

## DIVERSITY OF POLLEN TYPES AND BEE FLORAL RELATIONSHIPS

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Among the insects that collect and carry pollen, bees are of special interest as female bees have special hairs (scopa) on their hind legs (Families Halictidae, Apidae and Anthophoridae) and ventrally on their abdomen (Megachilidae), to carry pollen. Identification of pollen on bees is useful in determining foraging plants and foraging distances. The geographical origin of the floral host species and temporal pattern of flowering can also be understood from bee - pollen studies. The objective of this study was to relate the type of pollen on bees to their floral hosts.

About 500 individual bees (in 20 genera) with known host records and pollen on their body were used in the study. The pollen from each bee was removed and slide mounted. Similarly, pollen from the floral hosts from which the bees were collected was slide mounted. Pollen grains were examined microscopically and were categorized into 1 of 19 pollen classes based on the shape, number and type of aperture and visible sculpturing on the grain.

The pollen examined from 44 floral host species in 43 genera and 24 families belonged to 17 pollen classes. The regular pollen grains were circular, elliptic or triangular in shape, while irregular pollen grains were polyads or vesiculate. The number of apertures on pollen ranged from 0-8. Only the spiny sculpturing on pollen was visible. Majority of the pollen from the 44 floral hosts belonged to the triporate class (23 %) followed by spiny (16 %) and tricolporate (14 %). Moreover, of the 24 plant families, whose pollen were examined, only Lamiaceae (3 spp.) pollen belonged to a single class and were of a uniform type. Flowers of all other plant families bore pollen of different pollen classes.

The pollen on bees belonged to 17 pollen classes. On the basis of pollen carried, majority (17 genera) of bees were found to be generalists (polylectic), in that they carried pollen from more than one type of flowers in unrelated taxa. The remaining 3 genera included oligolectic bees that specialize on a particular pollen taxon. *Tetralonia* (2 spp.), *Systropha* (1 sp.) and *Lithurgus* (2 spp.) visited floral hosts belonging to two families only: Convolvulaceae and Malvaceae. Convolvulaceae plants bear pollen of 2 types; spiny and smooth while, Malvaceae pollen is spiny. Genus *Systropha* carried pollen from the Convolvulaceae plant: *Merramia tridentata* whose pollen has a smooth coat. *Lithurgus* and *Tetralonia* carried pollen from two species of Convolvulaceae and one species of Malvaceae, all having spiny pollen.

On close examination, polylectic bees were found to have a scopa able to accommodate pollen of several types while oligolectic bees have a scopa that is specialized to carry one type of pollen only. Such pollen specialist bees have a long tongue. The ability of polylectic bees to carry a variety of pollen types is of survival value.

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