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Conference Abstract

Modelling Climate Suitability and Spread of *Vespa velutina* in Ireland

Paul Thomas James Brett ‡

‡ National Biodiversity Data Centre, Waterford, Ireland

Corresponding author: Paul Thomas James Brett (pbrett@biodiversityireland.ie)

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Abstract

Vespa velutina (Hymenoptera: Vespidae; Lepeletier, 1836) recently arrived on the island of Ireland in 2025, where three nests were identified and removed. Prioritising management is critical given its documented impacts on native Diptera, Hymenoptera, and pollinator populations across Europe. A greater understanding of current climate suitability, identification of the potential spread across the island of Ireland and priority risk sites would be beneficial to guide the future management of this species.

The initial aim was to identify the regions on the island of Ireland that would be climatically suitable for this species to survive and proliferate in. This would require species distribution models to be developed using occurrence data from GBIF and other collections incorporating ERA5 climate data for the most recent climate normal (1991–2020) and subsequent years. The inclusion of more recent climate data would allow assessment of whether climatic conditions in Ireland have become more suitable in recent years.

The secondary aspect to assess is the potential spread of this species via man-made infrastructure and biological means by utilizing agent-based models using previously identified criteria from other European countries. Spread was simulated from previous nest locations in three locations to assess the spread if management measures had not been undertaken. It was later assessed from other locations across the country whereby if a nest were to be found there what would be the pattern of spread over time. It is envisioned that this framework will inform management decisions relating to *Vespa*

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velutina under an adaptive response strategy under current climate and with expected repeated introductions.

Keywords

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Conflicts of interest

The authors have declared that no competing interests exist.