






Wild bee larval food composition in five European cities

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Abstract

Urbanization poses threats and opportunities for the biodiversity of wild bees. At the same time, cities can harbor diverse wild bee assemblages, partly due to the unique plant assemblages that provide resources. While bee dietary preferences have been investigated in various studies, bee dietary studies have been conducted mostly in nonurban ecosystems and data based on plant visitation observations or palynological techniques. This data set describes the larval food preferences of four wild bee species (i.e., *Chelostoma florissomne*, *Hylaeus communis*, *Osmia bicornis*, and *O. cornuta*) common in urban areas in five different European cities (i.e., Antwerp, Belgium; Paris, France; Poznan, Poland; Tartu, Estonia; and Zurich, Switzerland). In addition, the data set describes the larval food preferences of individuals from three wild bee genera (i.e., *Chelostoma* sp., *Hylaeus* sp., and *Osmia* sp.) that could not be identified to the species level. These data were obtained from a Europe-level study aimed at understanding the effects of urbanization on biodiversity across different cities and cityscapes and a Swiss project aimed at understanding the effects of urban ecosystems in wild bee feeding behavior. Wild bees were sampled using

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standardized trap nests at 80 sites (32 in Zurich and 12 in each of the remaining cities), selected following a double gradient of available habitat at local and landscape scales. Larval pollen was obtained from the bee nests and identified using DNA metabarcoding. The data provide the plant composition at the species or genus level preferred by each bee. These unique data can be used for a wide array of research questions, including urban ecology (e.g., diversity of food sources along urban gradients), bee ecology (characterization of bee feeding preferences), or comparative studies on the urban evolution of behavioral traits between urban and nonurban sites. In addition, the data can be used to inform urban planning and conservation strategies, particularly concerning flower resources (e.g., importance of exotic species and, thus, management activities). This data set can be freely used for non-commercial purposes, and this data paper should be cited if the data is used; we request that collaboration with the data set contact person to be considered if this data set represents an important part of the data analyzed in a study.

KEYWORDS

cavity-nesting bees, *Chelostoma florissomne*, DNA metabarcoding, Europe, *Hylaeus communis*, *Osmia bicornis*, *Osmia cornuta*, plant–pollinator interactions, trap nest, urban ecology, urbanization

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Metadata and data are available in the Supporting Information and data are also openly accessible on the ENVIDAT repository at <https://doi.org/10.16904/envidat.249>. Raw sequencing data are provided in the National Center for Biotechnology Information (NCBI) Sequence Read Archive (SRA) under Project Accession No. PRJNA790728 at <https://www.ncbi.nlm.nih.gov/bioproject/790728>.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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