

Behavioral study of Carpenter bees *Xylocopa*, Insecta: Hymenoptera: Apidae: Xylcopinae. Foraging dynamic and Agricultural Pollinator.

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Abstract:

Carpenter bee is a large bee belongs from class Insecta order Hymenoptera family Apidae. Carpenter bees are of two genus, small carpenter bees (*Ceratina*) and large carpenter bees (*Xylocopa*). *Xylocopa* are the larger bees live in woodlands and grasslands. They make the nest in the wood hence called as Carpenter bee. Male is very aggressive, protect the nest from the predators, larger than the female. Body is divided into head, thorax and abdomen. Head is large, bears mouth parts, eyes, antenna. Mandibles are used for digging through wood. Thorax is short with fuzzy texture. Abdomen is very large, black, hard and shiny, females possess small sting, and males lack the sting. This bee has long hairy, broad front legs hence some time it is called as "Broad footed carpenter bee". In this paper the behavioral study, external characters and damage by carpenter bees have been included.

Keywords : Foraging, *Ceratina*, *Xylocopa*, woodpecker

Material and Methods:

1. Selection of the locality and nest: I have selected five local sites (houses made by dead wood) where there are lots of flowering plants were available total twenty five nests of the carpenter bees selected for the study, observed the behavior, external characters and photographs were taken simultaneously.

2. Collection and observation of carpenter bees:

I have collected total ten larger Carpenter bees (*Xylocopa*) one by one with the help of insect collecting net for observation. Taken the photographs, and leave them carefully without hurting or damage to their body parts, handled very carefully during the paper study.

Discussion:

Carpenter bee belongs from class Insecta, Order Hymenoptera, Family Apidae, Genus Xylocopa. These bees make nest in the dead wood, bamboos, soft wood, pithy stems of the plants, they buzz like saws when constructing the nests. They make the tunnels with many internal chambers. Female bees visit the flowers to collect the nectars; females collect the pollens for their offspring, when sufficient amount of pollens in the chambers females laid eggs on the pollen and seal the chambers. Females added the pollen in each chamber of the nest. Life cycle of the carpenter bee takes about three to four months and it includes eggs, larva, pupa and adult. Female carpenter bees return to the same area and same nest year after year extending tunnels and causing more and more structural damage to the piece of wood that they invade. When carpenter bees make the tunnels and lay the eggs in it, after hatching the eggs larvae emerges out and make the typical sound, woodpeckers attracted toward the nest and start more digging at the nest entrance hole in order to enlarge it, woodpeckers fed on the larvae of the carpenter bees and obviously it leads to more damages to the structure of the housing.

These bees feed on the nectar in the flowers, these are found in large numbers where the lots of flowering plants are seen around the houses, these bees select the dead wood houses, staircase, fences which are made up by the dead woods or the bamboos and start making the nest.



Fig.1 Carpenter bee Dorsal View

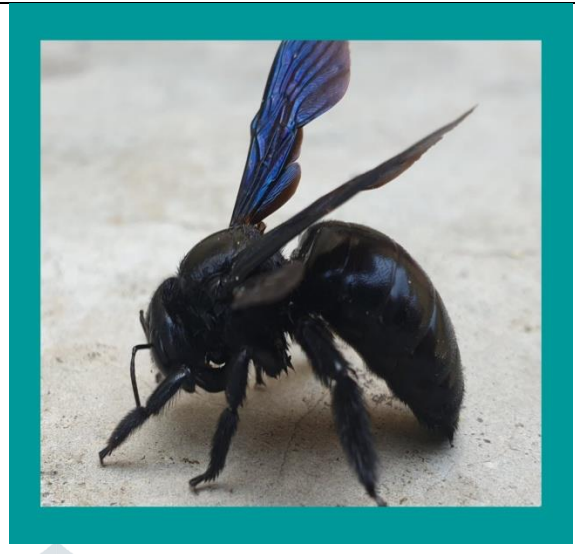


Fig. 2Carpenter bee Lateral view

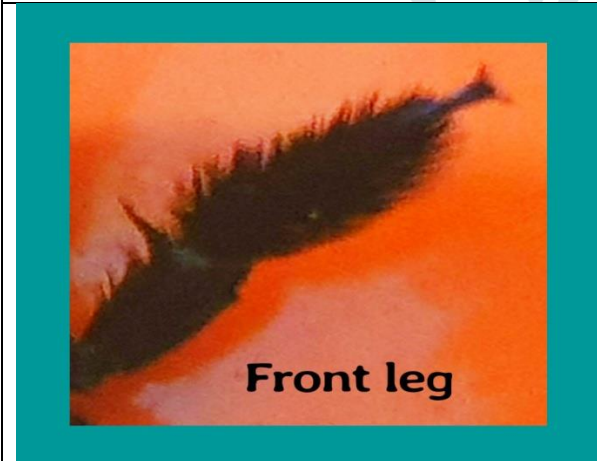


Fig. 3 Broad Leg



Fig.4 Fore wing, Hind wing and leg of carpenter bee

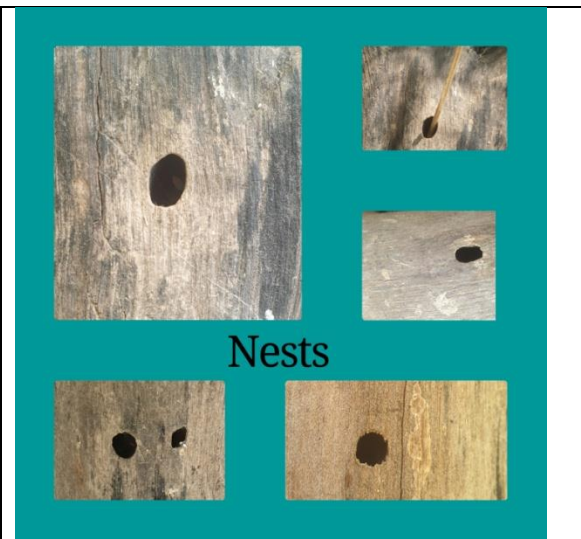


Fig. 5 Nest of Carpenter bee. woodpecker enlarged the entrance of nest.

Fig. 6 Nest of carpenter bees.



Fig.7 Nest of Carpenter bees

Result and Conclusions:

Carpenter bees are very beneficial to human because these bees feed the in or out of our houses can cause damage to the soft woods and presence of carpenter bees can attract woodpeckers who further burrow in to the wood to reach in the tunnels in which larvae of the carpenter bees

live, woodpeckers like to eat these larvae of carpenter bees. To prevent the infestation of carpenter bees, all the wooden properties should be apply a coat of paint which can prevent the structural damage.

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