



Survey and morphological study of Vanya Silk moths in the forest of district Bageshwar of Uttarakhand

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ABSTRACT

The present study deals with the diversity of wild silk moths in the forests of District Bageshwar, Uttarakhand. As the forests of the District Bageshwar cover tropical to temperate forest plant species in which sericigenous insects are found profusely. In connection of wild moth collection, a periodical survey was conducted during the year 2012-13, which revealed availability of three species viz, *Actias selene* Hubner, *Antheraea assama* Westwood and *Samia cynthia* (Drury) from Lepidoptera: Saturniidae found in the forest of District Bageshwar, Uttarakhand.

1. Introduction

Sericulture is an agro-based industry. Basically, the major activities of sericulture comprises of cultivation of host-plant to feed the silkworms during rearing which spin silk cocoons and further, reeling the cocoons for unwinding the silk filament for value added benefits such as processing and weaving. Non-mulberry silk moths are wild or semi domesticated fauna which produce fabulous silks. Seri-biodiversity means the variability in sericigenous or silk producing moths and their host plants. There are number of references regarding seri-biodiversity and their wide potential as a source of natural silk in Indian subcontinent (Thangavelu, 1991; Nassig *et al.* 1996; Chinnaswamy, 2001; Thangavelu *et al.*, 2002; Srivastava and Thangavelu, 2005). Arora and Gupta (1979) enlisted nearly 40 species in India alone. Jolly *et al.* (1975) recorded approximately 80 species in Asia and Africa producing silk of commercial importance. The family Saturniidae contains around 1500 species of which in Indian subcontinent may comprises nearly 50 species (Nassig *et al.*, 1996). Saturniidae is the largest family of Bombycoidea with about 1861 species of

162 genera and 9 subfamilies. Regier *et al.* (2008) stated that the family Saturniidae includes some of the largest and most beautiful species of all Lepidoptera are univoltine to multivoltine as per existing weather. The paper deals with diversity of wild silk moth in the forest of District Bageshwar, Uttarakhand.

2. Material and Method

The present survey pertaining in search of wild silkworm was carried out in Bageshwar located at 29°51'N 79°46'E/29.85°N 79.77°E and bordering Tibet in east, and the Great Himalayas in North. The District itself has an average elevation of 1,004 meters (3,294 feet) and at 800 AMSL with the varied topography while areas located at the boundaries are positioned at the elevation of 6000 meter. It occupies a distinct diversified ecosystem. In this connection a regular survey was made in different areas in block Kapkot in Bageshwar, Uttarakhand during year 2012-13 and collected four specimens through conventional method i.e., net and identified with available literature (Hampson, 1894).

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3. Results and Discussions

The present study revealed all 3 species of silk moths namely *Actias selene* Hubner, *Antheraea assama* Westwood and *Samia cynthia*(Drury)for the purpose of identification of the concerned material the morphological studies were carried out as mentioned hereunder:



Diagnostic characters:

Actias selene Hubner

Common name: Moon moth or Lunar moth

Host plant:*Machilus bombycina* King.

The male and female moth exhibit distinct sexual dimorphism. The male bears forewings with sharp curve at the tips, broader antennae and narrow abdomen while female bears blunt curve, light green body, narrow antennae broad abdomen. Head, thorax, and abdomen white; palpi pink, prothorax with a dark pink band; legs pink. Fore wing very pale green, white at base; a dark pink costal fascia, darkest along subcostal vein: an outwardly-oblique pale yellow antemedial line ; two inwardly-oblique slightly curved submarginal lines; a pale yellow marginal band; a dark red-brown lunule at end of cell, with a grey line on it, bounding inwardly a round ochreous spot with pinkish centre. Hind wing similar to the fore wing; the central portion of the tail pinkish. Female: The outer margin less excised and waved; the yellow markings less developed; the antemedial line of fore wing nearer the base and that on hind wing absent; the tail less pink. The mean male and female moth length, width with wing and weight was recorded as 2.05, 8.42cm, 1.86 g and 3.08, 10.60 cm, 2.30 g respectively.



Antheraea assama Westwood

Common name: Muga moth

Host plant: *Machilus bombycina* King.&*Litsaea polyantha* Juss.

The male and female moth exhibit distinct sexual dimorphism. The male bears forewings with sharp curve at the tips, dark brown body, broader antennae and narrow abdomen



while female bears blunt curve, light brown body, narrow antennae broad abdomen. In the male moth, the tips of the forewings exhibit a sharp curve, which is easily distinguishable from that of the female. The wings and the body of male moth are darker brown, whereas in the female these are light brown. The antennae of the male moths are broader than those of the females. The abdomen of the male is narrow but that of the female is broader. The male and female moth length, width and weight were recorded as 3.25 cm, 11.48 cm, 1.40 g and 4.24 cm, 13.68 cm, 3.14 g respectively.



Samia Cynthia (Drury)

Common name : Alianthus or Eri moth

Host plant : *Litsaea polyantha* Juss. (New host plant)

The *Samia cynthia* moth has frontal tuft pale-brown, antennal pale-brown. Collar with white fringe with whitish scales. Thorax pale-brown. Fore wing yellowish brown. Antemedial line directed outwards from costa to vein then inwards and terminating at inner margin, outline by black predominantly on the outer side, sending short and white spurs along veins, sometimes touching the postmedial lines. 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 and weight 1.3 g.

Remarks - Most economically important non-mulberry silk moth.

The results of the present study are more or less consistent with Chowdhary (1983) and Thangavelu (1991) who recorded 10 and 9 sericigenous species respectively. Since long back Ministry of Environment and Forest, Government of India is also boosting the forest dwellers to undertake 'Vanya Silk Cultivation' to uplift their socio-economic status by utilizing the natural flora as well as fauna wealth available in the forest. The study carried out may play crucial role in rearing of vanya silk moths for commercial exploitation by utilizing natural resources and to uplift socio-economic status of forest dwellers as well as sustainable development with conservation. The efforts made towards survey of vanya silk moths would not only be help for vanya silk production through rearing but also make a new eco-friendly sustainable occupation to the rural mass residing in far-flung areas in the forest of the state Uttarakhand.

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