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DISEASES, PESTS AND OTHER NATURAL ENEMIES OF INDIAN HONEY BEE (*Apis cerana* F.) IN KATRAN AREA OF KULLU VALLEY, HIMACHAL PRADESH

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KEYWORDS

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ABSTRACT

Apis cerana colonies are attacked by various pseudoscorpions, ants and birds. An understanding of the incidence periods of different insect pests, diseases, predators and natural enemies on *A. cerana* colonies is essential for developing effective management strategies for a particular hamlet/niche. Therefore, present investigation was carried out to find out the information regarding different insect pests, diseases, predators and natural enemies of *A. cerana* in the apiaries of Regional Horticulture Research Sub-Station of Dr. Y.S. Parmar University of Horticulture and Forestry at Katrain, Kullu, Himachal Pradesh. Fifteen colonies, each on 5-6 frames were selected for the present study. Organisms collected from debris were identified.

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1 Introduction

Beekeeping (*Apis cerana* F.) is a common practice among rural communities in India. Indigenous methods of keeping bee colonies in log and wall hives are still common in Himachal Pradesh. There was a serious blow to beekeeping with *A. cerana* due to epidemic of Thai sac brood disease in 1984-85, which killed more than 95 per cent of the colonies in the state (Rana, 1987). So far over the world, 18 viruses have been found to infect honey bees. Out of these, Thai sac brood virus and *Apis* iridescent virus have been found to cause heavy losses to bee industry in India (Abrol, 1993). Further, endoparasitic mite, *Acarapis woodi* Rennie was first found on *A. cerana* colonies in Katrain area of Himachal Pradesh (Singh, 1957). Different species of predatory wasps have also been reported to attack *A. cerana* colonies in India (Painkra, 2018). The greater wax moth, *Galleria mellonella* is also reported to be a serious pest of *A. cerana indica* in hives and stores (Adlakha & Sharma, 1975). Different pseudoscorpions (*Ellingsenius indicus*) ants (*Camponotus compressus*, *Dorylus labiams* and *Monomorium* spp.) and birds also attack *Apis cerana* colonies (Gulati & Kaushik, 2004).

Management strategies for specific ecological zone can be developed through the understanding of incidence periods of different insect pests, diseases, predators and natural enemies on *A. cerana* colonies. The present study was therefore undertaken at Katrain area of Kullu valley in Himachal Pradesh and aimed at the recording of different insect pests, predators and other natural enemies attacking *A. cerana* colonies.

2 Materials and Methods

The present investigations were carried out at Regional Horticulture Research Sub-Station of Dr. Y.S. Parmar University of Horticulture and Forestry at Katrain, Kullu (Himachal Pradesh)

situated at 32.1°N and 77.2°E longitude with altitude of 1473 m amsl. Fifteen colonies, each on 5-6 frames were selected for the present study. Samples of honeybees consisting of larvae, pupae, adults as well as hive debris were collected on monthly basis throughout the study year 2011-12 for the presence of diseases and pests. Organisms collected from debris were identified. Records on the presence of wax moth, pseudoscorpions and ants in the colony were maintained. Observations on activity of predatory wasps and birds were also recorded in the apiary. Thai sac disease was identified from the symptoms prevalent in the colonies (Rana, 1987).

3 Results and Discussion

Results of present study have been presented in table 1. As per the results of present study, colonies were found severely infected with Thai sac brood disease during the whole year. The disease was apparent during August to October months and again in March to July months. During the whole period, 10 colonies absconded due to the disease. Further, colonies and adults were also carefully inspected for the presence of ectoparasitic mites. Adult bees were observed microscopically for the presence of tracheal mite (endoparasitic mite). During whole of the year no parasitic mites were reported in *A. cerana* colonies. Along with virus and mites, presence of the wax moth larvae (*Galleria mellonella*) were also reported in the colonies in the months of August – September and February to March months and again during June to July months. Results are in agreement with the findings of Brar et al., (1985) and Gupta (1987), those who found peak activity of wax moths during June to November while Viraktamatha (1989) recorded the peak population during May to August, which coincided with dearth period in South India. Similarly, Adlakha & Sharma (1975) have also reported *Galleria mellonella* as a serious pest of *A. cerana indica* in hives and stores. Incidence of Pseudoscorpion, *Ellingsenius indicus*

Table 1 : Incidence of various diseases, pests, predators and natural enemies of *A. cerana* F. at Katrain (District Kullu)

Category	Disease/ enemy	Causative agent/ common name	Months of incidence (2011)											
			Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.
Microorganisms	Thai Sac brood	Virus	+	+	+	0	0	0	0	+	+	+	+	+
Moths	<i>Galleria mellonella</i> L.	Greater wax moth	+	+	0	0	0	0	+	+	0	0	+	+
Wasps	<i>Vespa auraria</i> Smith	Predatory wasp	+	+	+	+	0	0	0	+	+	+	+	+
Pseudoscorpion	<i>Ellingsenius indicus</i> Chamberlain		+	0	+	+	0	0	+	+	+	+	+	+
Ants (<i>Camponotus compressus</i> , <i>Dorylus labiams</i>)			+	+	+	+	0	0	0	0	+	+	+	+
Birds	<i>Dicrurus</i> sp.	Predatory bird	+	+	+	0	0	0	0	0	+	+	+	+

Here + Present; - Absent

Chamberlain was observed in colonies during October and November and then during February – August months. Ants were observed in the colonies for most part of the year.

The only wasp species attacking the *A. cerana* colonies in Katrain area during the period of observations was *Vespa auraria*. Its attack was reported during the months of August to November and again during March to July months. Abrol & Kakroo (1998) have reported five species of wasps attacking *A. cerana* colonies viz. *V. orientalis*, *V. cincta*, *V. velutina*, *V. magnifica*, and *V. mandarina*.

Predatory bird, *Dicrurus sp* was found attacking the foraging bees during August – October and then April – July months. Garg & Kashyap (1998) have also enlisted *Dicrurus adsimilis* attacking the honeybees. Painkra (2018) have also analyzed the status of different natural enemies which include Greater Wax moth, wasps, ants, lizard, Chameleon and bears during the months August to May.

Conflicts of interest

No conflicts of interests are declared by authors for the contents in this manuscript.

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