**Supplementary Information Captions**

**Supplementary Information 1.** List of revised herbarium specimens documenting the occurrence of *Solenopsora* congeners in the Apennine Peninsula.

The collections are sorted according to the regions, which are listed in alphabetical order. Regions are abbreviated as follows: Abr – Abruzzo, Bas – Basilicata, Cal – Calabria, Camp – Campania, Fr – Friuli, Vg – Venezia Giulia, Laz – Lazio, Lig – Liguria, Lomb – Lombardia, Marc – Marche, Mol – Molise, Pugl – Puglia, Sar – Sardegna, Si – Sicilia, Tosc – Toscana, TAA – Trentino-Alto Adige, Ven – Veneto. With each herbarium specimen we cite the complete information given in the original label. Collectors´ names of recent material are abbreviated as follows: AG – Anna Guttová, AGr – Alice Grassi, LP – Luca Paoli, MS – Marek Slovák, SM – Silvana Munzi, SR – Sonia Ravera, ZF – Zuzana Fačkovcová. In brackets at the end of each entry, the herbarium acronym with a specimen number or barcode, if available, is given.

**Supplementary Information 2.** List of revised herbarium specimens documenting the distribution range of *Solenopsora* congeners outside the Apennine Peninsula. The collections are sorted according to the countries and the regions, within which collections are listed in alphabetical order. With each herbarium specimen we cite the complete information given in the original label. Collectors´ names of recent material are abbreviated as follows: AG – Anna Guttová, JK – Jaromír Kučera, MS – Marek Slovák, SM – Silvana Munzi, ZF – Zuzana Fačkovcová. In the brackets at the end of each entry, the herbarium acronym is given with a specimen number or barcode if available . The list contains only unpublished records not included in Guttová et al. (2014, 2015) and Fačkovcová et al. (2017).

**Supplementary Information 3**. List of WorldClim 1.4 environmental variables derived from monthly mean, maximum, and minimum temperature and precipitation interpolations averaged from 1950 to 2000 at a spatial resolution of 1km2, and their codes used in this study.

**Supplementary Information 4.** Correlation coefficients (Spearman) between bioclimatic variables. Strong correlations are highlighted in bold.

**Supplementary Information 5.** The reduced set of environmental variables used for modelling plotted according to their contribution to best explain the habitat suitability maps. For the list of WorldClim 1.4 environmental variables see Supplementary Information 3; instead of prefix “bio” the letter “w” was used in the illustrated graphs.

**Supplementary Information 6.** List of main lithological units used for geological filtering, according to the Geological Map of Italy, scale 1:1,000,000 provided by Servizio Geologico d’Italia (OneGeology Portal, ISPRA).

**Supplementary Information 7.** The reduced set of environmental variables used for alternative modelling with geology filtering plotted according to their contribution to best explain the habitat suitability maps. For list of WorldClim 1.4 environmental variables see Supplementary Information 3.

**Supplementary Information 8.** Principal component analyses of a reduced set of environmental variables (see Materials and Methods) and occurrences of *Solenopsora* taxa in the study area. **A:** Projection of the environmental variables in a two-dimension PCA space. The variance explained by the components is given in parentheses. For list of WorldClim 1.4 environmental variables see Supplementary Information 3; instead of prefix “bio” the letter “w” was used in the illustrated graphs. **B:** Ordination of the occurrences of *Solenopsora* taxa on the first and second ecological PC axes (95% confidence ellipses) in the study area. For correlations of the environmental traits with component axes see Supplementary Information 10, 11 and 12.

**Supplementary Information 9.** PCA analysis – percentage of variation explained by principal components (1–10).

**Supplementary Information 10**. PCA analysis – contribution of environmental variables to principal components 1 – 5. For list of WorldClim 1.4 environmental variables see Supplementary Information 3.

**Supplementary Information 11.** Contribution of variables to PC1. Red dashed line indicates the expected average contribution, if the contribution of the variables were uniform. A variable with a contribution larger than this cutoff (1/length = number of variables\*100; 1/9 = 0.111 = 11%) could be considered important in contributing to the component. For list of WorldClim 1.4 environmental variables see Supplementary Information 3; instead of prefix “bio” the letter “w” was used in the illustrated graphs.

**Supplementary Information 12.** Contribution of variables to PC2. Red dashed line indicates the expected average contribution, if the contribution of the variables were uniform. A variable with a contribution larger than this cutoff (1/length = number of variables\*100; 1/9 = 0.111 = 11%) could be considered important in contributing to the component. For list of WorldClim 1.4 environmental variables see Supplementary Information 3; instead of prefix “bio” the letter “w” was used in the illustrated graphs.

**Supplementary Information 13.** Alternative model approach with geology as an environmental filter. **A:** Principal component analyses of reduced set of environmental variables (see Materials and Methods) and occurrences of *Solenopsora* taxa in the study area –projection of the environmental variables in two-dimension PCA space. The variance explained by the components is given in parentheses. The abbreviations of the variables are given in Supplementary Information 3; **B:** Principal component analyses of a reduced set of environmental variables (see Materials and Methods) and occurrences of *Solenopsora* taxa in the study area – ordination of the occurrences of *Solenopsora* taxa on first and second ecological PC axes (95% confidence ellipses) in the study area. For correlations of the environmental traits with component axes see F and G; **C:** PCA analysis – percentage of variation explained by principal components 1–9**; D:** PCA analysis – contribution of selected environmental variables to principal components 1–2; **E:** Contribution of variables to PC1. Red dashed line indicates the expected average contribution, if the contribution of the variables were uniform. A variable with a contribution larger than this cutoff (1/length = number of variables\*100; 1/9 = 0.111 = 11%) could be considered important in contributing to the component; **F:** Contribution of variables to PC2. Red dashed line indicates the expected average contribution, if the contribution of the variables were uniform. A variable with a contribution larger than this cutoff (1/length = number of variables\*100; 1/9 = 0.111 = 11%) could be considered important in contributing to the component.

**Supplementary Information 14.** The response curves showing the ranges of environmental conditions that are most favourable for the distribution of the *Solenopsora* taxa, based on ensemble modellistic approach for the first three best explaining environmental variables with geology included as a categorical predictor. The x-axis represents the variable range for the study area, the y-axis represents the mean probability of presence when all of the other variables are set to their average (mean probability occurrence).

**Supplementary Information 15.** The response curves showing the ranges in environmental conditions that are most favourable for the distribution of the *Solenopsora* taxa, based on ensemble modellistic approach for the first three best explaining environmental variables with geology as environmental filter. The x-axis represents the variable range for the study area, the y-axis represents the mean probability of presence when all of the other variables are set to their average (mean probability occurrence).

**Supplementary Information 16.** Habitat suitability maps (HSMs) of *Solenopsora* taxa along the Apennine peninsula, predicting suitable areas under current climatic conditions from 0 (blue) – not suitable, to 1 (red) – with high habitat suitability, based on climatic data. The scale on the right refers to the probability distribution scores. A – *S. candicans*, B – *S. cesatii*, C – *S. grisea*, D – *S. holophaea*, E – *S. liparina*, F – *S. olivacea* subsp. *olbiensis*, G – *S. olivacea* subsp. *olivacea*, H – *S. vulturiensis*.

**Supplementary Information 17.** Habitat suitability maps (HSMs) of *Solenopsora* taxa along the Apennine peninsula as a result of alternative approach based on filtering geology from 0 (blue) – not suitable, to 1 (red) – high habitat suitability. The scale on the right refers to the probability distribution scores. A – *S. candicans*, B – *S. cesatii*, C – *S. grisea*, D – *S. holophaea*, E – *S. liparina*, F – *S. olivacea* subsp. *olbiensis*, G – *S. olivacea* subsp. *olivacea*, H – *S. vulturiensis*.

**Supplementary Information 18.** Maps showing the extent of geographical ranges (cf. Gaston 1996) of the studied *Solenopsora* taxa based on revised herbarium specimens and field work, where the area within the polygons encloses the limits to the occurrence of distribution ranges of taxa. The most outlying points are connected in polygons. A – *S. candicans*, B – *S. cesatii*, C – *S. grisea*, D – *S. holophaea*, E – *S. marina*, F – *S. liparina*, G – *S. olivacea* subsp. *olbiensis*, H – *S. olivacea* subsp. *olivacea*, I – *S. vulturiensis*.