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First report of *Trilocho* (= *Ocinara*) *varians* and its natural enemies on *Ficus* spp. from Haryana, India

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Abstract

The occurrence of *Trilocho varians* (Bombycidae: Lepidoptera) larvae damaging the leaves of *Ficus religiosa*, *Ficus infectoria*, *Ficus benjamina*, *Ficus elastica* and *Ficus benghalensis* is reported for the first time from Hisar, Haryana. *T. varians* larvae caused 80-90 per cent defoliation in *Ficus* spp., trees. Information on morphology of different life stages of *T. varians* is highlighted in this report. The larvae and pupae were parasitized by ichneumonid wasps, *Encospilus* sp. and *Goryphus* sp. respectively. Further studies on *T. varians* biology, management, host range and natural enemies associated with it is necessary to avoid future outbreak.

Keywords: *Trilocho varians*, *Ficus* sp. ichneumonid wasps, defoliation, life stages

1. Introduction

The genus *Ficus*, commonly known as Figs, belongs to the family Moraceae. It constitutes an important group of trees with immense medicinal value [7, 10] and some of them are grown for landscaping purposes. *Trilocho varians* is an important pest responsible for the defoliation of *F. microcarpa* [8]. *T. varians* is widely distributed in South and Southeast Asia. Its occurrence has been reported from India, Nepal, Vietnam, Thailand, Myanmar, southern China, Sumatra, Java, and Taiwan [12]. The larvae feed on leaves of plants belonging to the genus *Ficus* (Rosales: Moraceae) [12], and assuming important pest status on ornamental and roadside *Ficus* trees, such as *F. benjamina* and *F. microcarpa*. The early instar larvae damage leaves, twigs and tender tips of the plant and make the leaves transparent. The late instars completely defoliate the trees and degrade the aesthetic value of the gardens. This is the first report of *T. varians* on *F. religiosa*, *F. infectoria*, *F. benjamina*, *F. elastica* and *F. benghalensis* in this region (Hisar). Earlier, *T. varians* has been reported as pest of *F. elastica* in Karnataka [11] and *F. religiosa* in Tamil Nadu [9].

2. Materials and Methods

During a survey to catalogue the insect pests of forest trees conducted during January, 2011 to November, 2012 at Hisar (Haryana) (latitude 30.30°N, longitude 74.60 °E), the leaves of *F. religiosa*, *F. infectoria*, *F. benjamina*, *F. elastica* and *F. benghalensis* were found to be infested by leaf eating larvae. These larvae were reared under laboratory conditions and emerged adults were collected and identified by the experts by using taxonomic keys and further studies on the different life stages of the pest was carried out by utilizing the laboratory reared adults by using natural host plants.

3. Result and Discussion

The adults emerged from reared larvae were identified as *Trilocho* (= *Ocinara*) *varians* Walker (Order: Lepidoptera; Family: Bombycidae; Subfamily: Bombycinae; Genus: *Trilocho*; Species: *varians* (F.Walker); Synonyms: *Naprepa varians* Walker, 1855; *Chazena velata* Walker, 1869) [5].

T. varians larvae caused 80 to 90 per cent of defoliation in *F. religiosa*, *F. infectoria*, *F. benjamina*, *F. elastica* and *F. benghalensis*. Heavy infestation was observed during May to December at the study site. Different life stages of *T. varians* along with the damage symptoms are presented in figure 1. The ichneumonid wasps, *Encospilus* sp. and *Goryphus* sp. (Hymenoptera: Ichneumonidae) emerged from larvae and pupae of field collected

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T. varians (Figure 2). These wasps may helpful in the natural regulation of the pest population in a forest ecosystem.

Eggs of *T. varians* were round and cake like in shape and laid in a line touching each other; the touching end of the egg was shorter and flattened. The freshly laid eggs were pale yellow in colour (Figure 1). However, the eggs turned black 24 hours before hatching. Similar observations with respect to egg shape and colour were made by Rajavel and Shanthy [9] and Daimon *et al.* [11].

The newly emerged larvae were brown in colour. However, after 24 hours the colour of larvae changed to greyish white up to fourth instar larvae. The colour of fifth instar larvae changed to dull brown colour with greyish stripes. A purple brown, double, dorsal hump, with black crescent was present on second and fifth abdominal segments. A short and fleshy horn was present on eighth abdominal segment. The last instar larvae resembled young branches of *Ficus* spp., making them difficult to locate. Early instars had longer horn than the final instar. Almost similar description has been given by other workers [1, 2, 5, 9].

Pupation was usually observed in boat-shaped cocoon, closely woven, white or yellow silken cocoon, with silky outworks. They were typically spun on the leaves. Similar observations were made by Rajavel and Shanthy [9] and Daimon *et al.* [11].

Head, thorax and abdomen of adults were pale or dark red-brown (Figure 1). Forewing was pale reddish brown or

greyish; two antemedial curved waved lines; a pale streak on the disc ocellulars surrounded by dark patch; two postmedial curved and waved lines somewhat far apart; a darker patch on the outer margin below the apex; the costal edge pale; cilia dark red-brown. Hind wing was pale or red-brown, or greyish with the outer area red-brown; a postmedial indistinct line; inner area pale, with some dark-red strigae crossing it [4].

In the male genitalia the uncus was undivided, the valves small, curved, tapering. The eighth tergite was elongate, simple and the eighth sternite bilobed posteriorly with a pair of long processes anteriorly. In the female genitalia the ring of the eighth segment was narrow but complete; the apophyses of the ovipositor lobes were very long while those of eighth segment short. There was no signum in the bursa [5].

Jia and Jinxin [6] reported seven generations of *O. varians* each year on *F. retusa*. They further reported that the egg, larva, pupa and adult stage lasts for 4-8 days, 11-15 days, 3-17 days and 5-16 days, respectively. Each female lays 155-251 eggs. Hai-Ying *et al.* [3] concluded that *Trichogramma pretiosum*, *T. euproctidis*, *T. dendrolimi* are potential egg parasitoids of *Ocinara varians*. Udayagiri [11] reported that eggs and pupae of *T. varians* were parasitized by the *Telenomus* sp. and ichneumonid, *Listrognathus listrognathus spinifrons*.

Further studies on *T. varians* biology, management, host range and natural enemies associated with it is necessary to avoid future outbreak.

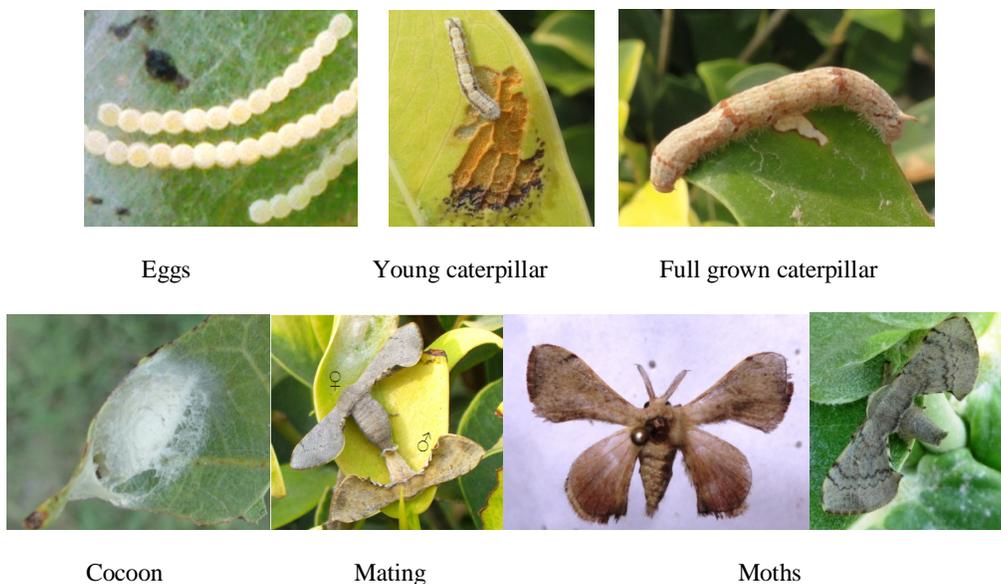


Fig 1: Different life stages of *T. varians*



Fig 2: Ichneumonid wasps

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