**Table S1.** Studies included in the analyses. If possible, we indicated spatial scales of the assemblage data explicitly, such as the length of the transects or plot size. If this information is not available, or if the studies did not standardize sampling area, we used other metrics such as sampled time and number of trees sampled.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Study | Mean abundance | Mean species richness | Scales of assemblage | Contact |
| Adgc01 (González-Chaves *et al.*, 2020) | 13.0 | 6.0 | Netting (Coffee visitors): 50m transect | Adrian González-Chaves,  Jean Paul Metzger |
| Amad01 (Amado de Santis & Chacoff, 2020) | 72.8 | 17.5 | Netting (Floral visitors): 1ha plot | A. A. Amado De Santis |
| Arm01 (Armas-Quiñonez *et al.*, 2020) | 252.0 | 30.0 | Netting (Floral visitors): 30m\*20m plot | Ek Del-Val,  Gabriela Armas-Quiñonez |
| Avil01 (Ávila-Gómez *et al.*, 2019) | 297.4 | 19.9 | Pan: 36 traps at 9 locations 100m apart, forming a 200m\*200m plot | Eva Samanta Ávila-Gómez |
| Baldi01 (Sárospataki *et al.*, 2009; Batary *et al.*, 2010) | 18.4 | 11.3 | Sweep nets: 60 sweeps along 2 95m transects  Netting (all bees): 2 95m transects | András Báldi |
| Ball01 (Ballare *et al.*, 2019) | 314.7 | 31.7 | Pan: 50 traps at an X formation, 1m apart (i.e., a ~17m\*17m plot)  Vane: 4 traps at the center of the plot, hung at 1m high for 5 days | Kimberly M. Ballare |
| balz021 | 13.7 | 3.3 | Netting (Floral visitors): 15m transect | Mario V. Balzan |
| balz03 (Balzan, 2017) | 12.0 | 5.0 | Netting (Floral visitors): 2m\*1m plot | Mario V. Balzan |
| Bana01 (Banaszak-Cibicka & Żmihorski, 2020) | 315.7 | 47.7 | Netting (All bees): 200m\*1m transect | Weronika Banaszak-Cibicka |
| Bana02 (Banaszak-Cibicka *et al.*, 2018) | 214.9 | 35.5 | Pan: 3 traps within 200m\*1m transect  Netting (All bees): 200m\*1m transect | Weronika Banaszak-Cibicka |
| Bana03 (Banaszak-Cibicka & Żmihorski, 2012) | 295.3 | 43.5 | Pan: 4 traps  Netting (All bees): 30 minutes  All conducted within 50m\*50m plots | Weronika Banaszak-Cibicka |
| Bass01 (Basset *et al.*, 2008) | 122.0 | 17.7 | Malaise: 1 trap  Pan: 4 traps  All pan traps 10m distant from the malaise trap (20m\*20m plots) | Yves Basset |
| Bate01 (Bates *et al.*, 2011) | 49.0 | 15.4 | Pan: 9 traps at 3 locations  Netting: 30 minutes\*2 visits. | Adam J. Bates |
| Baum011 | 21.3 | 7.4 | Netting (Floral visitors): 30 minutes within 1ha plot | Jessica M. Baumann,  Nicholas S. G. Williams |
| Beal01 (Beal-Neves *et al.*, 2020) | 67.0 | 7.0 | Netting (Floral visitors): Sampling flower visitors within 1 ha circular plots. Sampling time varied from 15 to 19 hours between sites. | Mariana Beal-Neves,  Pedro Maria de Abreu Ferreira,  Betina Blochtein |
| benj01 (Cariveau *et al.*, 2013; Garibaldi *et al.*, 2013) | 72.3 | 11.7 | Netting (Blueberry visitors): 200m transect | Faye Benjamin |
| Bill01 (Billeter *et al.*, 2008) | 66.0 | 16.3 | Combined window-glass and yellow-pan trap: 2 sets (25-50m apart) | Regula Billeter |
| Bird01 (Birdshire *et al.*, 2020) | 155.9 | 19.8 | Pan: 3 traps at 1 location  Netting (All bees): 30 minutes within 25m of the location | Kristen R. Birdshire |
| bomm01 (Bommarco *et al.*, 2012) | 16.5 | 3.5 | Netting (All bees): 150m\*4m transect | Riccardo Bommarco |
| bore011 | 24.0 | 6.7 | Netting (Apple visitors): 20m | Alexandra-Maria Klein |
| Bros01 (Brosi *et al.*, 2008) | 38.5 | 12.3 | Netting (All bees): 20m\*20m plot | Berry Brosi |
| Bros02 (Miljanic *et al.*, 2019) | 86.1 | 15.0 | Netting (All bees): 2 200m\*2m transects  Pan: 15 traps evenly distributed along the middle 100m of each transect | Berry Brosi |
| burk01 (Burkle *et al.*, 2020) | 1168.0 | 64.3 | Pan: 4 33m transects with 6 traps each. | Laura A. Burkle |
| burk02 (Simanonok & Burkle, 2014) | 35.5 | 5.6 | Netting (Floral visitors): For each flowering plant species, a semi-circular plot (~625m2) was observed.  Total number of plots varied with number of flowering species in each survey. Total number ranged from 44 to 128 plots | Laura A. Burkle |
| burk03 (Burkle *et al.*, 2013) | 154.6 | 26.9 | Timed search (Floral visitors): Total time ranged from 520 to 4279.5 minutes in site. | Laura A. Burkle |
| burk04 (Burkle & Knight, 2012) | 574.4 | 23.4 | Netting (Floral visitors): Transect covered the whole area (456-71246m2) | Laura A. Burkle |
| burk05 (Heil & Burkle, 2018) | 28.3 | 12.3 | Netting (Floral visitors): 25m diameter circular plot (~491m2) | Laura A. Burkle |
| burk06 (Burkle *et al.*, 2019) | 64.7 | 27.1 | Netting (Floral visitors): 25m diameter circular plot (~491m2) | Laura A. Burkle |
| cari012 | 42.6 | 11.3 | Netting (Bluerry visitors): 60m | Dan Cariveau |
| Cast01 (Sánchez-Echeverría *et al.*, 2016) | 19.0 | 1.0 | Netting (*Opuntia heliabravoana* visitors): 50m transect | Ignacio Castellanos,  Karina Sánchez-Echeverría |
| Carv01b (Carvalheiro *et al.*, 2010) | 53.7 | 7.2 | Netting (Mango visitors): 60m\*2m transect.  Methodology provided in the reference, but the data is from mango plantation margins. | Luísa G. Carvalheiro |
| Cely01 (Cely-Santos & Philpott, 2019) | 271.6 | 18.4 | Netting (All bees): 100m\*100m plot | Marcela Cely-Santos |
| conn01a (Connelly *et al.*, 2015) | 14.5 | 5.5 | Netting (Strawberry vistors): 2 20m transects | Heather Grab,  Greg Loeb |
| conn01b (Connelly *et al.*, 2015) | 62.8 | 14.5 | Pan: 10 traps (1m apart) within a 5m\*5m plot | Heather Grab,  Greg Loeb |
| conn02 (Grab *et al.*, 2018) | 181.9 | 19.4 | Netting (Strawberry visitors): 2 10m\*15m plots | Heather Grab,  Greg Loeb |
| conn04 (Grab *et al.*, 2018) | 432.3 | 9.5 | Netting (Floral visitors): 10m\*4m | Heather Grab,  Greg Loeb |
| cunn0052 | 612.7 | 10.6 | Vane: 1 or 2 vane traps (separated by < 500m) | Saul Cunningham |
| cunn009 (Lentini *et al.*, 2012) | 46.4 | 7.0 | Vane: 1 trap | Saul Cunningham |
| Cunn02 (Cunningham *et al.*, 2013) | 115.9 | 18.2 | Malaise: 1 trap | Saul Cunningham |
| cuss01 (Cusser *et al.*, 2018) | 37.7 | 8.8 | Netting (Cotton visitors): 4 parallel evenly-spaced 50m\*1m transects within a 50m\*50m plot | Sarah Cusser |
| Cuss02 (Cusser *et al.*, 2015) | 74.8 | 12.9 | Netting (Cotton visitors): 3 50m\*10m transects within a 50m\*50m plot. | Sarah Cusser |
| danf01(Russo *et al.*, 2015) | 89.6 | 20.4 | Netting (Apple visitors): 100m | Mia G. Park |
| Drom01 (Dromgold *et al.*, 2020) | 22.0 | 4.0 | Pan: 3 traps randomly placed in each site (26m2-832m2) | Nicholas S. G. Williams |
| Ducl01 (du Clos *et al.*, 2020) | 72.0 | 20.7 | Pan: 3 traps every 10m along a transect (100m)  Netting (All bees): 100m transect (same as pan trap) | Brianne Du Clos |
| Enriq01 (Enríquez *et al.*, 2015) | 117.6 | 14.7 | Netting (Pumpkin visitors): 144m2 | Eunice Enríquez |
| Forr01 (Forrest *et al.*, 2015) | 266.3 | 35.1 | Netting (Floral visitors): ~1.8ha plot | Jessica Forrest |
| Four01 (Normandin *et al.*, 2017; McCune *et al.*, 2020) | 757.6 | 63.4 | Pan: each cluster contained 3 traps spaced 1m apart. The number of clusters within sites ranged from1-15. | Frédéric McCune,  Valérie Fournier |
| Fowl01 (Fowler, 2015) | 96.9 | 23.8 | Pan: 6 sets of 4 traps within 100m2  Netting (all bees): 30 minutes\*2 visits. Area was not specified. | Robert Fowler |
| frei01 (Allen‐Perkins *et al.*, 2022) | 859.0 | 9.3 | Netting (Cherry visitors): 50m transect | Antonio Diego M. Bezerra,  Breno Freitas |
| frei02 (Allen‐Perkins *et al.*, 2022) | 215.0 | 7.0 | Netting (Cotton visitors): 50m transect | Antonio Diego M. Bezerra,  Breno Freitas |
| gain01 (Day, 2013) | 72.1 | 23.1 | Pan: 5 clusters of 3 traps at every 10m interval. 2 parallel transects separated by 50m (i.e., 50m\*40m = 2000m2) | Hannah Gaines Day,  Claudio Gratton |
| Gesl01 (Geslin *et al.*, 2016) | 107.0 | 18.9 | Pan: 1 set of 3 pan traps on a wooden pole. | Benoît Geslin,  Isabelle Dajoz |
| Gonz01 (Escobedo-Kenefic *et al.*, 2020) | 73.2 | 11.8 | Netting (All bees): 4hr walk within a ~1-1.2 ha area. | Patricia Landaverde-González,  Natalia Escobedo |
| Guen01 (Guenat *et al.*, 2019) | 10.5 | 5.5 | Pan: 5 clusters of 3 traps were set out on one occasion.  Note that the catches were extremely low (< 10 individuals in each sampling location), thus we pooled data across locations within the same land use from the same town. In total, data from two towns were used. The locations from the two towns were separated by ~200m and ~500m. | Solène Guenat |
| Guti01(Gutiérrez-Chacón *et al.*, 2018) | 99.9 | 20.9 | Netting (All bees): one 150m\*4m transect  Pan: 4 sets of 3 traps every 50m on the 150m transect.  Bait: 2 traps on the 150m transect extremes. | Catalina Gutiérrez-Chacón |
| Hall01 (Hall *et al.*, 2019) | 340.0 | 12.1 | Vane: 1 trap | Mark A. Hall |
| Hanl013 | 138.9 | 10.8 | A total of 1600m have been surveyed in each site. | Michael E. Hanley |
| Henn01 (Hennig & Ghazoul, 2011, 2012) | 23.0 | 5.0 | Plots (Floral visitors): 2m\*2m | Ernest Ireneusz Hennig |
| Hermy01 (Verboven *et al.*, 2014) | 14.6 | 4.2 | Netting (All bees): 50m | Martin Hermy |
| Hipo01 (Hipólito *et al.*, 2018) | 34.0 | 6.5 | Netting (Coffee visitors): 50m\*25m | Juliana Hipólito |
| holz01a (Holzschuh *et al.*, 2012) | 14.0 | 6.0 | Netting (Cherry visitors): 4 plots with 3 trees 1.5-2m apart. Plots randomly distributed in each site (1.16ha-5.04ha) | Andrea Holzschuh |
| holz01b (Holzschuh *et al.*, 2012) | 28.7 | 8.5 | Netting (All bees): 50m\*2m | Andrea Holzschuh |
| holz02 (Holzschuh *et al.*, 2007) | 38.6 | 6.1 | Netting (All bees): 1 95m “edge” transect and 1 95m “centre” transect in each field. Field size 0.6-12.5 ha. | Andrea Holzschuh |
| hopf1 (Hopfenmüller *et al.*, 2014) | 161.6 | 50.8 | Netting (All bees): ~0.1ha | Sebastian Hopfenmüller |
| Hung01 (Hung *et al.*, 2019) | 508.4 | 38.6 | Pan: 30 traps forming a X formation, each trap 5m-10m apart (~85m\*85m) | Keng-Lou James Hung |
| isaa012 (Isaacs & Kirk, 2010) | 30.7 | 3.7 | Netting (Blueberry visitors): In each survey, floral visitors of sections of blueberry fields (~10 brushes) were recorded. 10 sections were surveyed in each survey, with their size ranging from 0.05-6.79 ha. Each site was sampled twice. | Rufus Isaac |
| javo012 | 539.5 | 12.6 | Netting (Blueberry visitors): 100m\*1m transect | Steve Javorek |
| jha01 (Jha & Vandermeer, 2010) | 88.9 | 18.6 | Pan: 30 traps across 2 intersecting 50m transects (50m\*50m) | Shalene Jha |
| klat01 (Bjorn K. Klatt, 2013) | 51.0 | 9.3 | Netting (Strawberry visitors): Conducted in strawberry fields. Transects were at a length of 100 strawberry plants. 3 transects were used.  The total observation time per transect was 120 minutes (30 minutes per transect walk). | Bjorn K. Klatt,  Teja Tscharntke |
| klei012 | 118.6 | 7.5 | Pan: Ten traps, 5 at the orchard edge and 5 50/100m from the edge. | Alexandra-Maria Klein |
| Kohl01 (Kohler *et al.*, 2008) | 34.3 | 5.3 | Netting (All bees): 275/300m\*1m transect | Jort Verhulst |
| Kova01 (Kovács-Hostyánszki *et al.*, 2016) | 36.7 | 15.5 | Netting (All bees): 2 parallel 100m\*3m transects, at least 50m from each other. | Anikó Kovács-Hostyánszki |
| krem01(Kremen *et al.*, 2004) | 139.9 | 4.6 | Netting (Watermelon visitors): 2 to 4 50m transects. All transects started 5 to 10m from the edge of the field. | Claire Kremen |
| krem03(Williams *et al.*, 2011) | 333.9 | 46.9 | Netting (Floral visitors): 1.8 ± 0.04 ha on average. | Claire Kremen |
| Land01(Landsman *et al.*, 2019) | 194.0 | 22.3 | Pan: 5 trap clusters in each site. Each cluster has 3 traps.  Maximum distance between clusters of the same site < 500m. | Deborah A. Delaney |
| Landa01(Escobar‐González *et al.*, 2023) | 86.8 | 12.0 | Netting (All bees): 1 4hr walk | Patricia Landaverde-González |
| Latt01 (Makinson *et al.*, 2017) | 17.8 | 4.0 | Netting (Floral visitors): Selected 4 flowering patches in each site and observed floral visitors for 15 minutes each.  The area of each sampled garden ranged from 6.1m2 to 1720m2. | Tanya Latty |
| leon01 (Leong *et al.*, 2016) | 601.0 | 17.4 | Pan: 15 traps, 5m apart | Misha Leong |
| Lerman01 (Lerman & Milam, 2016; Lerman *et al.*, 2018) | 283.6 | 35.0 | Pan: Ten clusters of 3 traps distributed near lawn flowers of each site. Site area ranged from 0.03 to 0.18ha.  Netting (All bees): 15 minutes\*5 visits\*2 years. | Susannah B. Lerman |
| Liuy01(Wu *et al.*, 2021) | 107.9 | 15.5 | Pan: 3 parallel 40m transects at distances of 10m. Each transect had 3 traps. | Yunhui Liu |
| Liuy02(Wu *et al.*, 2019) | 197.3 | 22.9 | Pan: 3 parallel 40m transects at distances of 10m. Each transect had 3 traps. | Yunhui Liu |
| Mach01 (Machado *et al.*, 2021) | 24.4 | 11.5 | Bait: 1 odor bait  Pan: 3 traps were established 1m apart.  Netting (All bees): 20m transect | Ana Carolina Pereira Machado,  André Rodrigo Rech |
| Main01 (Main *et al.*, 2019) | 215.5 | 37.3 | Vane: 6 vane traps placed in a linear row. Spacing varied by the length of field margins (96-571m).  Netting (All bees): 200m\*4m | Anson R. Main,  Elisabeth B. Webb,  Doreen Mengel |
| mall01 (Mallinger *et al.*, 2016) | 199.3 | 14.6 | Pan: Ten traps were placed 2m apart in 2 parallel rows spaced 3m apart (~8m\*3m = 24m2)  mall01 and mall02 were considered separate studies due to different sampling years and sampling efforts in each year. This also facilitate comparisons with natural habitats, which was only surveyed in 2013, while some orchads were sampled in 2010, 2012 and 2013.  mall01 contains all orchard data from sampling conducted in 2010 and 2012. | Rachel Mallinger |
| mall02 (Mallinger *et al.*, 2016) | 73.6 | 15.8 | Pan: Ten traps were placed 2m apart in 2 parallel rows spaced 3m apart (~8m\*3m = 24m2)  mall02 contains natural habitat and orchard data from 2013 samples. | Rachel Mallinger |
| mand01 (Pisanty & Mandelik, 2015) | 25.3 | 10.7 | Pan: 12 traps at 5m intervals. | Gideon Pisanty,  Yael Mandelik |
| mand02 (Pisanty & Mandelik, 2015) | 30.9 | 10.9 | Pan: 12 traps at 5m intervals (55m).  Netting (All bees): Searching within a 25m\*25m plot.  Traps were placed on 1m poles in mand02 (which focused on sunflower fields), but on the ground in mand03 (watermelon fields). Thus they were considered as separate studies. | Gideon Pisanty,  Yael Mandelik |
| mand03 (Pisanty & Mandelik, 2015) | 23.0 | 9.1 | Pan: 12 traps at 5m intervals (55m).  Netting (All bees): Searching within a 25m\*25m plot. | Gideon Pisanty,  Yael Mandelik |
| Mans01 (Kohler *et al.*, 2020) | 117.7 | 14.3 | Pan: 33 traps were placed every 3m along 3 36m transects | Jessamyn S. Manson |
| Marq011 | 10.0 | 5.0 | Netting (Floral visitors): 60m transect. | Bruno Ferreira Marques |
| Marshall01 (Marshall *et al.*, 2006) | 16.5 | 4.6 | Netting (All bees): 15-minute search at the field boundary and center. 3 visits.  Sweep net: 20 sweeps at the boundary and center. 3 visits. | E. J. P. Marshall |
| Matt01 (Matteson *et al.*, 2008) | 61.4 | 20.2 | Pan: 1 trap every 500m2.  Netting (All bees): 10 person minutes every 500m2.  Area ranged from 224 to 2188m2 | Kevin Matteson |
| Meng01 (Meng *et al.*, 2012) | 98.2 | 16.5 | Vane: 1 trap | Ling-Zeng Meng |
| Meyr01a (Meyer *et al.*, 2005) | 18.3 | 3.7 | Netting (*Hippocrepis comosa* visitors): ≤ 4m2 plot (2m\*2m)  Separated into two studies because of very different methods and sampling years with Meyr01b. | Birgit Jauker,  Ingolf Steffan-Dewenter |
| Meyr01b (Meyer *et al.*, 2005) | 16.3 | 5.0 | Netting (*Hippocrepis comosa* visitors): 0.4m\*0.4m | Birgit Jauker,  Ingolf Steffan-Dewenter |
| Meyr02 (Jauker *et al.*, 2013) | 123.1 | 26.4 | Netting (All bees): Transect length varied, averaging at 15.7 ± 6.2m SD. Transect width was 4m.  4-12 transects within sites. Site area ranged from 3.1ha to 51.3ha. | Birgit Jauker,  Ingolf Steffan-Dewenter |
| Mont01 (Montoya‐Pfeiffer *et al.*, 2020) | 19.2 | 8.8 | Pan: 18 traps  Bait: 9 traps | Paula María Montoya-Pfeiffer |
| mora01 (Morandin & Winston, 2005, 2006) | 68.4 | 16.2 | Pan: 3 traps per clusters.  2 clusters were placed at field centers (500m from edges). 200m apart  5 clusters on the field edges, with 3 on the edge and 2 20m into the field. | Lora Morandin |
| Morr01 (Morrison *et al.*, 2017) | 129.0 | 10.1 | Pan: 3 traps per cluster. 5 trap clusters were placed at 10m apart. | Jane Morrison,  Jordi Izquierdo,  Jose L. Gonzalez-Andujar |
| Nali01 (Nalinrachatakan *et al.*, 2022) | 39.6 | 9.8 | Netting (All bees): Area was not specified, but indicated as “Point netting”. Total time ranged from 1/3 to 50 hours. | Pakorn Nalinrachatakan,  Natapot Warrit |
| neam012 | 22.0 | 6.5 | Netting (Squash visitors): 2 15-minute sampling in each farm  Data based on observations (without netting) are available but excluded due to very coarse taxonomy. | Lisa Neame |
| Norf01 (Norfolk *et al.*, 2014, 2015) | 30.8 | 8.7 | Netting (Floral visitors): 10m\*10m | Markus P. Eichhorn |
| otie01(Otieno *et al.*, 2015) | 33.8 | 10.3 | Netting (Pigeon pea visitors): 5 100m\*4m transects, each separated by ≥ 10m. | Mark Otieno |
| Phil01a (Quistberg *et al.*, 2016; Egerer *et al.*, 2017) | 21.9 | 8.7 | Netting (Floral visitors): Searching inside the 20m\*20m plot and within 20m of it. | Stacy Philpott,  Robyn D. Quistberg,  Monika Egerer |
| Phil01b (Quistberg *et al.*, 2016; Egerer *et al.*, 2017) | 57.4 | 7.9 | Pan: 3 clusters, each with 3 traps, were placed 5m apart in a 20m\*20m plot. | Stacy Philpott,  Robyn D. Quistberg,  Monika Egerer |
| Phil02a (Plascencia & Philpott, 2017; Cohen *et al.*, 2022) | 72.3 | 14.7 | Netting (Floral visitors): Searching inside the 20m\*20m plot and within 20m of it. | Stacy Philpott,  Montserrat Plascencia,  Monika Egerer |
| Phil02b (Plascencia & Philpott, 2017; Cohen *et al.*, 2022) | 31.8 | 6.2 | Pan: 3 clusters, each with 3 traps, were placed 5m apart in a 20m\*20m plot. | Stacy Philpott,  Montserrat Plascencia,  Monika Egerer |
| pott01(Carré *et al.*, 2009) | 59.9 | 8.8 | Netting (All bees): 6 15m\*4m transects.  Pan: 2 clusters of 3 traps. Traps within clusters were 5m apart.  All collections were conducted within a 50m\*25m plot. | Simon G. Potts |
| Power01 (Power & Stout, 2011) | 24.1 | 4.1 | Netting (All bees): 2 100m\*2m transects, 1 along the edge and 1 in the center of the sampled field. 2 fields were sampled (i.e., 4 transects). | Eileen F. Power,  Jane C. Stout |
| Pren01 (Prendergast *et al.*, 2020) | 95.5 | 11.5 | Pan: Ten clusters of 3 traps. Each cluster separated by >30m.  Timed search: A total of 18hr search within 0.2ha to 1.3 ha | Kit Prendergast |
| Pren02 (Prendergast *et al.*, 2021) | 124.5 | 26.4 | Pan: 29 traps (5m apart) were randomly distributed  Vane: 4 traps  All trapping conducted within a 100m\*100m plot. | Kit Prendergast |
| pufa011 | 17.0 | 6.4 | Netting (Apple visitors): 15 or 30 trees observed within each farm. | Gesine Pufal,  Alexandra-Maria Klein |
| Quin01 (Quintero *et al.*, 2010) | 58.0 | 6.0 | Pan: 8 traps 50-80m apart along a transect within a sampling plot. 2 plots per site separated by 200m. | Carolina Laura Morales |
| Rade01 (Rader *et al.*, 2014) | 411.8 | 4.0 | Flight intercept/Pan traps: 4 traps arranged 2m apart on a stake. | Romina Rader |
| Reyn01 (Reynolds *et al.*, 2022) | 22.4 | 6.8 | Netting (Floral visitors): 15m\*15m plot | Victoria Reynolds |
| Richards01a (Richards *et al.*, 2011) | 1105.0 | 48.0 | Pan: 30 traps at 10m intervals.  This paper was separated into 3 “studies” as the distribution of sampling efforts among sites were inconsistent between sampling methods. | Miriam H. Richards |
| Richards01b (Richards *et al.*, 2011) | 795.2 | 41.5 | Netting (All bees): 30 minutes over the entire 1ha site | Miriam H. Richards |
| Richards01c (Richards *et al.*, 2011) | 262.2 | 33.0 | Netting (Floral visitors): 5 minutes observations in patches of the most abundant flowers. | Miriam H. Richards |
| rick01 (Ricketts, 2004) | 58.5 | 9.3 | Timed observations (Coffee visitors): ~200-400 coffee flowers observed for 10 minutes. 2 observations were conducted simultaneously on different plants. Each site was sampled for 3 days. | Taylor Ricketts |
| saba01 (Sabatino *et al.*, 2010) | 183.1 | 13.1 | Netting (Floral visitors): Ten 1m radius plots distributed within a 0.5ha sampling area. | Malena Sabatino |
| saez01 (Sáez *et al.*, 2012) | 14.5 | 3.5 | Netting (Sunflower visitors): Sampling was conducted at 1m, 5m, 25m, 50m, and 100m from 1 field margin. | Agustin Saez |
| Samn02 (Samnegård *et al.*, 2015) | 46.3 | 17.7 | Pan: 3 traps ≥ 5m apart  Vane: 2 traps  All within 100m\*100m plots | Ulrika Samnegård,  Kristoffer Hylander |
| sard01 (Sardiñas & Kremen, 2015) | 207.9 | 8.3 | Transects (Sunflower visitors): 4 points along 200m transects. 2 transects per site.  Vane: 1 blue trap | Hillary Sardinas |
| Satu01 (Saturni *et al.*, 2016) | 48.0 | 10.3 | Timed search (Coffee visitors): Observed 10 coffee shrubs for ten minutes each.  All observed shrubs >100m apart, and are located within a circular area with a 1 km radius | Fernanda Teixeira Saturni |
| sche01 (Scheper *et al.*, 2015; Holzschuh *et al.*, 2016) | 69.4 | 10.0 | Netting (all bees): 2 150m\*1m transects | Jeroen Scheper,  David Kleijn |
| Schu01 (Schüepp *et al.*, 2012) | 73.9 | 9.1 | Malaise: 1 trap | Martin H. Entling |
| scil01 | 45.6 | 7.3 | Netting (Strawberry visitors): 1 hour of netting conducted twice at each site. | Amber Sciligo |
| sidh01 (Sidhu, 2013) | 193.0 | 2.6 | Netting (Cucurbit visitors): 50m transect | Sheena Sidhu |
| spie01 (Spiesman *et al.*, 2019) | 112.3 | 29.2 | Pan: 5 clusters equally spaced along a 100m transect. | Brian Spiesman,  Ashley Benett  Claudio Gratton |
| Srit01 (Sritongchuay *et al.*, 2019) | 688.9 | 25.1 | Netting (Floral visitors): 5 150m transects within 150m\*50m plots. | Tuanjit Sritongchuay |
| stef01 (Bartomeus *et al.*, 2014) | 38.5 | 10.0 | Netting (Strawberry visitors): 150m\*4m transect. | Ingolf Steffan-Dewenter |
| Stei01 (Stein *et al.*, 2017, 2018) | 4048.2 | 59.3 | Pan: 240-288 traps in 60m\*90m plots | Katharina Stein,  Drissa Coulibaly |
| Stew01 (Stewart *et al.*, 2018) | 368.7 | 3.4 | Netting (Floral visitors): 2m\* 2m plots for 15 minutes.  Number of plots ranged from 1 to 36. | Alyssa B. Stewart |
| Stew02 (Stewart & Waitayachart, 2020) | 841.9 | 6.1 | Netting (Floral visitors): 2m\* 2m plot observed for 15 minutes. Locations were not fixed over time.  Total time varied from 9.25 to 68.5 hours. | Alyssa B. Stewart |
| Stoj01 (Mudri-Stojnić *et al.*, 2012) | 74.1 | 10.2 | Netting (Floral visitors): 4 1-hour visits.  Site size ranged from 2-6 ha. | Sonja Mudri-Stojnić |
| taki01 (Taki *et al.*, 2009, 2010) | 20.8 | 4.8 | Netting (Common buckwheat visitors): 0.5m\*0.5m plot. | Hisatomo Taki |
| Taki02 (Taki *et al.*, 2013) | 261.9 | 32.2 | Pan: 2 pan traps in the center of each forest stand. | Hisatomo Taki |
| Taki03 (Taki *et al.*, 2018) | 30.6 | 10.5 | Sweep net: Sweeping 100 times per ha along each transect, walking 1m per sweep. Transects covered the entire area of each site, ranging from 1.3 to 10 ha. | Hisatomo Taki |
| Tang01 (Tangtorwongsakul *et al.*, 2018) | 165.9 | 7.4 | Netting (All bees): 4 50m\*1m transects within 1ha.  Pan: 30 traps within 1ha. | Pornpimon Tangtorwongsakul |
| Thre01 (Threlfall *et al.*, 2015) | 22.1 | 3.1 | Pan: 6 traps within 20m\*30m plots  Sweep net: 200 sweeps within 20m\*30m plots. | Caragh G. Threlfall,  Nicholas S. G. Williams |
| Tino011 | 64.3 | 5.9 | Netting (Floral visitors): 2 30m\*3m transects. | Carla Faleiro Tinoco,  Luisa G. Carvalheiro |
| Toni01 (Tonietto *et al.*, 2011) | 46.2 | 12.1 | Pan: 15 traps (1-5m apart) | Rebecca Tonietto |
| tuel01 (Tuell *et al.*, 2009) | 205.0 | 35.6 | Pan: 5 trap pairs (5m apart)\*2 transects (24m apart) | Julianna K. Wilson |
| Turo01 (Turo *et al.*, 2021) | 32.5 | 17.0 | Malaise: 1 trap  Pan: 7 traps in a 7\*15m grid | Katherine J. Turo |
| Vaid01 (Fitch *et al.*, 2019) | 122.0 | 30.9 | Pan: 6 traps in a 4m\*2m rectangle.  Netting (All bees): 2 30-minute sessions, 1 in the morning and another in the afternoon. Sampling was repeated 4 times (i.e. 30-minute\*2 sessions\*4 surveys). | Chatura Vaidya,  Gordon Fitch,  Paul Glaum |
| Verga01 (Vergara & Badano, 2009) | 15.0 | 4.7 | Netting (Coffee visitors): 4 coffee plants | Carlos H. Vergara |
| Vide01 (Vides-Borrell *et al.*, 2019) | 80.4 | 26.6 | Netting (All bees): 180 person-hours (90 minutes per person) per plot in each visit. The total sampling effort was 54 person-hours per plot. | Eric Vides-Borrell,  Rémy Vandame |
| West01 (Hass *et al.*, 2018) | 31.5 | 9.5 | Netting (Floral visitors): 1 90m\*4m transect | Catrin Westphal,  Annika Hass,  Svenja Bänsch |
| wick021 (Scheper *et al.*, 2015) | 134.0 | 23.4 | Pan: 3 traps per cluster. The number of clusters in each survey varied from 2 to 5. | Jennifer B. Wickens |
| will011 | 88.0 | 7.1 | Netting (Watermelon visitors): 50m transect | Neal M. Williams |
| Wils01 (Wilson & Jamieson, 2019) | 99.3 | 31.9 | Pan: 4-6 stations (≥5m apart), depending on visits. However, this is standardized across sites  Netting (All bees): 4 25m2 transects | Caleb J. Wilson,  Mary A. Jamieson |
| winf01 (Winfree *et al.*, 2008) | 64.2 | 10.9 | Netting (Watermelon visitors): 50m transect | Rachael Winfree |
| winf02 (Winfree *et al.*, 2008) | 19.9 | 7.5 | Netting (Tomato visitors): 50m transect | Rachael Winfree |
| winf031 | 84.3 | 15.8 | Netting (All bees): 4 40m transects | Rachael Winfree |
| winf05 (Winfree *et al.*, 2008) | 14.6 | 5.4 | Netting (Muskmelon visitors): 50m transect | Rachael Winfree |
| Youn01 (Hamblin *et al.*, 2018) | 196.0 | 33.3 | Pan: 12 traps (5m apart)  Vane: 1 trap  Netting (All bees): 20 minutes\*11 times | Elsa Youngsteadt |
| Zou01 (Zou *et al.*, 2017b,a) | 190.6 | 12.0 | Pan: 4 traps arranged as a 20m\*20m square | Yi Zou |

1 At the time of publication, details of the data were not publicly available from the agency or personnel responsible for the work. A summary of the methods can be found below.

2 Details of the unpublished data can be found in Kennedy *et al.* (2013).

3 Details of the unpublished data can be found in Hudson *et al.* (2014) (AD1\_2011b\_Hanley).

**Summary of sampling strategies in unpublished studies**

Here, we briefly described the sampling strategies of each unpublished study that has not been included in any public database. In all studies, we extracted the geographic coordinates of each assemblage, the sampling methods (all bees / floral visitors only / floral visitors of targeted plant species only) and efforts , and species abundance data.

balz02

Mario V. Balzan (unpublished data) investigated the structure of flower visiting webs in field margins of Malta (Central Mediterranean) in 2014. The margins consist of several flowering forbs; all flower-visiting bees were recorded in 12 sites. These were visited on a single day between 10:00 and 15:00 in low wind conditions. Flower visitation of bees at each transect was reported.

Baum01

Bee sampling was conducted by Jessica M. Baumann and Nicholas S. G. Williams (unpublished data) during the late summer months of February and March 2014 across 32 sites in four urban green space types: golf courses, residential gardens, botanic gardens and remnant heathlands in Melbourne, Australia. Starting from the center of the plot the collector walked slowly among any potentially attractive resource patches and collected bees via sweep netting from plants in flower. Surveying time depended on plot size, with 30-minute observation periods allocated for the 600m2 plots in golf courses and remnants, which was then scaled accordingly for the variably sized residential garden plots (i.e., a residential garden plot of 200 m2 was surveyed for 10 minutes). However, the yield of bees through these plot-restricted methods was low. Bee sampling was subsequently modified to a variable transect approach within a ~1 ha area around the original plots to target floral resources within each urban green space type over a 30-minute sampling period. Observations were made only on sunny or partly cloudy days when the temperature was above 20ºC, and the wind speed was less than 4 m/s.

bore01

Pollination data were collected by Virginie Boreux and Alexandra-Maria Klein (unpublished data) in 2015 in Germany on 27 apple orchards (14 organic and 13 conventional) selected in the vicinity of Lake Constance. 20m transects were walked for 5 minutes at the peak flowering time of the Braeburn variety, 3 times a day (morning, midday, and afternoon), at the edge (within the first 20m) and inside the plantation (20-40m). The number and species of the individuals spotted on apple flowers were recorded.

Marq01

Bruno Marques and Jeanne Caldeira (unpublished data) systematically collected bees in Goiânia city at 6 sites with varying degrees of urbanization, between September and November 2019. Sites are spontaneously grown herbaceous vegetation, most of which consisted of the widespread exotic species *Tridax procumbens*. In each site, bee specimens were collected along 60m transects at around 09:30 and around 15:30. In the morning, temperature between sites varied between 27 to 34 °C, and site relative humidity between 37 to 70%. In the evening, site temperature varied between 28 to 36 °C, and site relative humidity was between 23 to 55%. Only floral visitors were captured.

pufa01

Gesine Pufal and Alexandra-Maria Klein (unpublished data) assessed the effect of landscape context and management on the flower visitor communities and pollination success of the apple varieties Elstar and Boskoop in 2015. Sixteen sites (10 conventional and 6 organics) were selected within a 20 km radius around Freiburg in Breisgau, Germany, within a complex agricultural landscape. Flower observations were conducted on April 7th and 8th, 2015, during peak flowering but under varying weather conditions with 15 x 2 min per site and apple variety. The temperatures varied between 15. and 24.5ºC.

scil01

Amber Sciligo (unpublished data) collected abundance data 2 times per season on each site using two collection methods, pan-trapping (21 pans per site, open for 5 hrs) and netting on strawberry flowers (1 hr per site). Overall, 17 sites were sampled in Central Coast, California. Sampling was conducted in 2012.

Tino01

Carla Faleiro Tinoco (unpublished data) compared flower visitor communities in restored (for at least 8 years) and natural areas in Mato Grosso, Brazil. Managed bees were not present in these areas. 14 pairs of areas were sampled in 2019, in which each pair consisted of a restored area and a nearby natural area. In each area, floral visits were observed in two 3x30 m transects (one transect on the edge and the other inside) for 10 minutes on each species of flowering plant in the morning (between 8 am and 10 am) and in the afternoon (between 2pm and 4pm). The sampling of the same transects was carried out on two field trips, one in the dry season and the other in the rainy season.

will01

In 2010-2012, Neal M. Williams (unpublished data) sampled nine watermelon farms in California. In each year, each farm was sampled through walking 50 m transects over three days. All bees visiting watermelon flowers were netted for 30 minutes per day.

wick02

In 2013, Jennifer B. Wickens (unpublished data) deployed pan traps in 53 sites in Southeast England, consisting of croplands, field margins, and semi-natural grasslands. Pan traps were bowls of water with a drop of detergent spray painted white, blue or yellow and set as a triplet (equilateral triangle arrangement) to create one pan trap station. At each site, two to five pan trap stations were set before 09:00 and collected after 18:00 in each trapping session. In total, four trapping sessions were conducted at each site on good weather days from April to August each year. Data based on trapping from 2011 and 2012 and hand-netting in 2011-2013 were not considered due to >5% of bees not identified to at least genus levels.

winf03

Rachel Winfree (unpublished data) studied floral enhancements on private land in New Jersey. The enhancements were paired with a nearby control plot (100-700m away). Bees were collected four times during the summer of 2012 along a transect. In each plot, there were a total of 4 - 40m transects. Each transect was sampled for 10 minutes in the morning and 10 minutes in the afternoon. All bees were caught using a hand net with the timer halted to process bees. Specimens were identified by John S. Ascher.

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