

IMPACT OF TEMPERATURE ON BUMBLEBEE COGNITION

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Cognitive abilities are essential for pollinators, as they influence foraging efficiency, navigation, and adaptation to changing environmental conditions. Despite concerns about rising global temperatures, the impact of heat on insect pollinator cognition – critical for ecosystem stability – remains underexplored. This study examines how temperature influences the associative learning capabilities of bumblebees (*Bombus terrestris*) while foraging in free flight. We tested bumblebees in climate-controlled rooms at 24°C and 32°C using colour-conditioned learning tasks with artificial flowers. While the impact of exposure to elevated temperatures for a few minutes while foraging did not impair learning performance, bees foraging in warmer conditions drank significantly more water when it was available, indicating behavioural plasticity. These results suggest that, although the associative learning capabilities of foraging bees may be robust to changes in ambient temperature, heat causes them to adapt their foraging choices. These findings have consequences for our understanding of how pollinator foraging choices may change as environmental temperatures increase with global warming.

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