



OCCURRENCE OF A LEPIDOPTERAN SPECIES *SAMIA CYNTHIA* DRURY ON PRIMARY HOST PLANT SPECIES *LITSEA MONOPETALA* ROXB. OF MUGA SILKWORM IN DISTRICT BAGESHWAR, UTTARAKHAND, INDIA

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Abstract

The present study deals with the occurrence of wild silkworm *Samia cynthia* Drury on nature grown one of the primary host plant species *Litsea monopetala* Roxb. of muga silkworm species *Antheraea assamensis* Helfer, which is exclusively cultivated in Assam for production of precious muga silk fibre in India only in the world. The detailed biology of insect was carried out on nature grown host plant under natural weather in District Bageshwar of State Uttarakhand, India. The incidence of the wild silk moth recorded during onset of winter at an altitude of 3000ft. The larval period on an average recorded 30 days. The spun cocoons were in tan-brown colour and the average cocoon weight for male and female was recorded 1.5g and 1.92g, respectively.

Key words : *Samia cynthia* Drury, silkworm, host and spin.

Introduction

A large number of wild silkworm species belong to the family Saturniidae. This family has great economic importance as it consist a large number of wild silk producing species. Presently, around eighty wild silk producing species feed on various host plants have been reported (Jolly *et al.*, 1975). Among them three species *i.e.* *Antheraea paphia* L. (Indian Tasar moth), *A. assamensis* Helfer (Indian Muga moth) and *Samia cynthia* Drury (Indian Eri moth) are being exploited for producing commercially valued silk production.

S. cynthia Drury of Saturniinae is native to China, where its caterpillars feed on the Tree of Heaven, *Ailanthus altissima* and very closely related to *Samia ricini*, the Eri silkworm. Apart from the aforesaid host plant species of the insect other plant species *i.e.* *Ailanthus* sp., *Aithaea rosea* Cav., *Apium graveolans* L., *Azadirachta indica* A. Juss., *Berberis* sp., *Carica papaya* L. etc have also been reported as host of the insect in the world.

Under the present communication as new host plant, *Litsea monopetala* Roxb. (Syn. *Litsea polyantha* Juss.) is recorded for *S. cynthia* (Drury) in Bageshwar (Uttarakhand), India.

District Bageshwar is located at 29°51' N latitude and 79°46' E longitude with an elevation of at 800 AMSL in state Uttarakhand and consists varied topography with high mountain peaks, ridges and river valleys with an altitude ranging from 800 to 6,000 m. The area covers all weather conditions like tropical, sub-tropical, sub-temperate and temperate. Because of this district has affluent flora and fauna and several wild silkworm species are found abundantly in the forest areas of the Distt.

In the present study, insect biology of *S. cynthia* Drury on its new host *L. monopetala* Roxb. has been carried out.

Earlier work

There are number of studies have been reported on seri-biodiversity and their wide potential as a source of natural silk in Indian subcontinent (Arora and Gupta, 1979; Thangavelu, 1991; Nassig *et al.*, 1996; Chinnaswamy,

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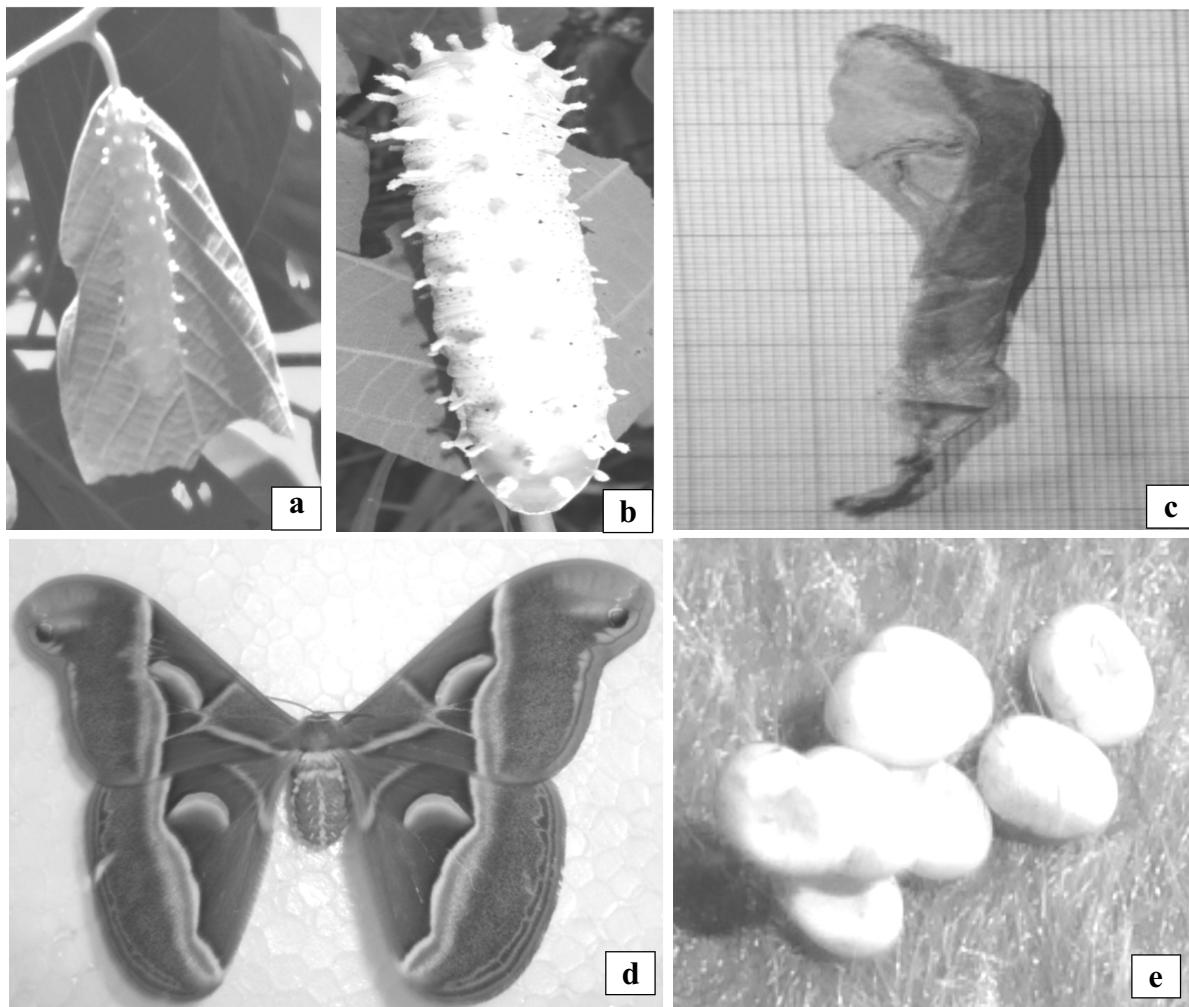


Fig. 1 : Biology of insect *Samiya cynthia* Drury.

- (a) Insect larva feeding on *L. monopetala* Roxb. leaves
- (c) Cocoon
- (e) Laid eggs

- (b) Mature larva
- (d) Female moth

2001; Thangavelu *et al.*, 2002; Srivastava and Thangavelu, 2005). Jolly *et al.* (1975) recorded approximately 80 species in Asia and Africa producing silk of commercial importance. Arora and Gupta (1979) enlisted nearly 40 species in India alone.

Materials and Methods

The larvae of the insect species were brushed on the host plant and reared under net cover in open weather till maturation and further cocooning of the worms. The spun cocoons were collected and kept indoor weather conditions for emergence, coupling and oviposition. The observations in respect of biology of the insect were recorded.

Results and Discussion

The wild silkworm *Samia cynthia* (Drury), a member of Saturniidae family (Subfamily : Saturniinae) belonging

to order Lepidoptera is commonly known as *Ailanthus* silkworm is univoltine and polyphagous in nature as it covers one crop cycle.

The morphometrics of different stages of the insects have been depicted (figs. 1a-e).

Eggs

Eggs are white creamish in colour, laid in rows of 10 to 20 on leaves and measures around 1×1 mm in size. Hatching takes 7–10 days.

Larvae

The newly-hatched, 4 mm long larvae consume part of their egg shells. At this stage they are mainly yellow with black-tipped, conical tubercles, black legs and a black head, which is carried almost horizontal. The body bears longitudinal rows of black spots. In the second instar, the body colour becomes paler with the cervical shield

reduced to a pair of black stripes. In the third instar, the head becomes retractile, the body pale yellow, the dorsal and dorso-lateral tubercles white. These tubercles loose their black tips but little black areas appear on the anal claspers and flap. By the fourth instar the head become pale brown, the yellowish-green body becomes covered with a white, powdery bloom, and the legs turn chrome yellow. In the final instar some of the body ridges become bluish and the head greenish. Under the powdery bloom, the body is a pale bluish-green.

Cocoons

Cocoon is spun on the leaves and its peduncle is attached to the main petiole of a leaf of the host. Its colour is brown to tan brown with a long peduncle at anterior end.

Moth

The *Samia cynthia* moth has a brown wing color in different shades of brown and has a beautiful purple stripe along the wings. They also have yellow spots and lines on the wings. At the tip of the wings is a small eye-spot meant to distract predators. The body of the moth is white with brown stripes. The wingspan of the moth is up to 15 cm.

Adults

Females prepare to mate in the evening or night after emerging in late morning. Adult flight is during May and June, as one generation.

Adult Biology

Most adults emerge in the late morning, with females calling that same night, or even during late afternoon. Pairing usually takes place just after sunset and lasts for up to 12 hours. Thereafter, the female deposits eggs on the underside of the host plants leaves.

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