**Supplementary Material**

Table S1. The total number of transects performed in each crop in each of the different countries, with dates of first and last samples taken.

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| --- | --- | --- | --- | --- |
| Country | Crop | Number of transects | First visit | Last visit |
| Switzerland (CHE) | Oilseed rape | 31 | 23/04/2019 | 02/05/2019 |
| Switzerland (CHE) | Apple | 32 | 23/04/2019 | 25/04/2019 |
| Spain (ESP) | Oilseed rape | 96 | 29/04/2019 | 27/05/2019 |
| Spain (ESP) | Apple | 96 | 08/04/2019 | 17/05/2019 |
| Estonia (EST) | Oilseed rape | 64 | 13/05/2019 | 03/06/2019 |
| Estonia (EST) | Apple | 68 | 13/05/2019 | 03/06/2019 |
| Great Britain (GBR) | Oilseed rape | 96 | 20/04/2019 | 14/05/2019 |
| Great Britain (GBR) | Apple | 96 | 23/04/2019 | 10/05/2019 |
| Germany (GER) | Oilseed rape | 80 | 24/04/2019 | 13/06/2019 |
| Germany (GER) | Apple | 96 | 18/04/2019 | 06/05/2019 |
| Ireland (IRE) | Oilseed rape | 96 | 01/04/2019 | 13/05/2019 |
| Ireland (IRE) | Apple | 92 | 25/04/2019 | 07/06/2019 |
| Italy (ITA) | Oilseed rape | 96 | 15/04/2019 | 17/05/2019 |
| Italy (ITA) | Apple | 96 | 11/04/2019 | 14/05/2019 |
| Sweden (SWE) | Oilseed rape | 96 | 19/04/2019 | 03/06/2019 |
| Sweden (SWE) | Apple | 64 | 15/04/2019 | 01/06/2019 |

Table S2. Description of all the landscape and climate variables used as independent variables in our initial analyses. The variables in black are those included in the final models; variables in grey are the ones that were not in any of the final models.

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| Type of variable | Independent variables | Description |
| **LANDSCAPE COMPOSITION** | **PLAND\_Cropland** | **PLAND** is the proportion of the landscape belonging to class *i*.**Cropland** includes the cropland patches. **Orchards** include all the orchards patches (this parameter was considered only for the analyses tun for the apple sites)**SNH** defines the semi-natural patches (including Woodland –Woodlands, shrub plantations, hedgerows, lines of trees and gardens – and grassland – both meadows and pastures). **Urbanisation** includes Urban areas and Roads. |
| **PLAND\_Orchard** |
| **PLAND\_SNH** |
| **PLAND\_Urbanisation** |
| **Landscape diversity (SHDI)** | It is a widely used metric in biodiversity and ecology and takes both the number of classes and the abundance of each class into account. I t is calculated through the Shannon Diversity Index.$$-\sum\_{i=1}^{m}(Pi\*lnPi)$$ |
| **Number of Adjacent mass-flowering crops** | It shows the number of flowering crops adjacent to the main crop (our site). All the selected sites had 4 borders, so this value ranges from 0 (no mass flowering crops neighbouring with the sites) to 4 (all the adjacent fields are occupied by mass-flowering crops). |
| **LANDSCAPE CONFIGURATION****LANDSCAPE CONFIGURATION** | **IJI** | Interspersion and Juxtaposition Index - It is a so called "salt and pepper" metric and describes the intermixing of classes (i.e. without considering like adjacencies - the diagonal of the adjacency table). The number of classes to calculate IJI must be ≥ than 3. |
| **NP\_Cropland** | Number of Patches - It describes the fragmentation of a class, however, does not necessarily contain information about the configuration or composition of the class. |
| **NP\_Orchard** |
| **ENN Cropland** | Coefficient of variation of Euclidean Nearest-Neighbour distance - It summarises each class as the Coefficient of variation of each patch belonging to class *i.* ENN measures the distance to the nearest neighbouring patch of the same class *i*. The distance is measured from edge-to-edge. The range is limited by the cell resolution on the lower limit and the landscape extent on the upper limit. The metric is a simple way to describe patch isolation. Values equal to 0 indicate that the Euclidean nearest-neighbour distance is identical for all patches. The values can increase, without limit, as the variation of ENN increases. Because it is scaled to the mean, it is easily comparable among different landscapes. |
| **ENN Orchards** |
| **ENN Semi-Natural patches** |
| **CLIMATE and WEATHER**  | **Daily Temperature** | Temperature recorded at each visit to each site |
| **BIO\_01** | Annual mean temperature |
| **BIO\_04** | Temperature seasonality (standard deviation \* 100) |
| **BIO\_10** | Mean temperature of the warmest quarter |
| **BIO\_11** | Mean temperature of the coldest quarter |
| **BIO\_12** | Annual precipitation |
| **BIO\_15** | Precipitation seasonality (coefficient of variation): proportion of the standard deviation of the total precipitation of the month over the average monthly total precipitation |
| **BIO\_18** | Precipitation of the warmest quartile |
| **BIO\_19** | Precipitation of the coldest quartile |

Table S3. Separate models were created for each of the groups of insects and for the two crops, depending on the AIC index. Subsequently, we “cleaned” each model in order to avoid any correlation between the variables (using a combination of hierarchical and correlative clusters, VIF analyses and AIC index). Using MuMIn function, the final model was selected. We ended up with different models for each insect group – the formulas show the models used for each analysis; the parameters written in grey show the variables that were eliminated during the process of obtaining the final models).

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| Analysed group | Model description |
| All taxa in apple | **glmer (pollinat\_no\_apis ~** proportion of Cropland + proportion of Urban + **proportion of Orchard** **+** proportion of Semi-Natural + Number patches Cropland + Isolation of Cropland + Isolation of Orchard + Isolation of Semi-natural + Juxtaposition+ Landscape diversity + Annual Temperature + Temperature Seasonality + Mean Temperature warmest quartile + **Annual Precipitation** + Precipitation Seasonality + Precipitation warmest quartile + Adjacent mass-flowering crops + Daily Temperature + offset(log(n))+ Annual Temperature\*Landscape diversity+ **(1|obs)** + (1|country), **data= app, family = poisson (link = "log"))** |
| All taxa in OSR | **glmer (pollinat\_no\_apis ~** proportion of Cropland + proportion of Urban + **proportion of Semi-Natural** **+** Number patches Cropland + Isolation of Cropland + Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ Landscape diversity + **Annual Temperature** + Temperature Seasonality + Mean Temperature warmest quartile + **Annual Precipitation** + Precipitation Seasonality + Precipitation warmest quartile + Adjacent mass-flowering crops + **Daily Temperature +(1|obs) +offset(log(n))+** Annual Precipitation\*Adjacent mass-flowering crops , **data= osr,family = poisson (link = "log"))**  |
| Apis in Apple | **glmer (apis ~** proportion of Cropland + proportion of Urban + **proportion of Orchard +** proportion of Semi-Natural + Number patches Cropland + Isolation of Cropland + **Isolation of Orchard +** Isolation of Semi-natural +Juxtaposition+ Landscape diversity + Annual Temperature + Temperature Seasonality + Mean Temperature warmest quartile + **Annual Precipitation +** **Precipitation Seasonality +**Precipitation warmest quartile + Adjacent mass-flowering crops + Daily Temperature + **offset(log(n))+** Annual Temperature\*Landscape diversity+ (1|country)**+ (1|obs), data= app, family = poisson (link = "log"))**  |
| Apis in OSR | **glmer (apis ~** proportion of Cropland + proportion of Urban + proportion of Semi-Natural + Number patches Cropland + **Isolation of Cropland** + Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ Landscape diversity + Annual Temperature + Temperature Seasonality + Mean Temperature warmest quartile + Annual Precipitation + Precipitation Seasonality +Precipitation warmest quartile + **Adjacent mass-flowering crops + Daily Temperature** **+ offset(log(n))+** Annual Temperature\*Landscape diversity+ **(1|country)+** **(1|obs), data= osr, family = poisson (link = "log"))**  |
| Bombus spp. in Apple | **glmer (bombus ~** proportion of Cropland + proportion of Urban + **proportion of Orchard** + proportion of Semi-Natural + Number patches Cropland + Isolation of Cropland + Isolation of Orchard + **Isolation of Semi-natural** +Juxtaposition+ Landscape diversity + **Annual Temperature +** Temperature Seasonality + Mean Temperature warmest quartile + Annual Precipitation + **Precipitation Seasonality** +Precipitation warmest quartile + **Adjacent mass-flowering crops** + Daily Temperature + **offset(log(n))+** Annual Temperature\*Adjacent mass-flowering crops **+ (1|obs), data= app,family = poisson (link = "log"))**  |
| Bombus spp. in OSR | **glmer (bombus** ~ proportion of Cropland + proportion of Urban + **proportion of Semi-Natural** + Number patches Cropland + Isolation of Cropland + Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ Landscape diversity + **Annual Temperature +** Temperature Seasonality + Mean Temperature warmest quartile + Annual Precipitation + **Precipitation Seasonality** + Precipitation warmest quartile + Adjacent mass-flowering crops + Daily Temperature + **offset(log(n))+** Annual Precipitation\*Adjacent mass-flowering crops+ **(1|obs), data= osr, family = poisson (link = "log"))** |
| Solitary bee in Apple | **glmer (solitary** ~ proportion of Cropland + proportion of Urban + **proportion of Orchard** + proportion of Semi-Natural + Number patches Cropland + Isolation of Cropland + Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ Landscape diversity **+ Annual Temperature** + Temperature Seasonality + Mean Temperature warmest quartile **+ Annual Precipitation** + Precipitation Seasonality +Precipitation warmest quartile + Adjacent mass-flowering crops + Daily Temperature + **offset(log(n))+** Annual Precipitation\*Adjacent mass-flowering crops+ (1|country**)+(1|obs), data= app, family = poisson (link = "log"))** |
| Solitary bee in OSR | **glmer(solitary ~** proportion of Cropland + proportion of Urban + proportion of Semi-Natural + Number patches Cropland + Isolation of Cropland + Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ **Landscape diversity** + **Annual Temperature** + Temperature Seasonality + Mean Temperature warmest quartile + **Annual Precipitation** + Precipitation Seasonality +Precipitation warmest quartile + Adjacent mass-flowering crops + **Daily Temperature** + **offset(log(n))+** **Annual Temperature\*Landscape diversity+** (1|country**)+ (1|obs), data= osr, family = poisson (link = "log"))** |
| Hover flies in Apple | **glmer (hover flies** ~ proportion of Cropland + **proportion of Urban** + proportion of Orchard + proportion of Semi-Natural + Number patches Cropland + Isolation of Cropland + Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ **Landscape diversity +** Annual Temperature + Temperature Seasonality + Mean Temperature warmest quartile + Annual Precipitation + Precipitation Seasonality +Precipitation warmest quartile + Adjacent mass-flowering crops + Daily Temperature + **offset(log(n))**+ Annual Precipitation\*Adjacent mass-flowering crops+ (1|country)+ **(1|obs), data= app, family = poisson (link = "log"))**  |
| Hover flies in OSR | **glmer(hover flies** ~ proportion of Cropland + proportion of Urban + proportion of Semi-Natural + Number patches Cropland + Isolation of Cropland + Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ Landscape diversity **+ Annual Temperature** + Temperature Seasonality + Mean Temperature warmest quartile + Annual Precipitation + Precipitation Seasonality Precipitation warmest quartile + **Adjacent mass-flowering crops** + Daily Temperature + **offset(log(n))**+ Annual Precipitation\*Adjacent mass-flowering crops+ (1|country) **+(1|obs), data= osr, family = poisson (link = "log"))**  |
| Lepidoptera in Apple | **glmer (lepidoptera ~** proportion of Cropland + proportion of Urban + proportion of Orchard + proportion of Semi-Natural + Number patches Cropland + **Isolation of Cropland +** Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ Landscape diversity + Annual Temperature + Temperature Seasonality + Mean Temperature warmest quartile + Annual Precipitation + **Precipitation Seasonality +** Precipitation warmest quartile + **Adjacent mass-flowering crops** + **Daily Temperature +(1|obs)+ offset(log(n))+** Annual Precipitation\*Adjacent mass-flowering crops , **data= app, family = poisson (link = "log"))** |
| Lepidoptera in OSR  | **glmer (lepidoptera ~** proportion of Cropland + proportion of Urban + **proportion of Semi-Natural** + Number patches Cropland + **Isolation of Cropland** + Isolation of Orchard + Isolation of Semi-natural +Juxtaposition+ Landscape diversity + **Annual Temperature +** Temperature Seasonality + Mean Temperature warmest quartile + **Annual Precipitation +** Precipitation Seasonality + Precipitation warmest quartile + Adjacent mass-flowering crops + **Daily Temperature** + **offset(log(n))**+ Annual Precipitation\*Adjacent mass-flowering crops+ **(1|obs), data= osr, family = poisson (link = "log"))** |