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Cover: A bag worm with its beautiful heap of junk. Acrylics on 300 GSM paper by Dupati Poojitha based on a picture by Sanjay Molur.

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SHORT COMMUNICATION

Rediscovery of the gypsy moth *Lymantria kanara* Collenette, 1951 (Insecta: Lepidoptera: Erebidae) from Kerala, India, after 73 years and its taxonomic redescription

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Abstract: The species, *Lymantria kanara* Collenette, 1951, belonging to the family Erebidae, subfamily Lymantriinae, is a rare taxon considered to be endemic to southern India. Here, we provide information on the recently rediscovered *L. kanara* from Kerala, India, after a 73-year hiatus. Prior to this study, all published research on this taxon was based on catalogues or the type specimens housed in museums with scanty descriptions. Hence, this study provides a detailed taxonomic description of an adult male and its genitalia, to easily identify the species.

Keywords: Agricultural crops, bipectinate antenna, broad sacculus, light trap, Lymantriinae, Lymantriini, male genitalia, Palakkad, rare species, Singappara forest, southern India.

Lymantriinae is one of the enigmatic subfamilies of the family Erebidae due to various reasons such as sexual dimorphism, interspecific variations, and geographical variations. Another important reason for the complexity of the subfamily is that many species are insufficiently illustrated with only a small number of specimens in museum collections. This is a species-rich subfamily in spite of a smaller number of genera (Schintlmeister 2004). Many species of this subfamily are predators of various agricultural crops (Swafvan & Sureshan 2022). This group of moths was earlier placed in the family Lymantriidae, which was then relegated to the subfamily status by Zahiri et al. (2012) based on a molecular and phylogenetic study. Hübner (1819) established the genus *Lymantria*, using *Phalaena monacha* Linnaeus as the type species. It is believed to be distributed in Asia, North America, Africa, and the Indo-Australian tropics, with a higher concentration of species from the Indo-Australian tropics (Holloway 1999). Hampson listed 18 *Lymantria* species from British India including Ceylon and Burma (Hampson [1893]). This genus is currently a member of the subfamily Lymantriinae and tribe Lymantriini. Globally, there are about 167 species grouped into 12 subgenera, i.e., *Porthetria*, *Papuatria*, *Lymantria*, *Beatria*, *Nyctria*, *Syntria*, *Pantria*, *Collentria*, *Spinotria*, *Sarantria*, *Griveaudtria*, and *Pyramocera*. Four species, i.e., *Lymantria nussi* Schintlmeister, *L. vinacea* Moore, *L. todara* Moore, and *L. kanara* Collenette, are listed as endemic to southern India (Schintlmeister 2004). The lectotype of *L. todara*, designated by Gupta (1984), was collected from southern India. Later, reports of *L. todara* from Maharashtra and Goa have been recorded based on the Moths of India website (Sondhi et al. 2024). *Lymantria nussi*, described by Schintlmeister (2004), was distributed in three states: Kerala, Tamil Nadu, and Karnataka. The holotype of the species *L. vinacea* was designated from southern India. However,

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further studies on this species are not available. The species, *L. kanara,* was first described by Collenette (1951) from Kanara, southern India (Kanara was referred to for the western coastal plains of present-day Uttara Kannada and Dakshina Kannada at the time of British India). There is no record of the species after the original description by Collenette (1951).

Schintlmeister (2004), while reviewing the genus *Lymantria*, examined the type repositories and based on the genitalia study, placed numerous *Lymantria* species under a new subgenus, *Collentria*, with *Lymantria grisea* as the type species. This subgenus includes only seven species, viz., *L. grisea* Moore, 1879; *L. cryptochloea* Collenette, 1932; *L. barlowi* Schintlmeister, 1994; *L. caliginosa* Collenette, 1933; *L. fumida* Butler, 1877; *L. fergusoni* Schintlmeister, 2004 and *L. kanara* Collenette, 1951. The species, *L. kanara* has been rediscovered after 73 years in Kerala, India. Hence, a detailed taxonomic redescription of the adult male, along with male genitalia characters is also provided in this paper. This study represents the only record of the species apart from the holotype designated by Collenette (1951).

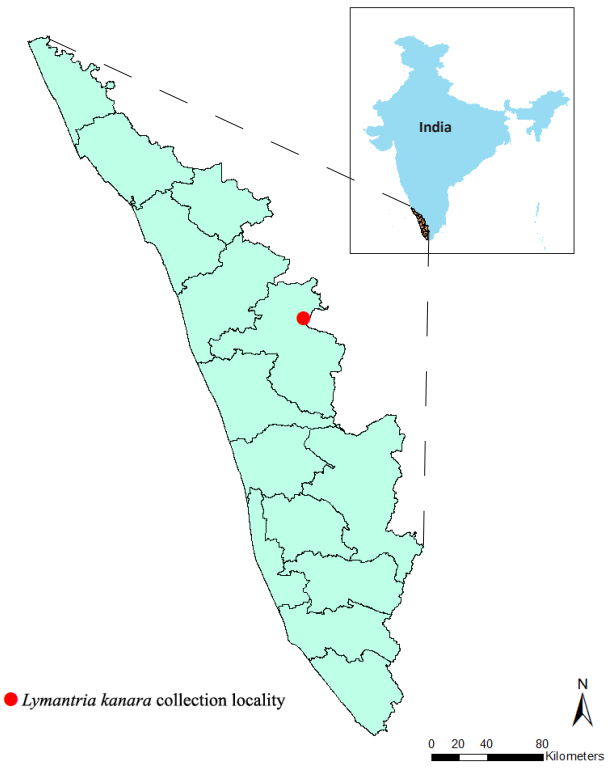

Figure 1. Collection site of *Lymantria kanara* in Kerala, India.

Materials and Methods

The adult male specimen was collected from the Singappara forest range (Collection permit no. KFDHQ-3342/2023-CWW/WL10), Palakkad District, Kerala on the 29 February 2024 (10.975 ^{0}N, 76.642 ^{0}E) (Figure 1). The collection was done using the light sheet trap method. The collected specimen was pinned, dried, labeled, and deposited in the insect collection of Entomo Taxonomy Lab (ETL), Christ College (Autonomous), Irinjalakuda, Thrissur, Kerala. Genitalia preparation follows the method of Robinson (1976). The genitalia was examined under the Labomed Luxeo 4D stereozoom microscope and identified based on the original description by Schintlmeister (2004). The ArcGIS software version 10.8. was used to generate the specimen collection locality map. The terminology followed for morphological description is based on Hampson ([1893]), Holloway (1999), and Schintlmeister (2004).

Results

Systematic status
Superfamily: Noctuoidea Latreille
Family: Erebidae Leach, 1815
Subfamily: Lymantriinae Hampson, 1893
Tribe: Lymantriini Hampson, 1893
Genus: *Lymantria* Hübner, 1819
Subgenus: *Collentria* Schintlmeister, 2004
Type Species: *Lymantria kanara* Collenette, 1951

Lymantria kanara Collenette, 1951

Holotype: Southern India, Kanara, in British Museum of Natural History, London

Lymantria kanara Collenette, 1951. Some new species of Lymantriidae in the British Museum (Natural History) Ann. Mag. Nat. Hist. (12) 4 (46).

Material examined: 1 Male, India, Kerala, Singappara, Palakkad District, 10.975 ^{0}N, 76.642 ^{0}E; 960 m; 29-ii-2024; Adarsh P.K., CZR1000.

Redescription of Male (Image 1): Wing expanse 3.5 cm. Forewing length 1.6 cm. Head small, ochreous brown, frons and vertex, dark brown; ridge between vertex and collar white; collar dark brown; tegula with white and grey hairs; eyes smooth and black; palpi stout, clothed with brown and grey hairs, palpi dark brown near to compound eyes; third segment of palpi upright and comparatively large; proboscis well developed; antennae brown with long and thick bipectinations with pinkish hairs at base; abdomen covered with pale pinkish hairs and without lateral black-brown spots; fore legs and mid legs densely covered with light brown hairs except tarsus; hind leg with two pairs of

Image 1. Habitus of male *Lymantria kanara* (CZR1000). © ET Lab, Zoology Department, Christ College.

tibial spurs and comparatively with less hairs; forewing short and broad, apex rounded, outer margin (termen) elongated, inner margin (dorsum) short; ground colour brownish with two distinct black spots on tornus and discal area; costa with eight distinct black patches, 4th medial and 5th antemedial black patches comparatively large and prominent; area between medial costal marking, antemedial costal marking and the discal spot relatively dense with black scales; an obscure basal and sub-basal wavy blackish band present, subterminal and terminal wavy blackish bands well defined; termen with alternative clusters of black and greyish hairs from apex to tornus area; hindwing ground color pale grey with black shade towards terminal area, anal margin densely haired with pinkish tinge, cilia whitish-grey. Underside without bands, markings on costa and outer margin intact, base of costal margin with few pinkish hairs; forewing vein Cu1, M3 and M2 arising close to lower angle of cell and M1 from below upper angle, radial veins (R1, R2, R3 and R4) stalked; hindwing Cu1, M3 and M2 arising close to lower angle of cell, M2 and R from upper angle.

Male genitalia (Image 2): Small and stout structure. Uncus well sclerotized and pointed at tip, minute hairs present on lateral side; tegumen with a spine-like process pointing towards valvae ventrally; valvae coalesced, basal part (sacullus) moderately sclerotized and broad with two major dorsal and ventral processes distally; dorsal digitiform process with pointed end relatively longer than the spine-like processes on tegumen; ventral process broad at the base, distally tapering towards one side with a hooked tip; small lateral ridge near the base of valvae possess longer hairs pointing posteriorly; vinculum elongated; saccus 'v' shaped; aedeagus short, stout and slightly curved without spines.

Discussion

Lymantria kanara can be easily distinguished from other congeners by the presence of long and dense brown bipectinate antennae. The presence of distinct black spots on the tornus and discal area is another striking, distinctive character. Broad and strong sacculus is the unique male genitalia character of *L. kanara*. *Lymantria kanara* can be easily differentiated from other endemic species by the following features: a) an extensive black area is present in the post-basal and post-medial region of costa in *L. nussi* which is absent in *L. canara*; b) forewing of *L. todara* is pure white with prominent black markings and with yellowish-white abdomen; in *L. kanara* forewing is not pure white with black markings and abdomen is covered with pale pinkish hairs. Based on the data available, the known distribution of *L. kanara* can be more precisely stated as Karnataka and Tamil Nadu (Schintlmeister 2004). Through this study, Kerala is added as a new distribution record for this rare species.

Image 2. Male genitalia of *Lymantria kanara*. © ET Lab, Zoology Department, Christ College.

Conclusion

After 73 years, the species *L. kanara* has been rediscovered, and recorded for the first time in the state of Kerala, India. All published information on this species before this study was based on Collenette's original research or type specimens deposited in museums with minimal annotations. Therefore, this work presents a thorough taxonomic redescription of the adult male along with characteristics of its genitalia. This study is the sole known account of the species outside of the type designated by Collenette in 1951.

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