



## One new variety (*kolhapurensis*) of *Antheraea mylitta* from India

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**ABSTRACT :** A new variety of *Antheraea mylitta* var. *kolhapurensis* is reported for the first time from India. Biosystematics of the new variety is given in the paper. The characters fore wing curvature, ocellus, cocoon and genitalia are different than that of closely related 44 ecoraces of *Anthearea mylitta*.

**Keywords :** *Anthearea mylitta* var. *kolhapurensis*, description, India.

### INTRODUCTION

Tasar sericulture needs new breakthrough from the view point of either new hybrids or new variety/race/species which would be rearable indoor and can obtain more than 90 per cent rearing success. At present, the success of rearing of tasar silkworm is about 30-40 per cent. Hence, new ecoraces are to be investigated from nature. In past, Hampson (1976), Sathe & Pandharbale (1991, 2004, 2008), etc, studied taxonomy of moths from India. Other taxonomical workers related to genitalia of tasar moths refer to Zander (1903), Pierce (1909-1943), Sondgrass (1935), Viette (1948), Sen and Jolly (1967, 1971), etc, while, ecoraces of *A.mylitta* have been studied by Thangavelu (1992), Alam et.al (1993), Narasimhanna (1998), Akai (1998), Satpathy & Rao (2003), Mohan Rao et.al (2004), Kirsur & Krishna Rao (2003), Shankar Rao et.al (2004), Rout et.al (2003), Mitra & Moon (2009) etc. Up to date 44 ecoraces have been reported from India (Srivastava et.al, 2003).

### MATERIAL AND METHODS

For taxonomical studies silkmths have been collected from the fields of western Maharashtra at 15 days interval from May to January. The moths collected have been preserved in the laboratory by pinning and drying in the insect box. Taxonomical observations have been made on head, thorax, abdomen and their appendages. Measurements were taken with the help of ocular meter. Cocoons collected / reared have been characterized with respect to cocoon weight, shell weight, shell ratio, cocoon length, cocoon width, peduncle length, ring diameter, filament length and filament shade.

### Preparation of genitalia

For preparation of genitalia, the hind portion of the abdomen of male moth beyond 6<sup>th</sup> segment was separated out, boiled in 5 per cent KOH solution for about 30 min and then kept over- night in the same solution. This resulted in the removal of muscles and partial bleaching of chitinous parts. KOH was neutralized by acetic acid treatment for about 30 min. The material being very big, examination of the unstained specimens in thick Canada balsum on slides

under dissecting microscope was helpful in studying the genitalia. In describing the genitalia the terminology adopted was the same that of Sondgrass (1935), Sen & Jolly (1971).

### RESULTS AND DISCUSSION

#### *Antheraea mylitta* var. *kolhapurensis*

**Male:** 33 mm long, 9 mm broad, yellowish brown dorsally, brown ventrally, antenna light brown, bipectinate expect a five apical segment, 17.4 mm long, 7.1mm broad, 37 segmented, fore leg 21.7 mm long, wing expanse 144mm (Fig.1). Head 3mm long, 5 mm broad, brown dorsally, ventrally grey; eyes rounded, large, light brown in colour, ocular distance 15 mm; proboscis vestigial; antenna 17.4 mm long, terminally bifurcated, yellowish brown, scape 1 mm long, pedice l 0.40 mm long, flagellum 16 mm long; labial palpi upturned, three segmented, brownish. **Thorax**-11mm long, 8 mm broad, dark brownish dorsally, grey ventrally, prothrox, meso and metathorax brown with brown scales, scales 0.20 mm long and 0.15 mm broad. **Fore wing**-69 mm long, 50 mm broad, area of the fore wing is about 1380 mm<sup>2</sup>, costal region of wing is ash grey in colour; postmedian line is pink with a white line on its border; antemedian line is dark brown and is bordered on the inside with a white line; oblique line brown with a indistinct faint white inner border; ventrally, pink, grey scales; antemedial line indistinct; medial line indistinct. Post medial line indistinct, margin in both wings brown. Ocellus 73mm<sup>2</sup>, with a hyaline area 27 mm<sup>2</sup>, median cross vein convex, anterior outer line reddish pink, anterior inner line white, anterior half dove grey, posterior, outer line black. Hyaline area oval; wing scales are generally conical and bristle like with up to nine spines of different lengths. Curvature of fore wing hook like. **Hind wing**- 40mm long, 45 mm broad, area of hind wing 945 mm<sup>2</sup>, area of ocellus 57 mm<sup>2</sup>, area of hyaline spot 6 mm<sup>2</sup>, hyaline area oval shaped, antemedian line is dark brown, oblique line absent.

**Fore leg**- 21.7 mm long, 1.6 mm broad , brown coloured; coxa 2.8 mm long; trochanter 1.0 mm long; femur 5.80 mm long; tibia 7.0 mm long; tibial spur absent; tarsus 4.5 mm long, five segmented; claw 0.60 mm long, curved, dark brown.

**Abdomen**-19 mm long, 9 mm broad, dorsally brownish, densely covered with brownish scales on dorsal, ventral and lateral sides. **Genitalia**-(Fig.2) Uncus bifid, sparsely set with setae on the dorsal side, apex nothched, down curved, hook like median dorsal process, chitinised ending into teeth on each side; Vinculum very short, entering into a short and bulbus saccus; Harpes hinged to the lateral sides of vinculum, trilobed, first lobes muscular and flexible bearing numerous hairs; dorsolateral lobe chitinous and bears three spines of distal extremity; Tegumen broder in the middle, narrow at the both ends, apically the end produced into a flattened process, latter broadened at its end; Anellus very strong, chitinised, circular, anal opening chitinised into an almost quadrate plate and Aedeagus long, narrow (Fig.3), basal part shorter than apical part, latter denticulate in its distal on third part, ventrally produced into a bow shaped plate.



Fig. 1. *Antheraea mylitta* var. *kolhapurensis* (male)



Fig. 2. Genitalia of *Antheraea mylitta* var. *kolhapurensis*

Fig. 3. Aedeagus of *Antheraea mylitta* var. *kolhapurensis*.

**Cocoon** : Light yellow in colour, oval shaped with filament texture golden yellow.

1) Cocoon weight (gm) : 9.35; Shell weight (gm) : 1.40; Shell ratio (%) : 14.97; Cocoon length (cm) : 3.6; Cocoon width (cm) : 2.3; Peduncle length (cm) : 3.6; Peduncle width (mm) : 15; Peduncle weight (mg) : 0.1; Ring diameter (mm) : 4; Filament length (mts) : 265.40; Reeled weight (gm) : 0.47; Denier : 15.92.

**Host plants** : Ber (*Ziziphus jujuba* Gaertn ), Arjun (*Terminalia arjuna* W&A) and Desi badam (*Terminalia cattapa* Linn ).

**Holotype** : Male, India, Maharashtra, Hatkanangle, Coll. 8-VI-2007, R.P. Kavane, fore leg, antenna, on card sheet, body and other parts pinned in insect box, labeled as above.

**Paratype** : 28 females : 14males, sex ratio (m:f) 1:2, Coll. Western Maharashtra, R.P Kavane, from May to December.

#### Distribution record

Western maharashtra, Hatkanangle Ramling 03-VII-2008; 3♀, 1♂, Panhala 12-IV-2007; 3♀, 1♂, Radhangari 23-VII-2007; 3♀, 1♂, Patan 12-IV-2007; 3♀, 2♂, Anuskara 12-IV-2007; 2♀, 1♂, Atigre 2-IV-2007; 3♀, 1♂, Dehu- alandi 28-IV-2008; 3♀, 1♂, Kokrud 12-IV-2007; 2♀, 4♂, Malkapur 12-IV-2007; 2♀, 1♂, Amba 12-IV-2007; 2♀, 1♂.

#### Remarks

Review of literature indicates that the present form runs close to *Antheraea mylitta* ecorace Sarihan by having following characters (Sinha, 1998 and Mohanty, 2003): Cocoon weight; Shell weight; Silk ratio and Denier.

However, it differs from above ecorace by having following characters: Cocoon weight 9.35 gm; Shell weight 1.40 gm; Silk ratio 14.97; Denier 15.92; Morphological characters : Hook like forewing curvature, Medial cross vein convex and strong, Ocellus colour and radius, Genitalia shape and size.

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