With the current momentum of increasing computation power, and genetic data analyses capacities, also population genetics are valuable metrics to consider, for instance in regard of the stability and resilience of environmentally challenged populations (Matias et al., 2017; Theodorou et al., 2018; Theodorou et al., 2020). Mating frequency of honey bee queens reduce under more rainy conditions (El-Niweiri and Moritz, 2011), which may negatively affect queen performance (e.g., egg laying), and the lower degree of polyandry may limit colony performance (i.e., due to a low gene diversity and lower disease resistance). For honey bees in particular, different breeding lines are a very interesting variable to consider in regard to colony performance. Some strains may be climatically better adjusted, while others may perform relatively better under pressure of disease and parasites, e.g., *Varroa destructor* (Nürnberger et al., 2019).

Many citizen science initiatives represent great opportunities in support of bee population monitoring. Data collected by lay persons can support the analyses of scientific data collections (Brodschneider et al., 2019). Ecosystem monitoring efforts for wild bees can be supported via, e.g., species identification for biodiversity assessment. For honey bees, the involvement of beekeepers as citizen scientists is extremely valuable. Data on colony health can flow both from and toward beekeepers, noting that honey bee colony health depends on the extent to which beekeepers are informed on beekeeping practices (Jacques et al., 2017). Access to honey bee colony data is essential within the MonViA project, for instance, to allow making resilience estimates. Whereas small colonies are likely relatively vulnerable, large colonies may be able to buffer climatic impact and better bridge times of nutritional scarcity. Yet above all, honey bee colonies are managed, which involves essential information regarding beekeeping practices. The feeding of colonies, the treatment of parasites and diseases, the travel with colonies toward floral resources, are all beekeeping interventions, likely highly explanatory to colony growth, productivity and survival. Hence, an essential component in the analyses of honey bee colony performances is the consideration of beekeeping practices (Genersch et al., 2010).

With the MonViA project we aim to provide an internationally linkable data resource for agricultural landscapes and beyond, to monitor national long-term biodiversity trends, in support pollinators and safeguard biodiversity as a whole. Based on our modelling results, we conclude that the honey bee population in Germany could potentially benefit by rising Central-European temperatures. Albeit, population level data analyses based on yearly country averages (Fig. 1) are most certainly less powerful to assess environmental impacts on colony performance, as compared to within year colony level data. Notwithstanding, the combination of different research approaches can enable to bridge knowledge gaps, e.g., between short-term causality findings, and observed long-term population trends.

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Conflicts of interest

The authors declare no conflicts of interest.

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