

ARTIFICIAL POLLEN DISPENSING FLOWERS AND FEEDERS FOR BEE BEHAVIOUR EXPERIMENTS

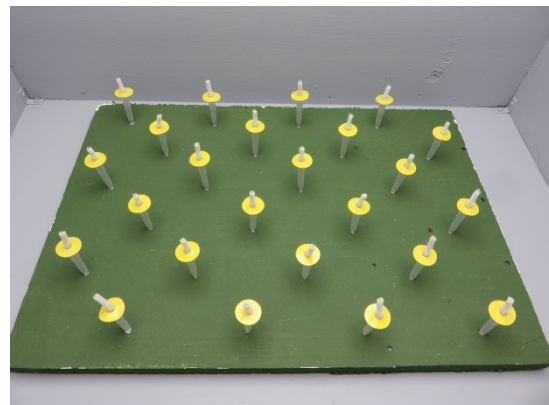
by Avery Russell & Daniel Papaj

The foraging behaviour of pollinators contributes greatly to the evolution of plant-pollinator interactions. In return for the service of pollination, flowering plants often offer food rewards to their pollinators. Pollinators such as bees, many flies, beetles and some butterflies must collect pollen and nectar, the two most common floral rewards, to survive and reproduce. Due to their impressive cognitive abilities, many pollinators can be trained to forage from artificial flowers, which allow experimenters to precisely control what the pollinator experiences and to study their behaviour.

While flexible designs for artificial flowers providing nectar rewards abound, useful designs for artificial flowers that dispense pollen are few. Likewise, the study of pollinator foraging behaviour has focused almost exclusively on nectar collection. In this study we describe and demonstrate the effectiveness of a novel, easily constructed and modifiable artificial flower that dispenses flexible and controllable amounts of pollen via an 'anther' composed of a chenille stem. We also review the literature to provide a thorough accounting of the amount of pollen offered by individual live flowers from 44 plant families.



Common Eastern Bumblebee, Bombus impatiens, collecting pollen from a chenille stem flower.



Example array of artificial flowers with chenille stem anthers.