C1 Innovations in vineyard inter-row greening to increase biodiversity and resilience in vineyard ecosystems

C1's Project Deliverable Product

Fact sheets of wild bee species suitable as indicators for biodiversity vineyards

The following content is an excerpt from the brochure "Sieg, L., Elias, D., Tischew, S. und Kirmer, A. (2025): Wildkräutergassen in Weinbergen der Saale-Unstrut-Weinbauregion – Tipps für die Anlage und Pflege sowie Steckbriefe typischer Pflanzen und Tiere. Brochure as part of the LIFE VineAdapt project. 58 p."

Summary:
The 13 most common wild bee species in the flowering inter-rows of the demonstration vineyards in the Saale-Unstrut region between 2021 and 2024 are presented. The overview is supplemented by seven selected bee species that occurred less frequently in the studied vineyards, but are characterized by special food or nesting requirements.

Typical wild bees in the vineyard

More than half of all wild bee species in Germany are currently under threat. Vineyards can contribute to the promotion of this important pollinator group by establishing species-rich inter-rows sown with regional wild plants. The studies in the **LIFE VineAdapt project** showed that the number of wild bee species and individuals was higher in the species-rich flowering inter-rows than in the grass-dominated control inter-rows. The use of native wild forbs from different plant families in the seed mixture (see page 9) enables it to be utilized as nectar and pollen sources by the wild bees that occur in the region.

Photo: Lea Sieg

The following overview shows the 13 most common bee species that occurred on the established flowering inter-rows in the demonstration vineyards of the Saale-Unstrut region between 2021 and 2024. The presentation is supplemented by seven selected bee species that occurred less frequently in the studied vineyards, but are characterized by special food or nesting requirements.

Common bee species

Scientific species name	Species name	Number of individuals		Foraging behaviour; special nesting behaviour	Red List	
		Flowering inter-rows	Control inter-rows		GER	Saxony-Anhalt
Andrena flavipes	Yellow-legged mining bee	36	26	polylectic		
Bombus lapidarius	Red-tailed bumblebee	83	3	polylectic		
Halictus simplex	Common furrow bee	45	8	polylectic		
Lasioglossum glabriusculum	Smooth furrow bee	148	73	polylectic		3
Lasioglossum laticeps	Broad-faced furrow bee	46	22	polylectic		
Lasioglossum lineare	Linear furrow bee	36	6	polylectic	3	3
Lasioglossum malachurum	Sharp-collared furrow bee	406	128	polylectic		
Lasioglossum morio	Common green furrow bee	55	64	polylectic		
Lasioglossum nitidiusculum	Tufted furrow bee	37	8	polylectic	V	
Lasioglossum pauxillum	Lobe-spurred furrow bee	301	89	polylectic		
Lasioglossum politum	Shiny furrow bee	255	29	polylectic		
Lasioglossum villosulum	Shaggy furrow bee	41	19	polylectic		
Nomada flavoguttata	Small nomad	43	10	parasitic on *Andrena minutula*		

Red List: 2= critically endangered, 3= endangered, V= watchlist

Specialized bee species

Scientific species name	Species name	Number of individuals		Foraging behaviour; special nesting behaviour	Red List	
		Flowering inter-rows	Control inter-rows		GER	Saxony-Anhalt
Chelostoma campanularum	Small scissor bee	2	0	oligolectic on Campanulaceae		
Colletes similis	Bare-saddled Colletes	26	0	oligolectic on Asteraceae	V	
Eucera nigrescens	May long-horned bee	22	1	oligolectic on Fabaceae		
Osmia aurulenta	Gold-fringed mason bee	27	2	polylectic; nests in snail shells		
Osmia spinulosa	Spined mason bee	2	0	oligolectic on Asteraceae; nests in snail shells	3	
Pseudoanthidium nanum	Stalk wool-carder bee	7	0	oligolectic on Asteraceae	3	
Tetralonia malvae	Mallow long-horned bee	1	0	oligolectic on Malvaceae	2	3

References

Saure, C. (2020): Rote Listen Sachsen-Anhalt – 63. Bienen (Hymenoptera: Apiformes). Halle: Berichte des Landesamtes für Umweltschutz Sachsen-Anhalt: Vol. 1/2020, pp. 777-790.

Scheuchl, E., & Willner, W. (2016): Taschenlexikon der Wildbienen Mitteleuropas: Alle Arten im Porträt. Wiebelsheim: Quelle & Meyer.

Westrich, P., Frommer, U., Mandery, K., Riemann, H., Ruhnke, H., Saure, C., et al. (2011): Rote Liste und Gesamtartenliste der Bienen (Hymenoptera, Apidae) Deutschlands. In M. Binot-Hafke, S. Balzer, N. Becker, H. Gruttke, H. Haupt, N. Hofbauer (Eds.), Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands. Band 3: Wirbellose Tiere (Teil 1). Münster (Landwirtschaftsverlag). Naturschutz und Biologische Vielfalt (pp. 373-416).

Selected wild bee findings (see also table on p. 47) are shown below during flower visits at sown wild forbs in the vineyard inter-rows of the winegrowers participating in the project.

The first three photos show foraging generalists that collect pollen from a wider range of host plants (polylectic bees). In the picture below, the gold-fringed mason bee is visiting flowers on the common clover on the Kreisberg in Höhnstedt. Its nesting method is special – the bee builds its brood cells in empty snail shells, which is why vineyards are one of its characteristic habitats.

Photo: Lea Sieg

Other common representatives are the red-tailed bumblebee, seen here on a sand sparrow on the Kreisberg in Höhnstedt, and a furrow bee shown in the last photo on an oxeye daisy on the Eulauer Heideberg.

Photo: Lea Sieg

Photo: Lea Sieg

The other three wild bee species shown here are specifically dependent on flowers of Asteraceae, Malvaceae and Campanulaceae for pollen collection (oligolectic bees). On these pages you can see the bare-saddled Colletes on Oxeye daisy on the Eulauer Heideberg, as well as two males of the mallow long-horned bee, which is highly endangered in Germany, on musk mallow in a vineyard near Höhnstedt and the small scissor bee on harebell on the Köppelberg near Bad Kösen.

Photo: Lea Sieg

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