

## Prospective Of Sweat Bees Pollinators In Agro-Ecosystem and Its Conservation

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### INTRODUCTION

Sweat bees (Halictids) is one of the bee families in the order Hymenoptera. They are smaller and dull to metallic black but some are brightly coloured, particularly in metallic greens and blues. Their patterns range from green to red to yellow, and they often have bands similar to honeybees. In comparison to other bee species, they are short-tongued bees. They exhibit the most diverse gradation in their social behaviour (Michener 2007). Depending on the time of year, geographic location, altitude, and other variables, some species are eusocial, semi-social, communal, or solitary (Michener 2007). Other overwintered females that have not started nests frequently join sweat bees that begin a nest in April. Some individuals in these shared nests may act as workers rather than deposit eggs. In these shared nests some individuals may role as workers and not lay eggs. By the end of the summer, just one egg-laying bee survives. Some female offspring worker, while others mate and survive the winter to build nests in the spring. A community of wild-bees that live in and around the farms and gardens where fruit crops are grown visits most fruit plantings areas. In turn, this native bee's population is sustained by wildflower plantings which provide food and nesting areas.

A few oligolectic species and subgenera feed exclusively on a single plant family. Except for parasitic species (e.g., *Sphecodes*), which do not transport pollen at all, female halictids carry pollen on the tibia and femur of their rear legs. Males usually resemble females of the same species except that they are often slenderer, do not have scopa and sometimes have a yellow clypeus. Like bumblebees, they can collect pollen using a process called "buzz pollination" (sonication). When a bee grabs the anther of a flower in her mandibles and uses her wing muscles to vibrate the flower, the pollen is dislodged. Diversifying nature of these halictid



pollinators that are active on a farm makes good economic sense because it spreads risk across many bee species. In recent years an alarming decline of pollinators has been reported (Bartomeuset *al.* 2013), threatening the ecosystem service of pollination. Several factors are responsible for bee decline, which include large-scale clearance of habitat, and habitat deterioration, pesticide misuse and climate change. Habitat clearance and deterioration are considered the most important factor of biodiversity loss in general and bee decline in particular. In this context, creating bee-friendly habitats and providing adequate floral resources can help conserve bees' vital pollination services while also promoting biodiversity by increasing connectivity between remnants of natural habitat.

## **CONSERVATION PRACTICES**

### **Establishment of habitat**

Growers can make their farms and surrounding landscapes more suitable for sweat bee pollinators by following some simple practices to make their fields and land more attractive to bees. These pollinators need undisturbed nesting sites and access to nectar and pollen when the crop is not in bloom. As the sweat bees are attracted to perspiration, they also need slightly salty water and some nest building materials like mud or leaves. Many farms have some of these resources already; increasing them should improve native bee abundance over time.

Many sweat bee pollinators require water to live, while others are just drawn to freshwater. Bees will be drawn to a supply of pesticide-free water and dirt. Sweat bees and other helpful insects will be attracted to a birdbath, fountain, dripping faucet, tiny pond, or mud puddle. Adults, like many other bees, feed on nectar and pollen while pollinating flowers. Like deer visiting a salt lick, or an athlete drinking an electrolyte beverage, they supplement their diet with salts, which they sometimes try to obtain from sweating humans.

### **Creation of Nesting area**

Many species in this group occupy a great variety of habitats. Sweat bees almost build their nests on the ground, with a few exceptions in rotting wood. Adults can be seen foraging for pollen and nectar amid flowers in fields, gardens, grasslands, roadside ditches, and other open areas with varieties of flowers (Fig 1). Ground-nesting halictid adults fly in and out of these nests several times, gathering pollen for their developing larvae. Nesting sites for these bees

can be provided by providing non-tilled open land or well-drained soil mounds near farms. An untouched grassy place near fields is ideal for underground nesting. Cavity-nesting bees require nesting sites, which can be provided by drilling holes in wooden blocks or bundles of cut plant stems.



Fig 1. Foraging Bees

### **Diversification of Vegetation**

Planting gardens or meadows with a variety of native wildflowers, trees, and shrubs is the easiest approach to attract natural pollinators. Native pollinators will be fed by a variety of wildflowers and native grasses (nectar, pollen, and/or larval host plants). Lawn areas should be minimized in favour of patches of native wildflowers, shrubs, and grasses. Lawn areas that do exist should be mowed less frequently to allow the vegetation to provide habitat for pollinators. Perennials should be chosen over annuals. The area of the lawn should be reduced in favour of natural wildflowers, shrubs, and grasses. Lawn areas that do exist should be mowed less regularly to allow for the growth of plants, which will offer pollinator habitat. Annuals should be avoided in favour of perennials. Perennials are usually higher in nectar content and provide a more consistent food source than annuals since they bloom year after year. Each flower species should be planted in a cluster to attract more pollinators than if they were grown individually.

### **Judicious use of plant protection chemicals**

Haliclids mainly visit crop fields to feed while the crop is in blossom. During flowering, more care must be taken to safeguard these bees by applying in the evening hours as bees are more active till noontime. The actions that assist bee pollinators include avoiding pesticide treatments shortly before, during, and after bloom, and selecting only the most bee-safe



products if sprays are necessary. Choosing insecticides that are less harmful to bees could help these native bees thrive in the long run.

### **Conclusion**

The species diversity of bees is positively related to the amount of forest cover. In contrast to other bee species, they increased in abundance with the proportion of fallow land, gardens and pastures. There is a need to conserve forest and biodiversity to maintain bee diversity and the ecosystem service of pollination that they provide to a potentially wide range of other crops and wildflowers. Adopting conservation approaches in the farm will improve the opportunities such sweat bees will increase to levels that will contribute to crop pollination. Enhancing the suitability of farm landscapes for native pollinators will also provide a diversified strategy for achieving good crop yields in pollination-dependent crops year after year.

### **Reference**

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