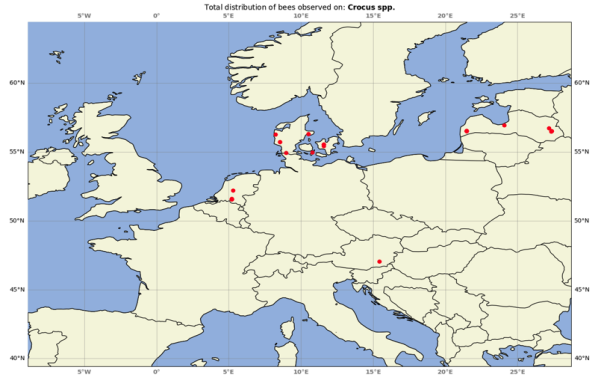
Total distribution of bees observed on: **Cotoneaster spp.**



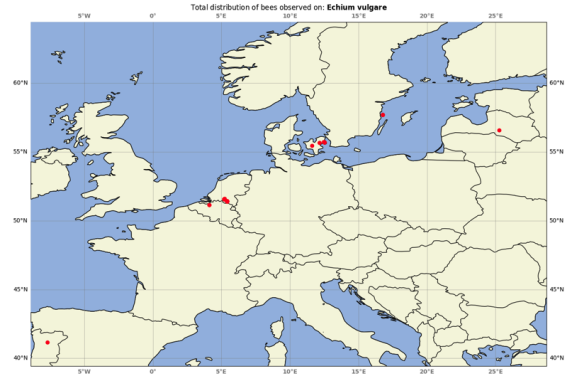
Total distribution of bees observed on: **Crataegus monogyna**



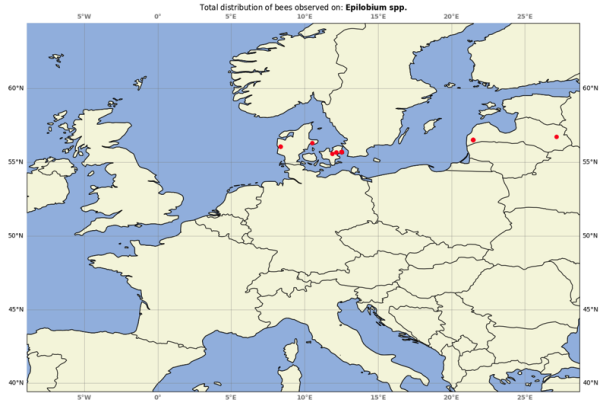
Total distribution of bees observed on: **Crocus spp.**



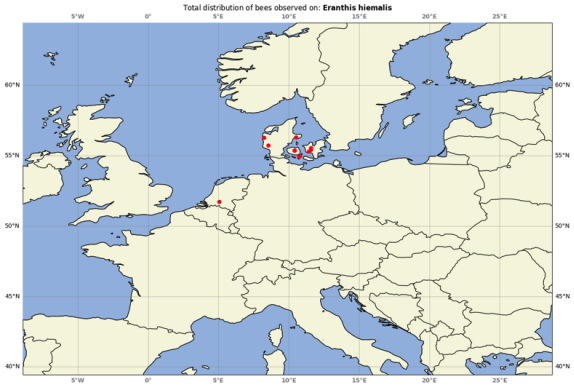
Total distribution of bees observed on: **Echium vulgare**



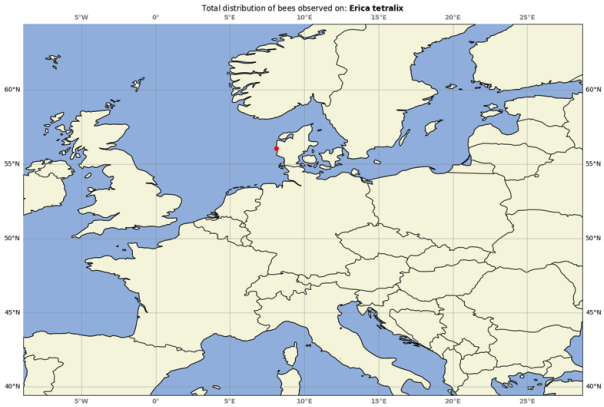
Total distribution of bees observed on: **Epilobium spp.**



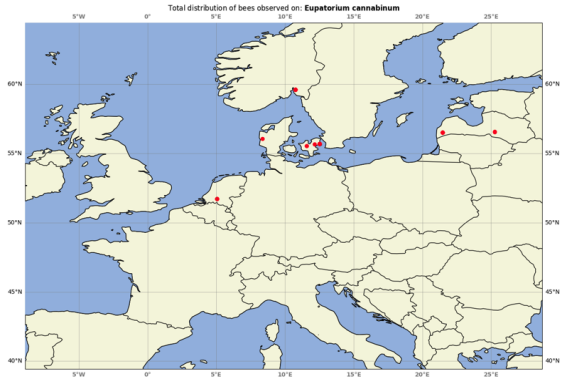
Total distribution of bees observed on: **Eranthis hiemalis**

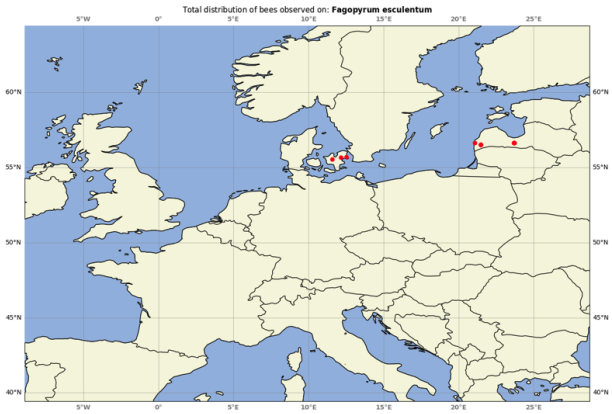


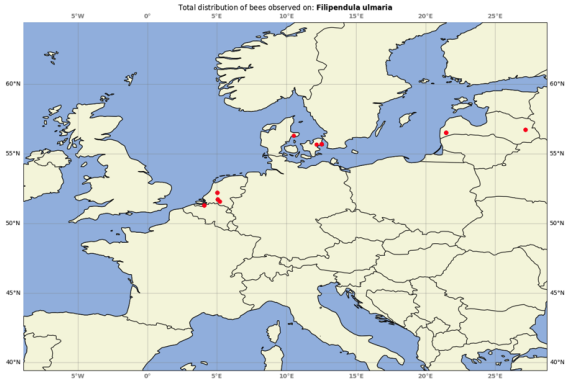
Total distribution of bees observed on: **Erica tetralix**

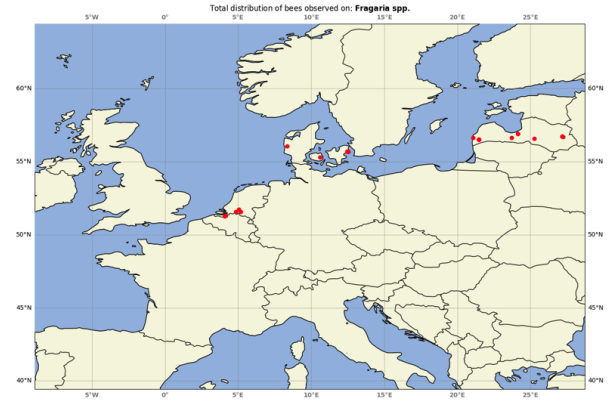


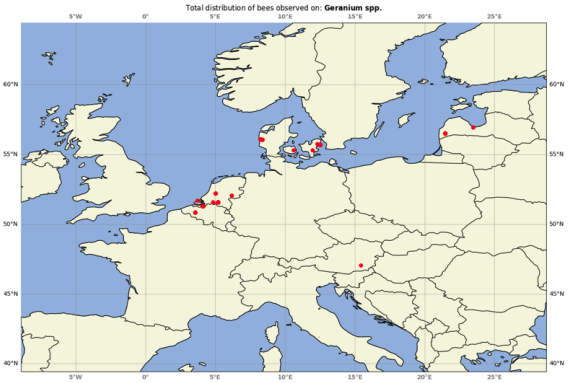
Total distribution of bees observed on: **Eupatorium cannabinum**

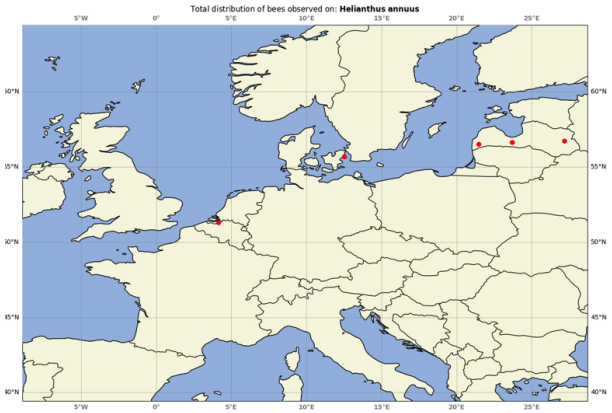


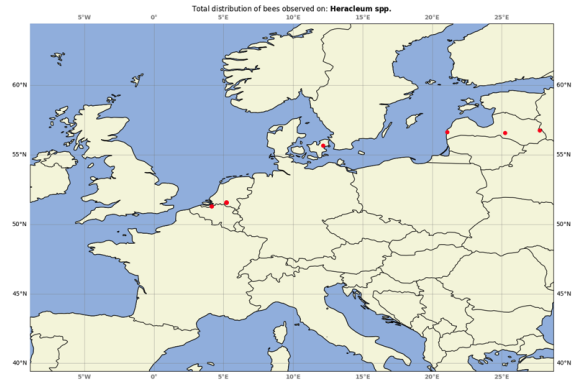

Total distribution of bees observed on: Fagopyrum esculentum

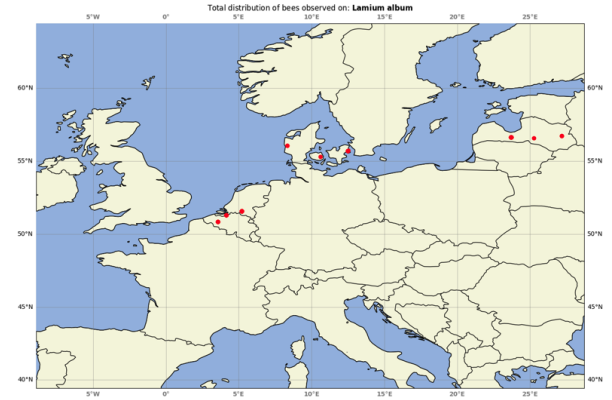

Total distribution of bees observed on: Filipendula ulmaria

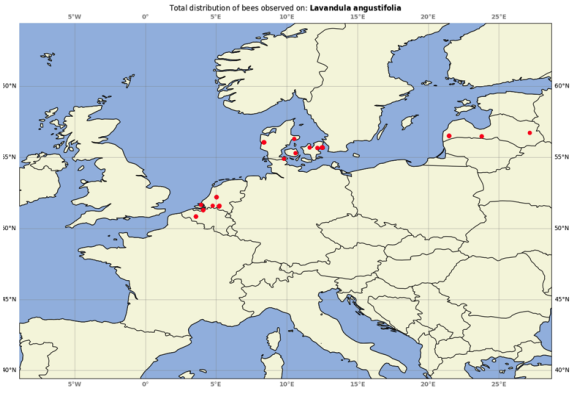

Total distribution of bees observed on: Fragaria spp.

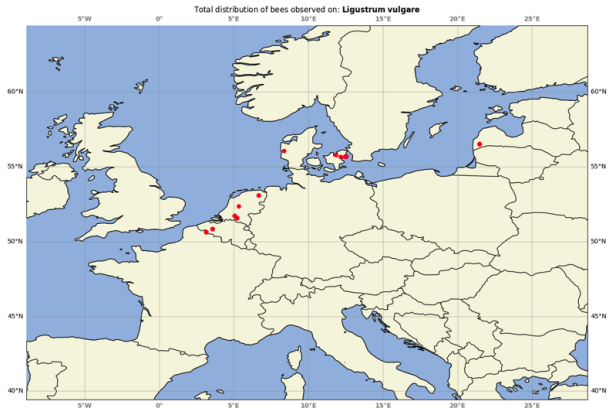

Total distribution of bees observed on: Geranium spp.

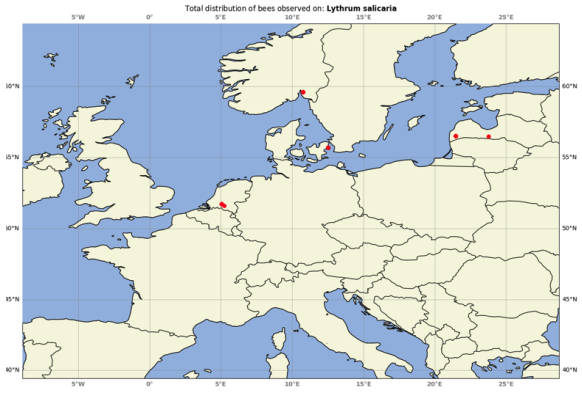

Total distribution of bees observed on: Helianthus annuus

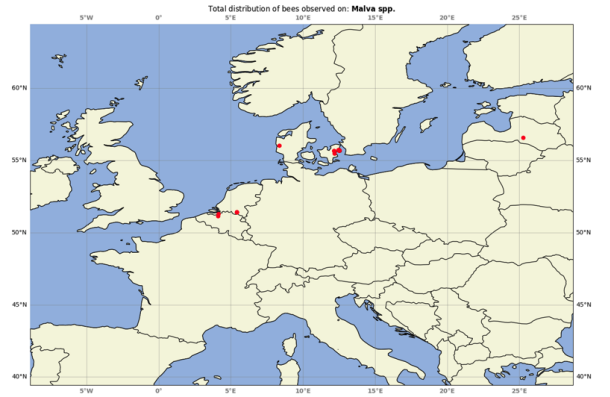

Total distribution of bees observed on: Heracleum spp.

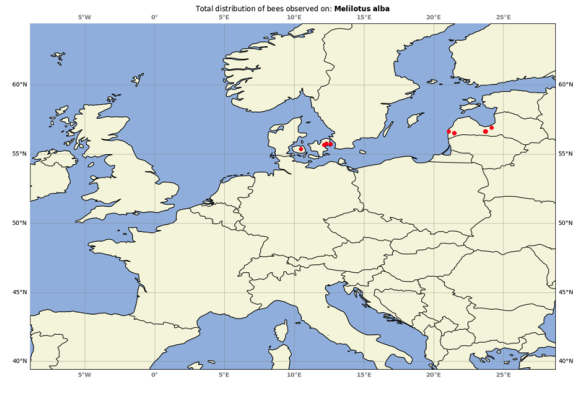

Total distribution of bees observed on: Lamium album

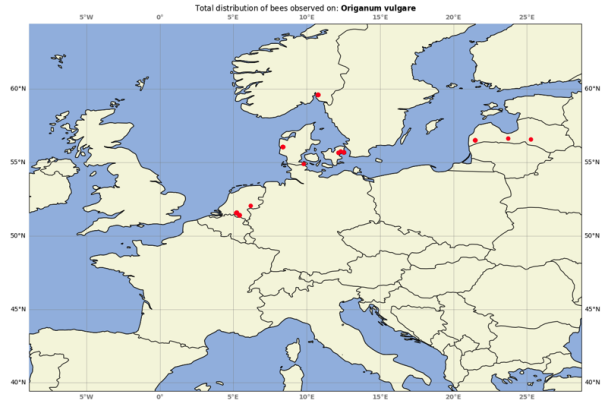

Total distribution of bees observed on: Lavandula angustifolia

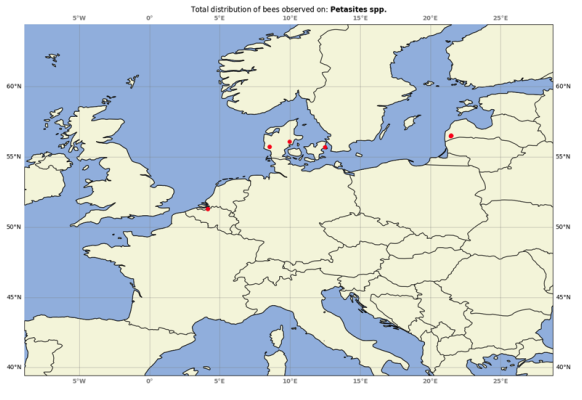

Total distribution of bees observed on: Ligustrum vulgare

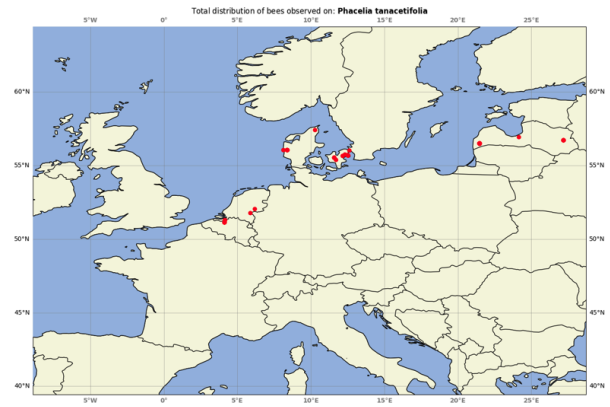

Total distribution of bees observed on: Lythrum salicaria

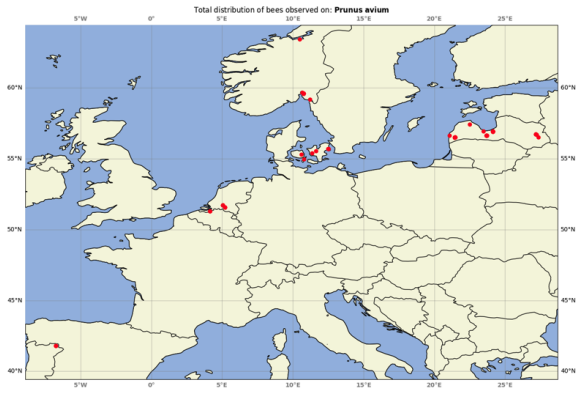

Total distribution of bees observed on: Malva spp.

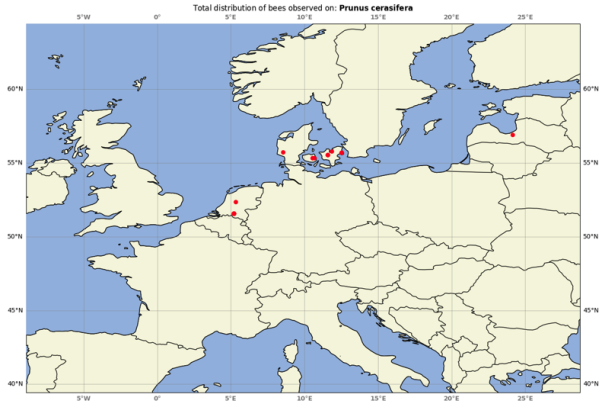

Total distribution of bees observed on: Melilotus alba

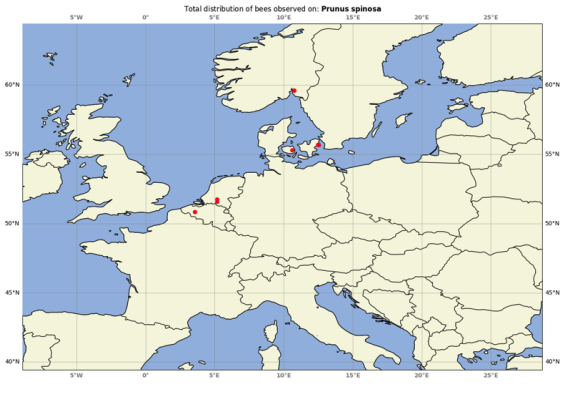

Total distribution of bees observed on: Origanum vulgare

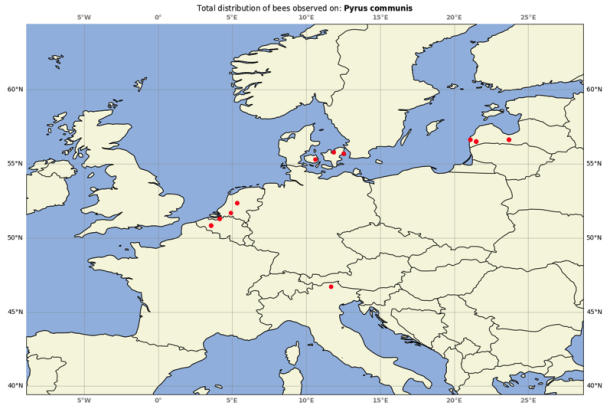

Total distribution of bees observed on: Petasites spp.

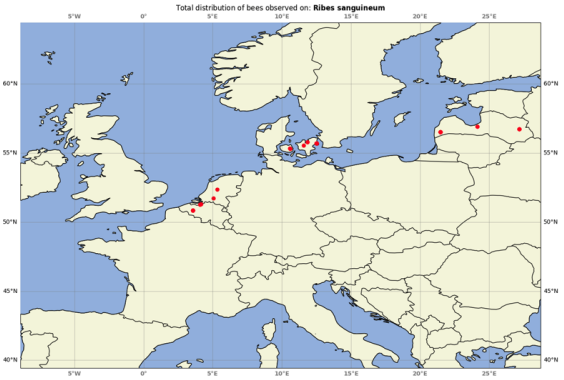

Total distribution of bees observed on: Phacelia tanacetifolia

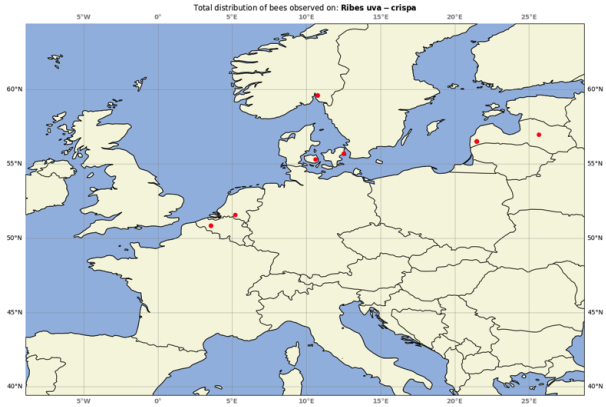

Total distribution of bees observed on: Prunus avium


Total distribution of bees observed on: Prunus cerasifera

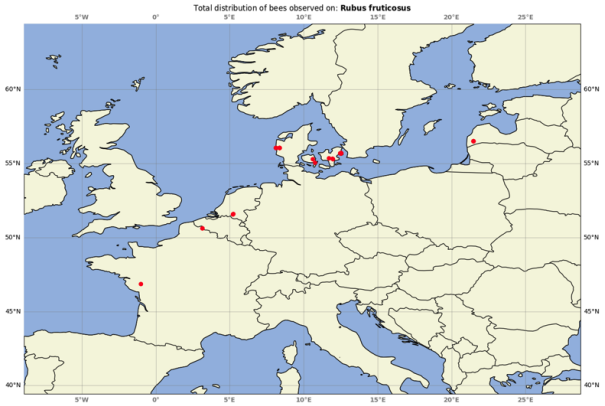

Total distribution of bees observed on: Prunus spinosa

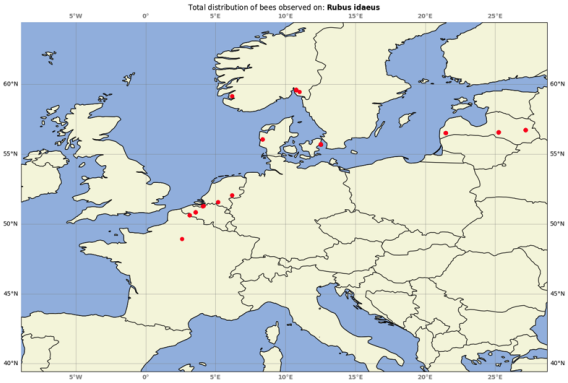

Total distribution of bees observed on: Pyrus communis


Total distribution of bees observed on: Ribes sanguineum

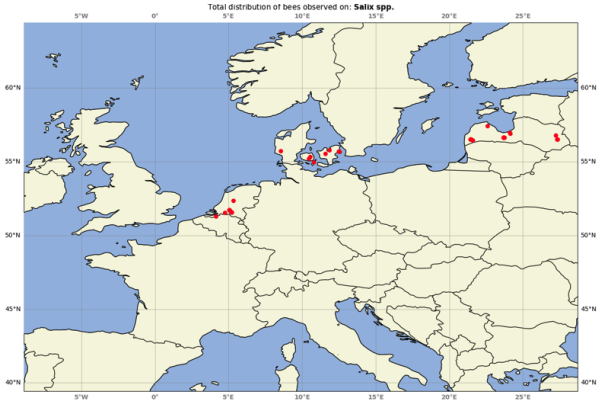

Total distribution of bees observed on: Ribes uva – crispa


Total distribution of bees observed on: Robinia pseudoacacia

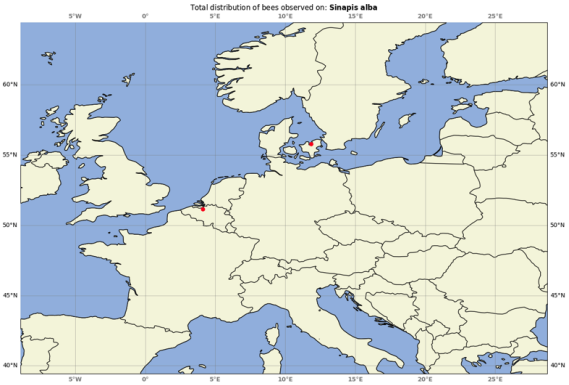

Total distribution of bees observed on: Rubus fruticosus


Total distribution of bees observed on: Rubus idaeus

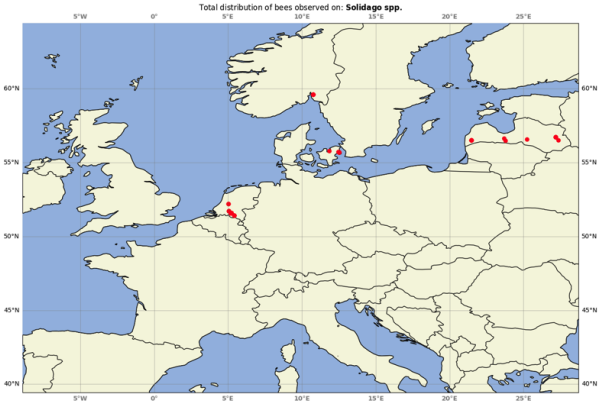
Total distribution of bees observed on: **Salix spp.**



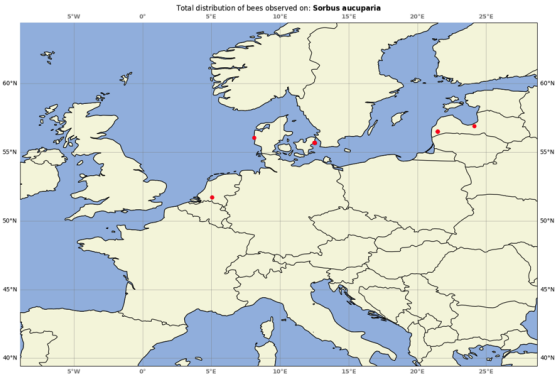
Total distribution of bees observed on: **Sinapis alba**



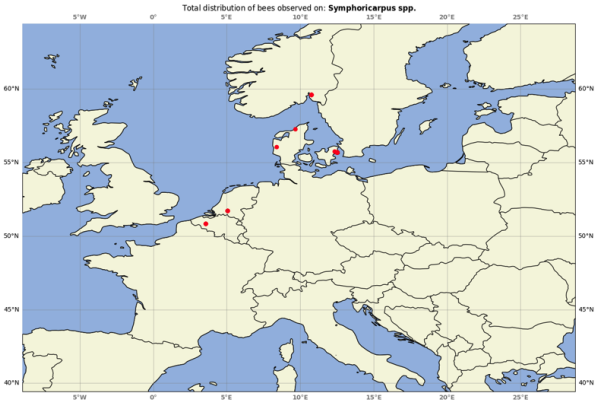
Total distribution of bees observed on: **Solidago spp.**



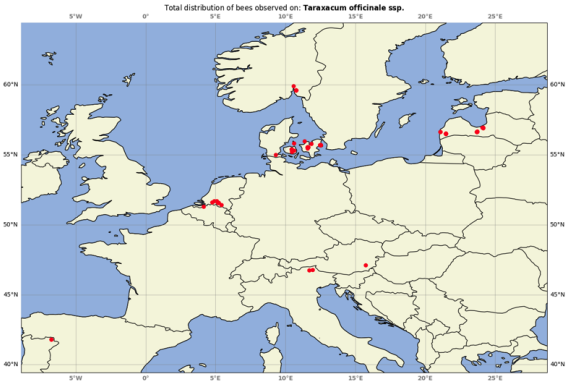
Total distribution of bees observed on: **Sorbus aucuparia**



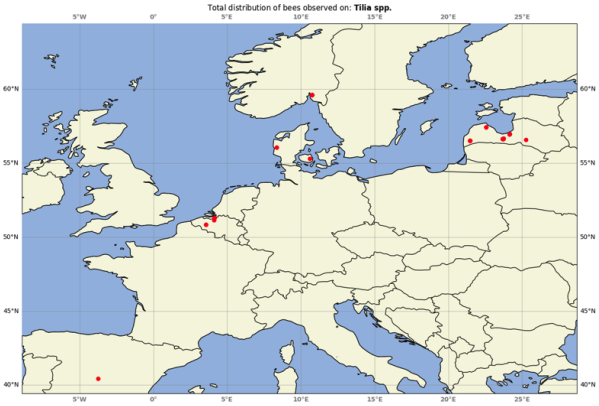
Total distribution of bees observed on: **Symphoricarpus spp.**



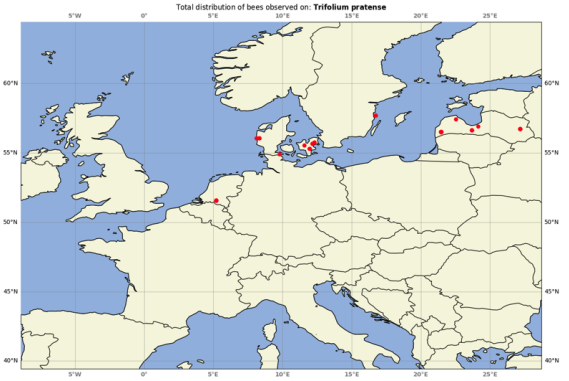
Total distribution of bees observed on: **Taraxacum officinale ssp.**

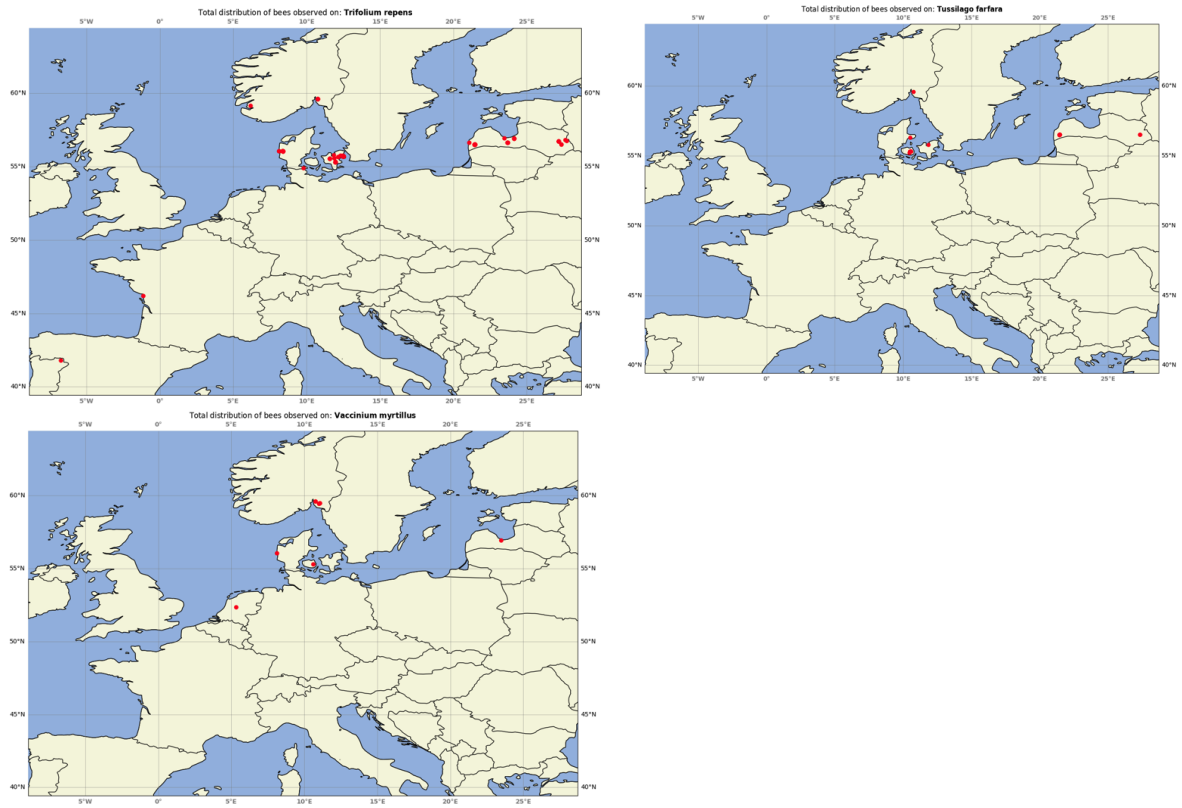


Total distribution of bees observed on: **Tilia spp.**



Total distribution of bees observed on: **Trifolium pratense**





Maps 1. Maps of the EU with red dots where specific plants and visiting pollinating insects were recorded.

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