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Study on Life cycle of Moth (*Syntomoides imaon)* in the Cachar district, Assam, India

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Abstract

Life cycle of *Syntomoides imaon* was studied from July to August, 2015 in Cachar district of Assam. This species was found during April to late August. *Syntomoides imaon* is a handmaiden moth and completes its life cycle within a period of 46 days. The male moth is attracted by the female with the help of secretion of pheromone. It completed its life cycle through 1st, 2nd, 3rd, 4th and 5th in star larva and cocoon and pupa. Host plants reported for *Syntomoides imaon* in databases are *Vitex* species and *Mulberry* species. During the present study, *Ipomoea cornea* was used as host food plant to see if any variation takes place in their life cycle.

Keywords: Life cycle, *Syntomoides imaon,* Host Plants, Hand maiden moth, Cachar, Assam

Introduction

Insect diversity has occupied an important place on national agenda as it is concerned with the integral aspect of human life (Ramamurthy and Ghai 1993). The tribe Syntomini contains seven genera namely, *Syntomoides*, *Syntomis*, *Callitomis*, *Tricheta*, *Psichote*, *Naclia* and *Euchromia* (Hampson 1892). From India, 75 species have been described out of which 72 species have been described by Hampson (1892). In past, *Syntomides* have been studied by Pandharbale and Sathe (2001), Gadekar *et al.* (1990), Sathe (1998), Sathe and Pandharbale (2004, 2008), etc. As in other taxa of the moth, knowledge about immature stages of this genus is lacking and there are no descriptions of their life cycle. Wild larval ecological traits are also unknown for *Syntomoides imaon*. In this paper, we have described the life cycle and larval stages for *Syntomoides imaon*. We also report a new host plant for this species. Other host plants reported for *Syntomoides imaon* in Hosts databases are *Vitex* species and *Mulberry* species (Sathe 2014).

Taxonomic position

Phyllum -------- Arthropoda
Class --------- Insecta
Order ------ Lepidoptera (Butterfly, Moths, Skipper)
Family -------- Arctiidae
Subfamily ------ Syntomini
Genus ---------- Syntomoides
Species -------- imaon
Scientific name ------ *Syntomoides imaon*

Descriptive features

The adult moth is medium in size with a wingspan of about 1.2 inches (3 cm). General colouration is black with 7 white blocks (Sixes are bigger and almost in same size, whereas only one is dot like) in each forewing and hind wing sub apical patch. The forewings are larger than the hind wings and therefore, hind wings are remained covered by the forewings. The abdomen of both male and female has two yellow coloured bands: Frons and collar yellow. The male individual is slender and long and the female individual is stout and short. The most commonly observed stage of the caterpillar is third stage. During the third stage of caterpillar it becomes black with same coloured hairy stripes. The length of the third instar larvae is about 1.5 cm. The full grown caterpillars are about 1.2 inches (3 cm) long

Materials and method

Study site: The study was carried out in Dargakona village of Cachar district (Fig. 1). Geographical location of the district lies between 92°24' E and 93°15'E longitude and 24°22' N and 25° 8' N latitude. The total geographical area of the district is 3,786 Sq. Km.

Life cycle: *Syntomoides imaon* is a handmaiden moth and can be picked up easily with hand. One female *Syntomoides imaon* species is only picked up with hand and kept in a net covering chamber on the morning (within 7AM - 8 AM). Next morning on the same time almost 7-11 AM, the male *Syntomoides imaon* species came and were flying around the net chamber in which female moth is kept. It happens due to the pheromone secretion of the female one to attract the male to copulate. Five male species are picked up with hand and kept in the chamber with the female. Only one male individual copulated with the female one.

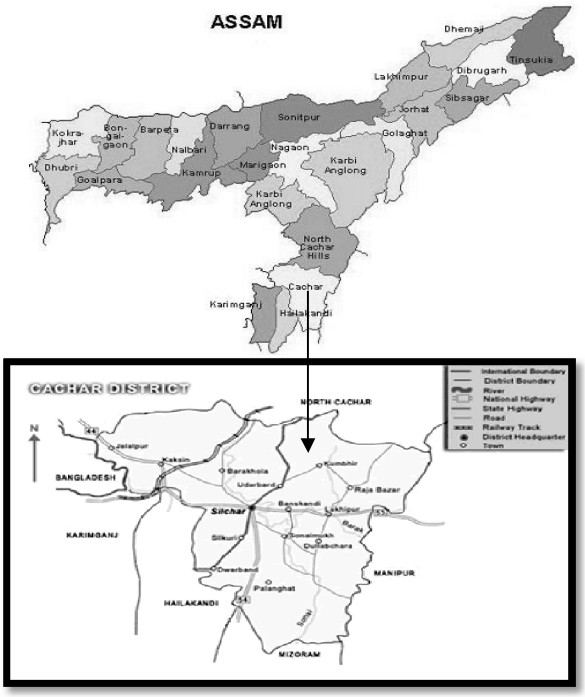

Fig.1 Map of Cachar district showing the study site

Results and Discussion

During the study period, photographic documentation from mating through emerging period was made and the time duration of successive stages is given in Table 1. The *Syntomoides imaon* moth completes its life cycle within 46 days (Fig. 2).

A total number of 156 eggs were laid by the female. Eggs hatched days after ovipositor at any time of day twelve. Larval stage lasted 12 to 14 days and pupae ended their development 10 to 11 days later. Instar duration was between five and three days for immature larvae and or three days, two days, two days for 3rd, 4th and 5th instar larvae respectively. There were differences in larval stage duration: 1st, 2nd and 3rd instar lasted longer than 4th and 5th instar larva (Fig. 3).

Table1: Stage wise time duration of Life cycle of Moth

Stages of cycle		Duration
1.	Copulation	24 hours
2.	Egg laying	After 48 hours of copulation
3.	Egg hatching	12 days
4.	First instar	5 days
5.	Second instar	2 days
6.	Third instar	3 days
7.	Fourth instar	2 days
8.	Fifth instar	2 days
9.	Cocoon	6 days
10.	Pupa, 1st stage	7 days
11.	Matured pupa	3 days
12.	Adult or imago	11th day of pupa (1 day)
	Total	**46 days**

Immature Stages

Eggs: are spherical, the transparent and shiny eggshell gives a pearly appearance. There is no color change during development.

First instar larvae: minimum length 0.5 cm and maximum length 0.7 cm. Body color was ivory, almost white. Setae present in the larvae is also same colour with the body. Head is creamy, and has one white spot.

Second instar larvae: minimum length 0.9 cm and maximum length 1.1cm.There were no significant color changes from first instar in this or next stages. One white spot is present in the head.

Third instar larvae: minimum length 1.3 cm and maximum length 1.5 cm. Body colour turns to blackish. The colour of the setae also turns to black. The head contains three white spots.

Fourth instar larvae: minimum length 2.2 cm and maximum length 2.4 cm. Body covered with black setae. Two white spot present in the head.

Fifth instar larvae: maximum length is about 3cm. Body covered with black setae. Legs and prolegs have black tiny setae. One white line is present in the head.

Pupae: Enclosed in a thin, walled, and black cocoon. Pupae's length is about 2 cm and width is 1.3 cm. abdominal segments with punctures moderately dense on dorsal part. Newly formed pupae's colour is creamy white up to 7 days which became reddish remain up to 3 days. On the eleventh day of pupae the imago emerged out.

Host and food plants: The food plant for the adult is used *Hibiscus rosasinensis* flower. But during mating period they did not take food. *Ipomoea cornea* was used for the larva as their food and host plant. Larvae fed with *Vitex negundo* spent most of the time walking all over the plant; they did not eat the leaves and died of starvation.

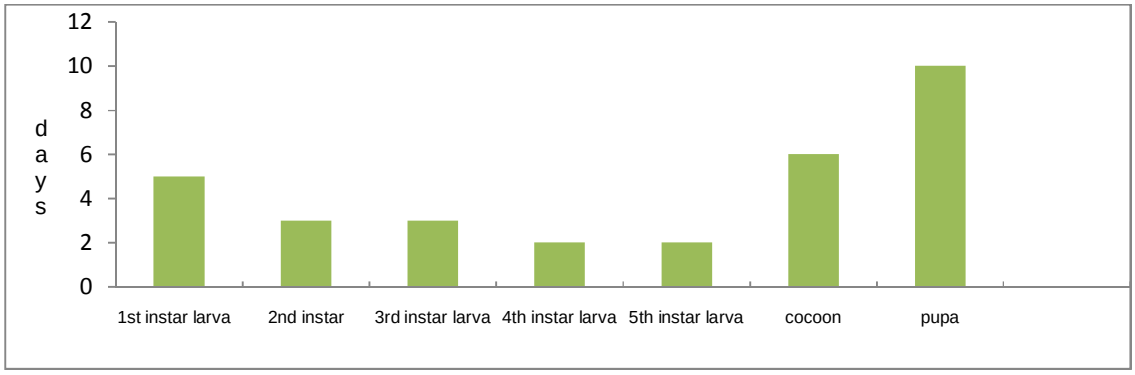

Fig.2 Graph showing stage wise time duration of Life cycle of Moth

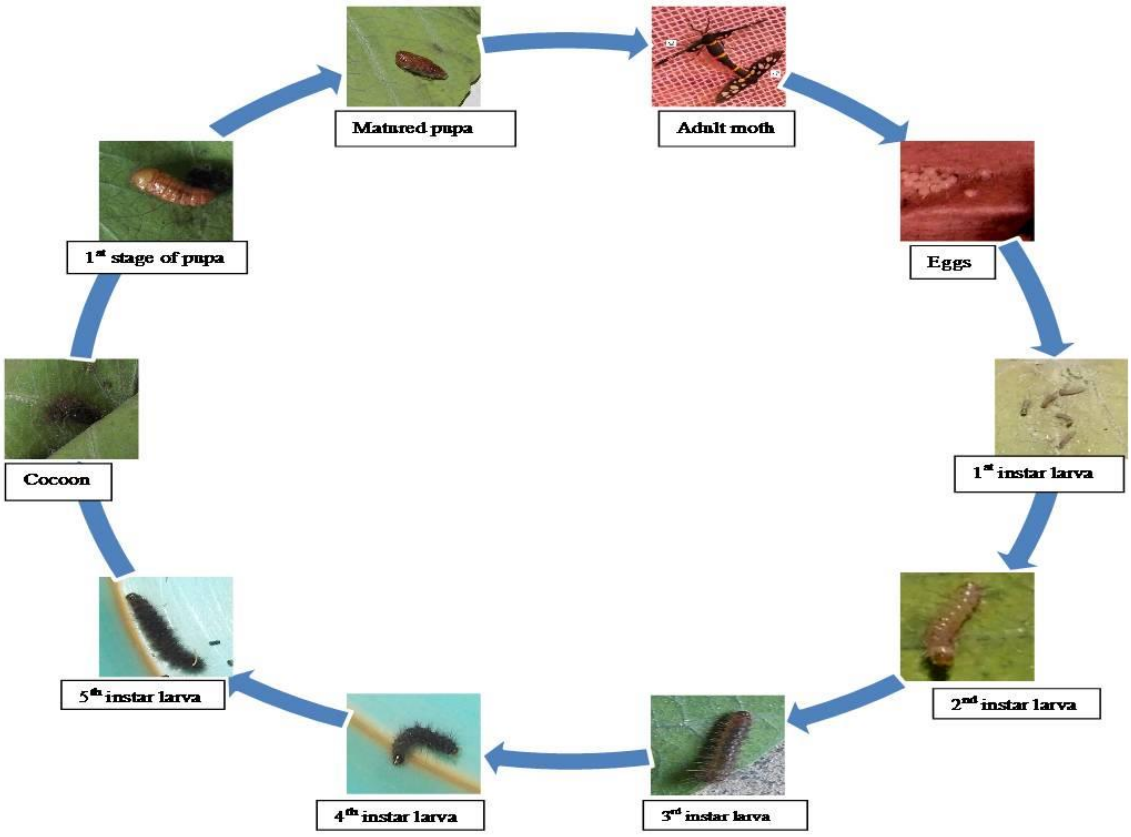

Fig.3 Life cycle of *Syntomoides imaon*

Acknowledgements

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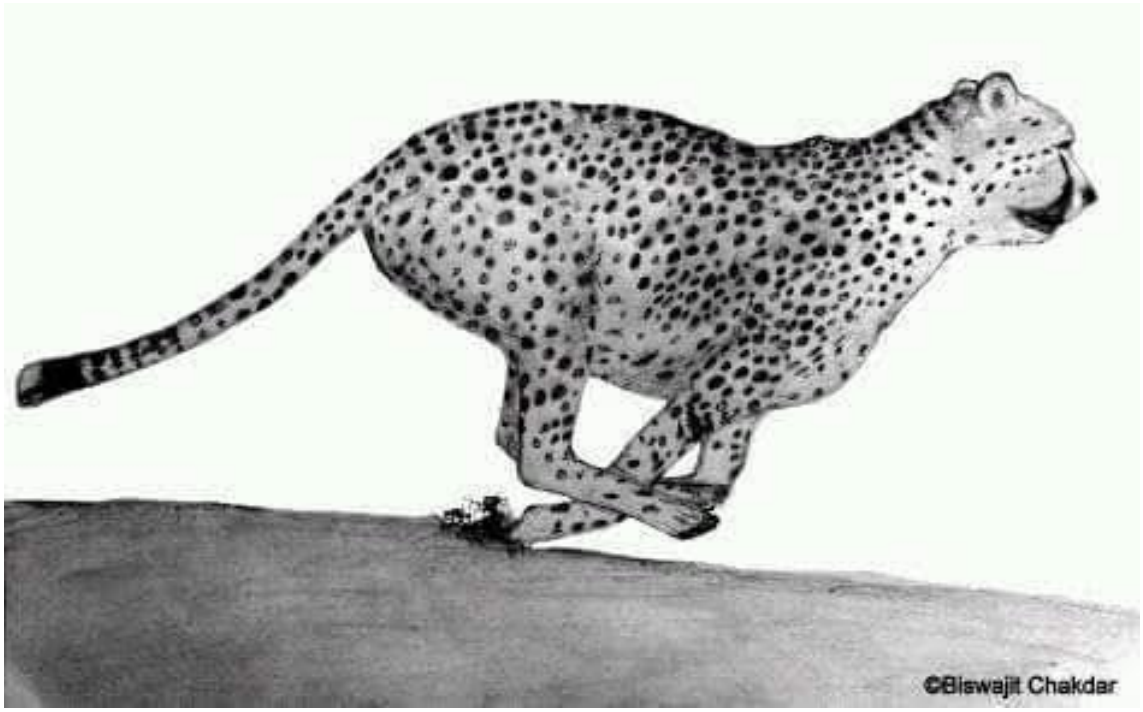

Race

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