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Leiden  
The Netherlands

## **Pollinators in complex landscapes: modelling and mapping the distribution of wild bees and hoverflies in the Netherlands**

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### **Citation**

Moens, M. (2025, December 10). *Pollinators in complex landscapes: modelling and mapping the distribution of wild bees and hoverflies in the Netherlands*. Retrieved from <https://hdl.handle.net/1887/4284738>

Version: Publisher's Version

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## Stellingen

### Bijhorende bij het proefschrift

#### Pollinators in complex landscapes

#### Modelling and mapping the distribution of wild bees and hoverflies in the Netherlands

- 1 In the Netherlands, Red List–threatened wild bees are more susceptible to climate change than non-threatened wild bees (Chapter 2).
- 2 Biotic interactions should not be included in species distribution models (Chapter 3).
- 3 The ditches and woody landscape elements showed little to no model improvement for bees and hoverflies and are therefore less important than herbaceous landscape elements in wild pollinator conservation (Chapter 4).
- 4 With sufficient landscape elements in agricultural fields, wild pollinators can effectively replace honeybees for crop pollination (Chapter 5).
- 5 We should aim for a land sparing approach in agriculture as opposed to a land sharing approach. For example, if the increased production from high yielding agriculture (in the land sparing approach) translates to more protected natural area, studies have found a general benefit to biodiversity compared to the land sharing approach (Sidemo-Holm et al., 2021).
- 6 Citizen science is a valuable source of input data for models (e.g. Robinson et al., 2020).
- 7 Nature conservation goals, including those for wild pollinators, should expand their focus on beta or gamma species diversity instead of alpha diversity. Even when data on beta diversity is lacking, understanding of the processes impacting this diversity can provide important information to promote regional diversity (Socolar et al., 2016).
- 8 Species distribution models will gradually lose importance with the arrival of high-definition satellite data, especially for larger immobile species like trees (e.g. Thapa et al., 2024).
- 9 It is the responsibility of researchers to make sure that their research is applied and applicable (e.g. Loroño-Leturiondo & Davies, 2018).
- 10 We should embrace the droughts periods that are becoming more frequent in the Netherlands (Klimaatsignaal, 2021) and plan for the arrival of more Mediterranean plant and bee species. For example, by facilitating habitats that have not existed before in the Netherlands.
- 11 Genetically modified organisms in crops should be allowed and stimulated in Europe, as they have clear benefits (Kovak et al., 2022).

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Leiden, 10-12-2025