Asian Hornets, *Vespa velutina*, are currently absent in the UK but predicted to arrive, establish and impact biodiversity in the future.

Asian hornets are widespread in France and there have been 23 confirmed sightings in the UK but in all cases the nests have been destroyed
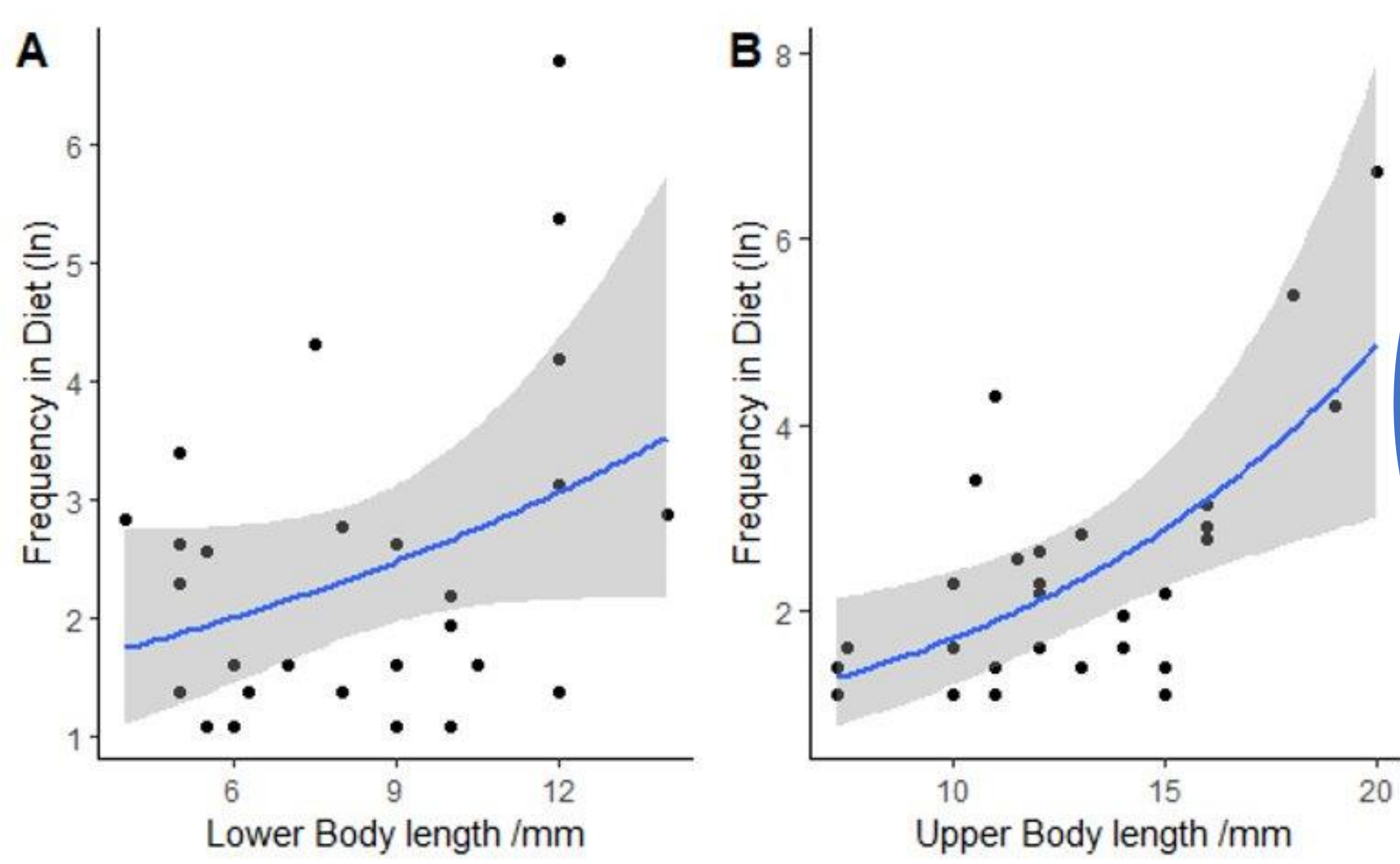
Known predator of honeybees **– what are the potential impacts of Asian hornets on wild pollinating insects?**

## Importance of prey size and seasonality on *Vespa velutina* diet

Size
Size is an important predictor, as it can impact a species' development, respiration, metabolism and niche[1]. Body length of Asian Hornet prey species correlates with their frequency in the Asian hornet diet in France[2].

Seasonality
Species phenology influences the availability of a prey to be consumed by a predator. I use records from France (GBIF) to determine seasonality of Dipteran prey species identified in the diet of Asian hornets in France[2].

Larger insects that have a high degree of overlap in phenology with Asian hornets are predicted to be at most threat

Effects of body size of prey (lower and upper range of body length for 33 arthropods) on frequency of occurrence in the diet of Asian hornets in France
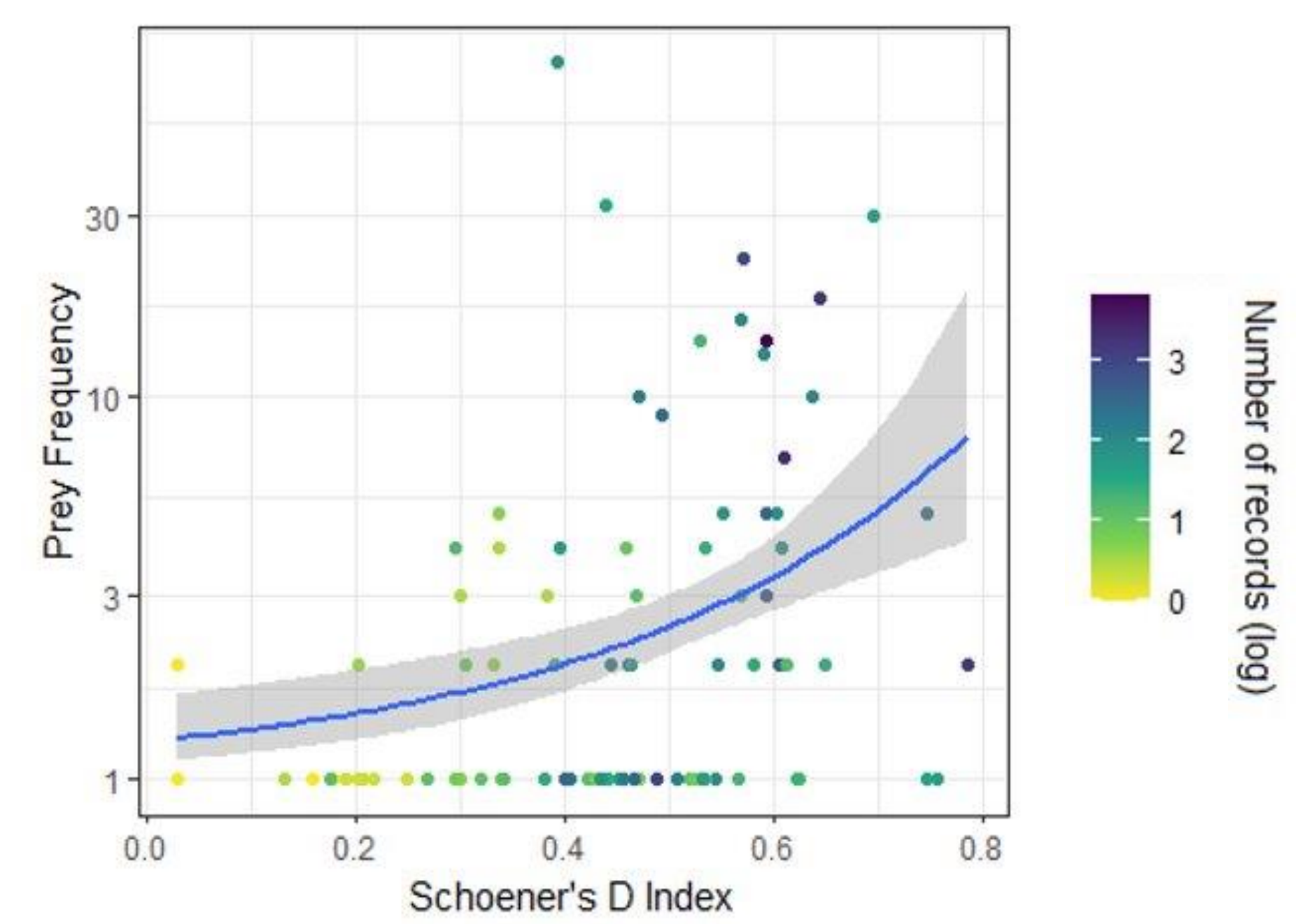
Effect of degree of seasonal overlap (Schoener's D Index) between Asian hornets and Diptera on frequency of Dipteran prey within the diet of Asian hornets

Co-occurrence Risk Maps

Environmental Suitability Models are useful for predicting future distribution of invasive non-native species. Environmental suitability map has been produced for Asian hornet[3] using climate variables. Assessing co-occurrence between Asian hornets and potential prey, including wild pollinating insects of Asian hornets, could inform risk assessments

Red-tailed bumblebees, known prey of Asian hornets in France, are predicted to have a high degree of overlap with Asian hornets in the UK
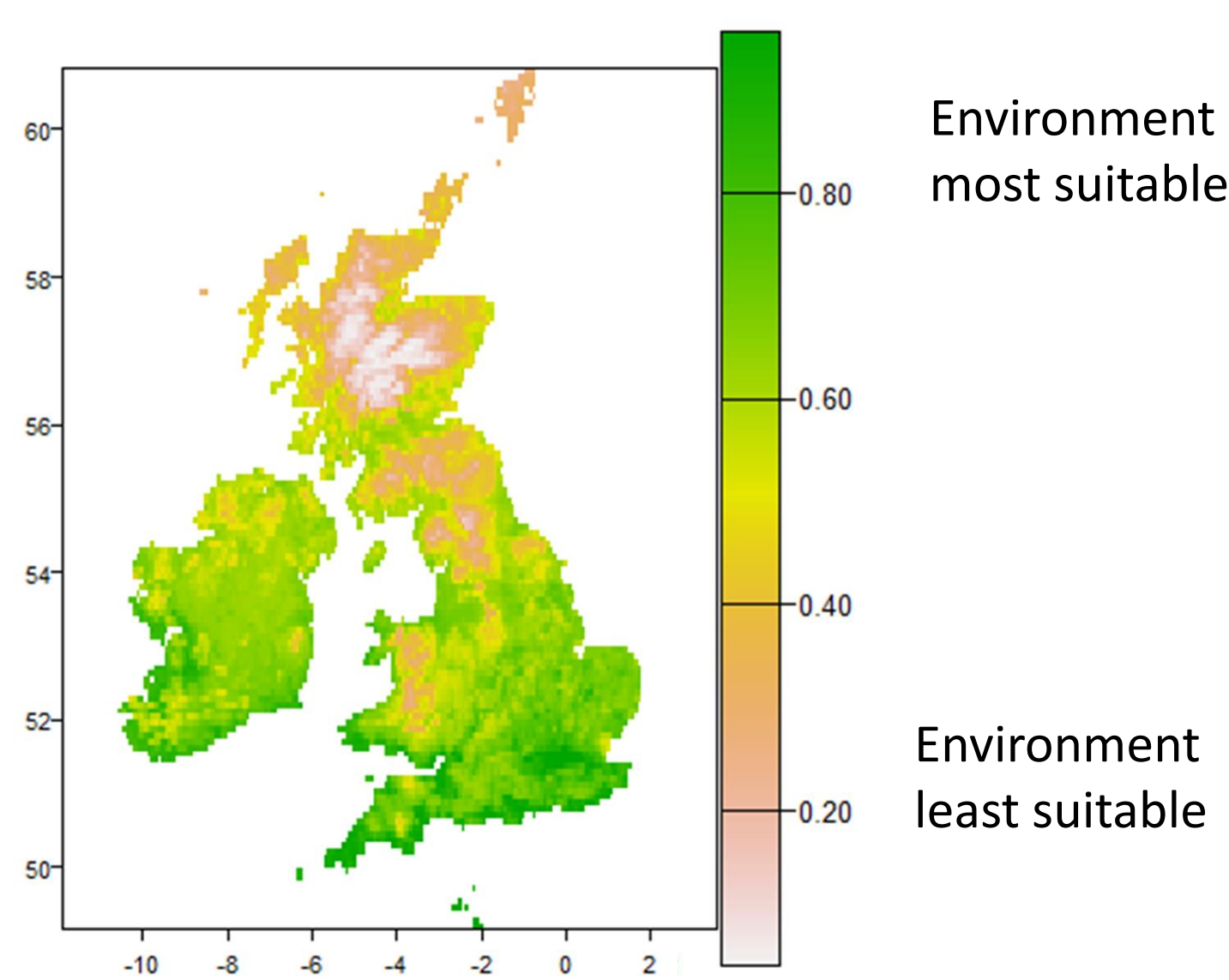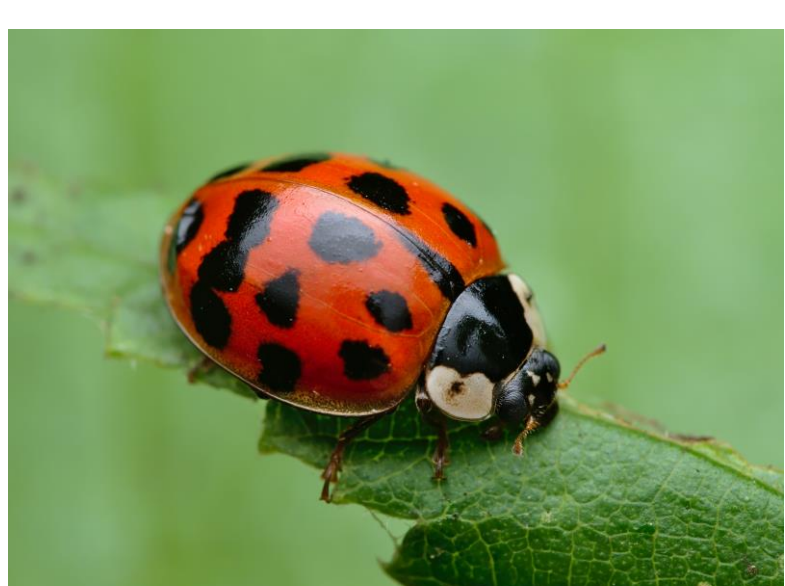

Environmental suitability map of *Vespa velutina* in the UK[3]
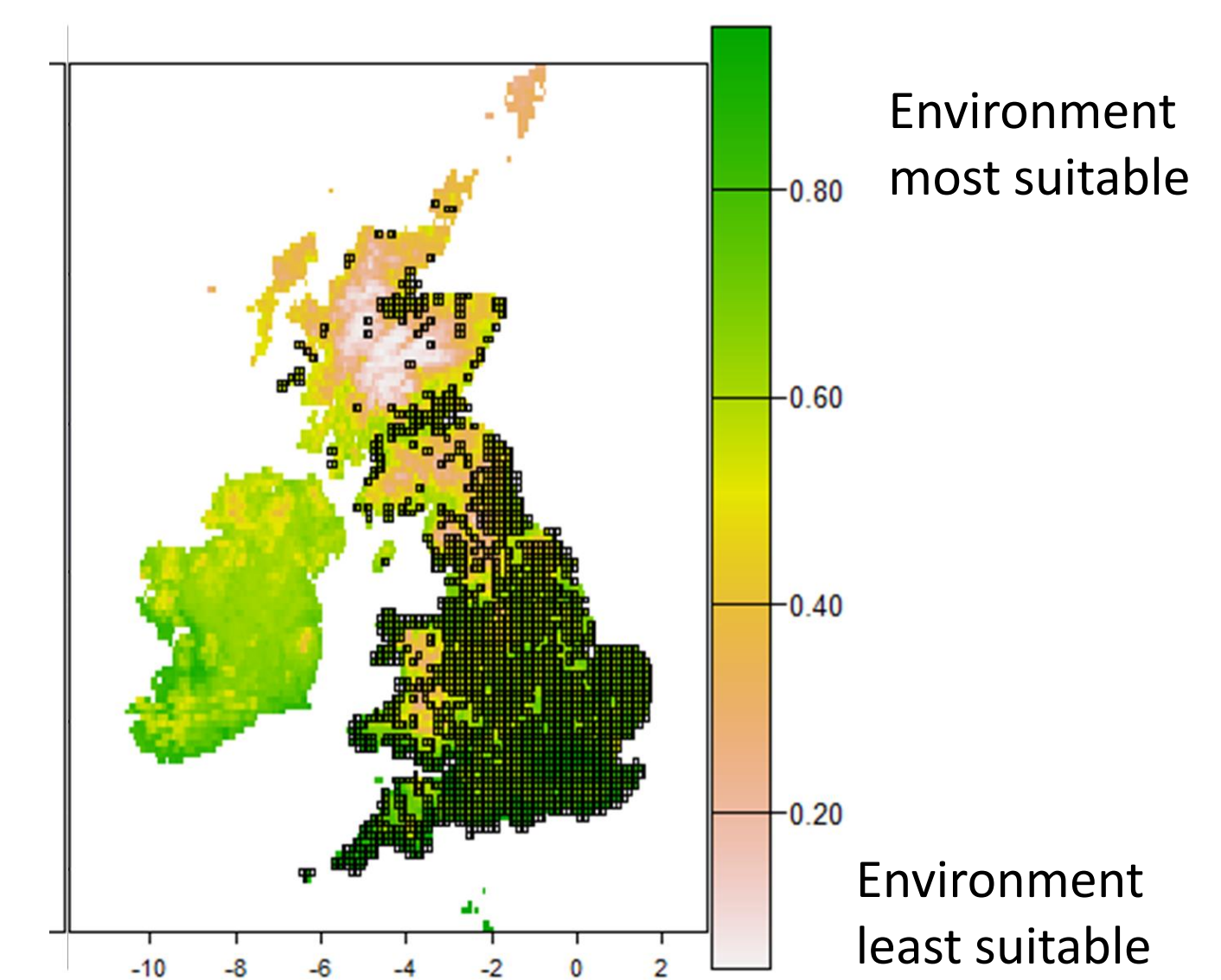
**Occurrence of red-tailed bumblebee, *Bombus lapidarius*, in the UK. BWARS (1820-2020)**

Implications:
Useful for informing risk assessments on the magnitude of the threat of Asian hornets to other species

Next steps:
Investigate the role of habitat type
Model range of potential prey species and assess threat of Asian hornet

Future directions:

Adapt methods for another non-native invasive insect, Harlequin ladybird
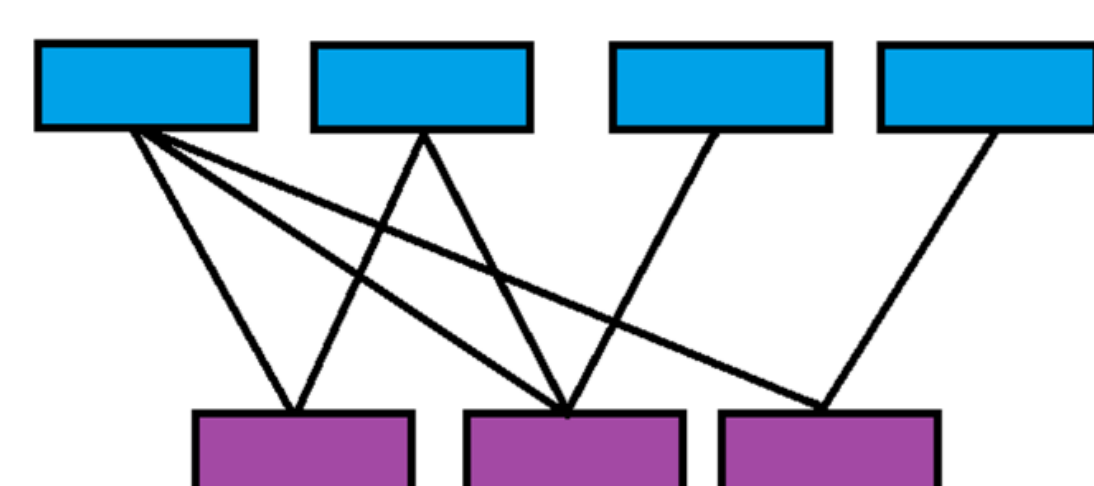
Develop approaches to consider cascading effects of invasive non-native species within ecological networks

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References: 1. Blanchard et al., (2017). *Trends in Ecology & Evolution*: 32 (3), 174–186. 2. Rome et al., (2021). *Annales de la Société entomologique de France*: 57(1), 1-11. 3. Hassall et al., (2020) Effectiveness of rapid eradication attempts reported using NOTSYS notifications in preventing the spread of *V. v. nigrithorax* in Europe. *Technical note prepared by IUCN for the European Commission*.

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