

## Honey bee flora of Miandan Valley Swat,

KHYBER PAKHTUNKHWA, PAKISTAN

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### ABSTRACT

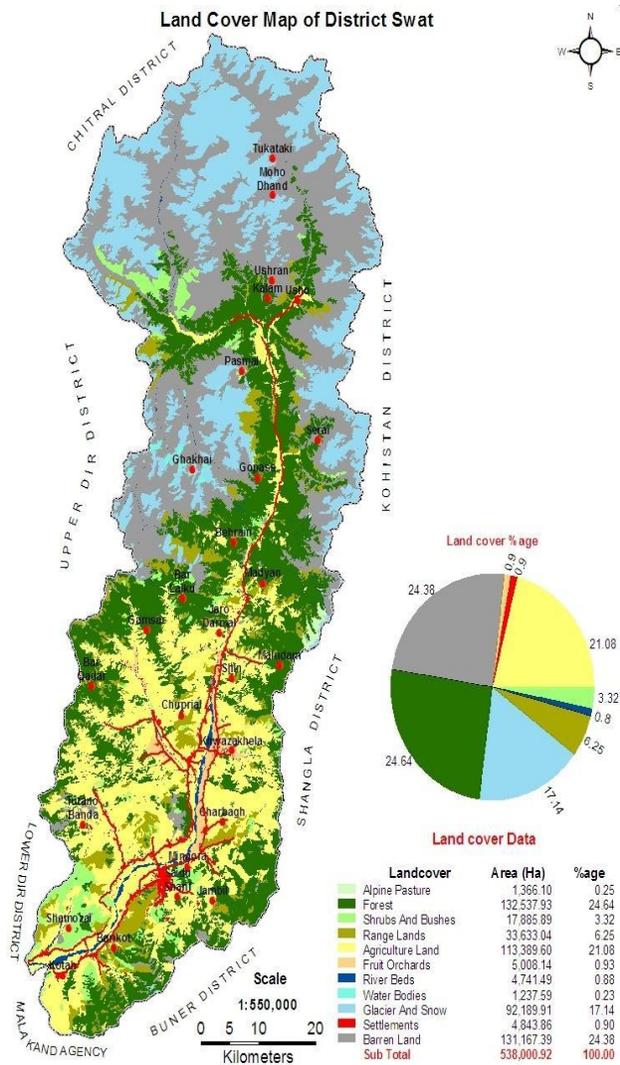
The study was conducted in 2016 to 2017 different flowering season in Miandam valley of District Swat. The study revealed that there were 82 honeybee flora species are present which belong to 37 families. Rosaceae is the largest family, second is Lamiaceae, Brassicaceae and Asteraceae is the third largest family. Other family are also present. Major honeybee flora in the area *Rabdosia rugose* and *zea mays*, *Berberis lyceum* Royle. medium honeybee flora are *Zizyphus sativa* and *Brassica comprestis*, minor bee flora are *Nasturtium officinale*, *Fragaria nubicola*, *Eriobotrya japonica* *Paeonia emodi*. The area show abundant bee forage honey flow season start from March to August and September to October. November and December are scarcity season. Major problem in the area for bee foraging is over grazing, free harvesting, no modern techniques of bee flora management and no propagation of seed occurs in the area.

### INTRODUCTION

Plants and honeybee relation exist in history of flora and fauna from unknown period and both are inter dependable. Pakistan has God gifted floral diversity and represent approximately 1572 genera and around 600 wild plant species that are frequently common in the Hindukush, Himalaya and Karakorum regions (Ibrar, M., Hussain, F., & Sultan, A. (2007).).

Honey bee keeping is common hobby in Swat valley and mostly upper Swat villages like Matta, Khwazakhela, Kabal Miandam, Malamjaba, Madyan, Utror and Gabral etc. There are 8 bee flora species are used by honey bee for the production of honey in Utror and Gabral (Hamayun, M. 2005) Honey bee also visit for collecting nectars from *Justicia adhatoda*, *Cannabis sativa* and *Pimpinell adiversifolia* in Ranyal hill district Shangla. (Ibrar et al. 2007) Making of honey and other products of honey bees entirely depend on availability of bee flora in area and also significant field for honey beekeepers Abou-Shaara, H F. (2015). Adequate nectar and polantity and quality of pollen and nectar can lead to demographic decrease of bee colonies leading to low

len resources are critical in maintaining honey bee health (Denisow, B., &Wrzesien, M. (2007). These insects are members of the subfamily Apinae, which produce and store liquefied sugar, otherwise known as honey or pollen supplement to prevent nutritional deficiency and colony failure Bhalchandra, W., Baviskar, R. K., &Nikam, T. B. (2014).Honeybees are member of phylum Arthropoda and class insecta. These insect belongs to sub family Apinae Dukku, U. H. (2013).. Honeybees collect nectar and pollen as food from majority of plants known as bee flora. The honeybee depends entirely on flowering plants for food. Honeybee collects nectar and sent to honey sac where different enzymes applied on nectar this chemical process change nectar into honey(Bista, S., &Shivakoti, G. P. 2001.).Pakistan has four honeybee species. *Apis dorsata*, *Apis florea*, and *Apis cerana* are indigenous species while *Apis mellifera* introduced. While doing this they pollinate these flowers, thereby helping to increase fruit and seed-setting both in wild and cultivated plants (Usman H, 2013). Honeybee and flowering plant are inter dependable. Beekeeper rear honey bee for best and demanded honey so they wholly depending on the types of flowering plants available in the area Farooq, S., Barki, A., Khan, M. Y., &Fazal, H. (2012). Wild honey mostly obtain from *Plectranthus rogosus* and *Zizyphus spp*, is considered to be the best quality, used in the preparation of traditional medicines and sold higher rates in the local market(Sher et al. 2011). The study area is rich in bee flora and belong to moist temperate forest zone and lies between 35° 4' N and 72° 29-32' E in the mountain range of Hindukush (Porter SC. 1970). The total area of the valley is about 6949 hacters (Khan, A., Gilani, S. S., Hussain, F., &Durrani, M. J. 2003). Most of the area is not cultivated but 20 % of the area is cultivated. Forest plants cover major portion of the area.



## MATERIAL AND METHOD

The present study has been done in Miandam valley of Swat, Pakistan. The study was organized in different flowering seasons of the years 2016 and 2017. The area is well forest dominated plants species. Minor plants species consist of climbers, herbs, shrubs which play a vital role in bee foraging while some trees species are also facilitate honey bee in nectar and pollen. Data

were collected through interviews as well as questionnaire. Kenea, G. C., Abi, D., Beyene, T., & Tsadik, M. W. (2014). The data was analyzed after completion of data, the percentage, and frequency, were applied in simple percentage formula, as under:

$$\text{Percentage \%} = f \times 100/n$$

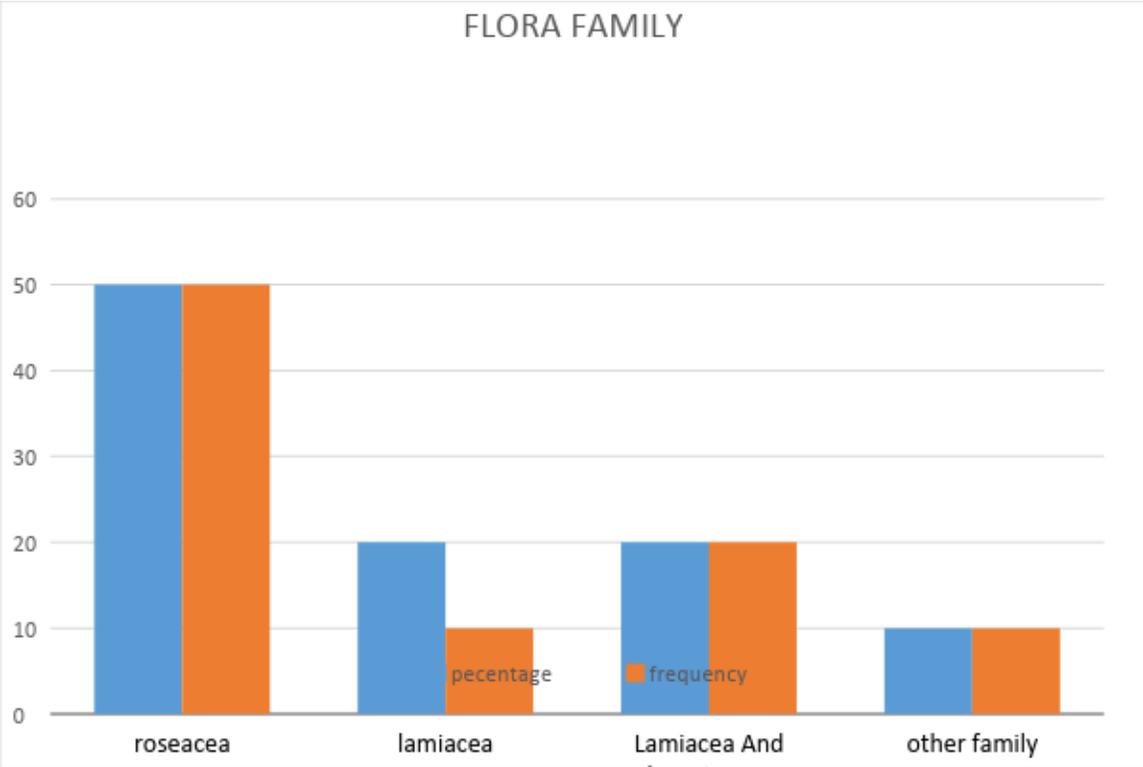
f = Total Frequencies      n = No. of Observation

## RESULTS AND DISCUSSION

The area vegetation is mainly divided in two green sectors Forest sector and Agriculture sector. The forest vegetation are further divide into olive-white oak forest, blue pine-black forest, fir, spruce forest and alpine flora. While agriculture sector mainly focused on Agronomy and Horticulture. The main crops of the study area are Wheat, Maize and at small scale rice also sow there. Vegetables like *Brassica rapa* (turnip), *Solanum tuberosum*(Potato), *Lycopersicon esculentum* (Tomato), *Allium cepa*(Onion), *Cucurbita maxima*(Pumpkin), *Momordica charantia*(Bitter gourd) *Abelmoschus esculentus* (Okra), *Luffa acutangula*(Ridge Gourd), *Raphanus sativus* (Radish), *Daucus carota*(Carrot), *Brassica*, *Spinacia oleracea*(Spinach) trifolium etc are also cultivated and people are take keep interest in off season vegetation like *Solanum tuberosum* (Potato), *Brassica rapa*(Turnip), *Brassica oleracea*(gobi). Fruit orchard are the main source of income of the study area and *Prunus persica* (peach) ,*Prunus domestica* (plum), *prunus armeniaca*(apricot), *Diospyrus lotus* (persimmons) *Prunus avium*(cherry) orchard are there while in disperse open spaces of the lands are full with *Juglans regia*(walnuts), *Pyrus communis* tango, *Pyrus pyrifolia*(nashpatee).etc.

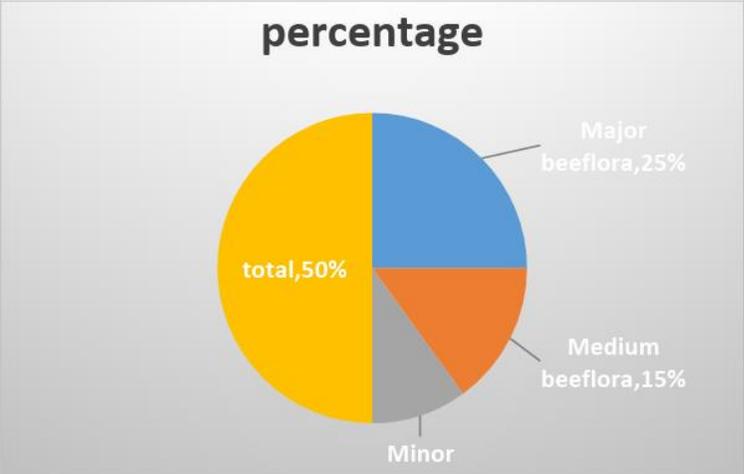
Therefore, honeybee floras of the study area are here by divided in to two types' wild and cultivated plants. Total honeybee floras species of the area are 82 belong to 37 families .out of these plant species 77 are dare dicot while 5 are monocot plant species

The study show that the area have great strength of honey bee flora there are 82 species of honey bee flora are present which belong to 37families. The honey bee collect nectar and pollen from these flora at their different flowering seasons. These honey bee flora are divide into 37 families in which the family Rosacea contain 11 species and second are Lamiaceae which contain 8 species. At third family Barssicaceae and Asteraceae contain 6 species. Fourth Family Polygonaceae contain 5 species, family Apiaceae and Solanaceae contain 4 species. Family Cucurbitaceae and Amaryllidaceae contain only 3 species. Family Hypericaceae, Fumaraceae contain 2 species each and the remaining family contain only one species each.

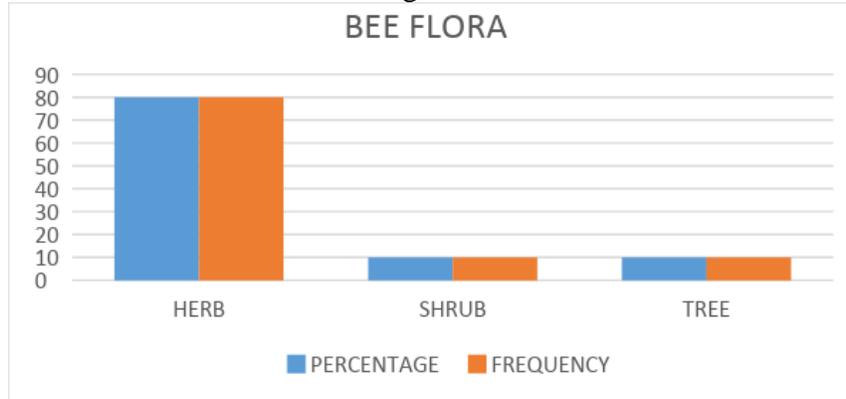


The study area also show that in the area the main honey flow season start from March to august and September to October. The dearth season are November to December.

The respondent of the area told that the honey bee visit most frequently to *Rabdosa rugose* and *zea mays*, *Berberis lyceum Royle* are the major bee flora *Brassica comprestis*, *Zizyphus sativa Prunus domestica Prunus dulcis Pyrus communis* are the medium bee flora and *Nasturtium officinale*, *Fragaria nubicola*, *Eriobotrya japonica Paeonia emodi* are the minor honeybee flora because when the major bee flora are not flowering they visit to these flora and also other flora of the study area.



The current study reveals that the area have great honey bee flora diversity. There were 82(eighty-two) bee flora species belonging to 37 families. In these 82 species 80% honey bee flora are in the form of herbs and the remaining 20% are shrubs and trees.



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