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NOTE

FIRST RECORDS OF THE GHOST MOTH GENUS *PALPIFER* HAMPSON, [1893] (LEPIDOPTERA: HEPIALIDAE) FROM THE INDIAN SUBCONTINENT SOUTH OF THE HIMALAYA

Siyad A. Karim & John R. Grehan

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**FIRST RECORDS OF THE GHOST MOTH
GENUS *PALPIFER* HAMPSON, [1893]
(LEPIDOPTERA: HEPIALIDAE) FROM THE
INDIAN SUBCONTINENT SOUTH OF THE HIMALAYA**

Siyad A. Karim¹  & John R. Grehan² 

¹ Simi Manzil, Vettipuram Road, Pathanamthitta, Kerala 689645, India.

² Research Associate, McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, 3215 Hull Rd, Gainesville, FL 32611, USA.

¹ siyadhakarim10@gmail.com,

² calabar.John@gmail.com (corresponding author)

Ghost moths are distributed over most of the world where suitable habitats are present and the family is globally represented by about 77 genera and 600 species. The family is of general phylogenetic interest because it is the largest of the families basal to many of the more diverse and derived lepidopteran lineages (Regier et al. 2015). The global geographic diversity of Hepialidae is concentrated in the general regions of central and South America, Australasia, and eastern Asia. The Indian subcontinent and Sri Lanka have a smaller diversity of only three genera – *Endoclita*, *Palpifer*, and *Hepialiscus* with about 26 species. These genera are also widespread across other parts of eastern Asia (Grehan 2011). Within India, the most geographically restricted genus is *Hepialiscus*, which is not recorded outside the Himalaya or its immediate vicinity (Grehan & Ismavel 2017). The most well-known genus is *Endoclita*, which comprises larger-bodied moths and species in India. There are at least seven species of *Endoclita* known from the Western Ghats, one from Sri Lanka, and a further 11

species from northern India, mostly in the northeast (Grehan & Mielke 2017; Grehan & Ismavel 2017). It is very likely that further species of *Endoclita* remain to be described as other distinct specimens from southeastern India have been reported to JRG.

In contrast to the widespread occurrence of *Endoclita*, records for Indian and Sri Lankan *Palpifer* have previously been limited to five species along the Himalayan region and a single species from Sri Lanka (Hampson 1893, 1896; Grehan & Ismavel 2017). This is a surprising distributional gap since much of western and southern India supports forested areas that would seem to provide suitable habitat. It is likely that this distributional gap represents a collecting artifact as the moths are small (wingspan less than about 33mm) and lack prominent wing markings. *Palpifer* species are also rarely reported as agricultural pests. This expectation of a collecting gap was recently demonstrated for southeastern Asia with the description of two new species from Malaysia and northern Laos, respectively. And some locality records for the distribution range of *Palpifer* are limited to personal communications or photographic records only (Grehan & Mielke 2019).

The new record of *Palpifer* in subcontinental India was made of a live individual (Image 1) that flew into a house on 21 March 2017. This occurred in a residential area interspersed with trees and shrubs and located about 10–12 km from the nearest forests. SAK photographed the moth at about 22.00h under conditions of light rain, which is typical for collecting many hepialids. Pathanamthitta is located on the lower slopes of the Pandalam Hills that



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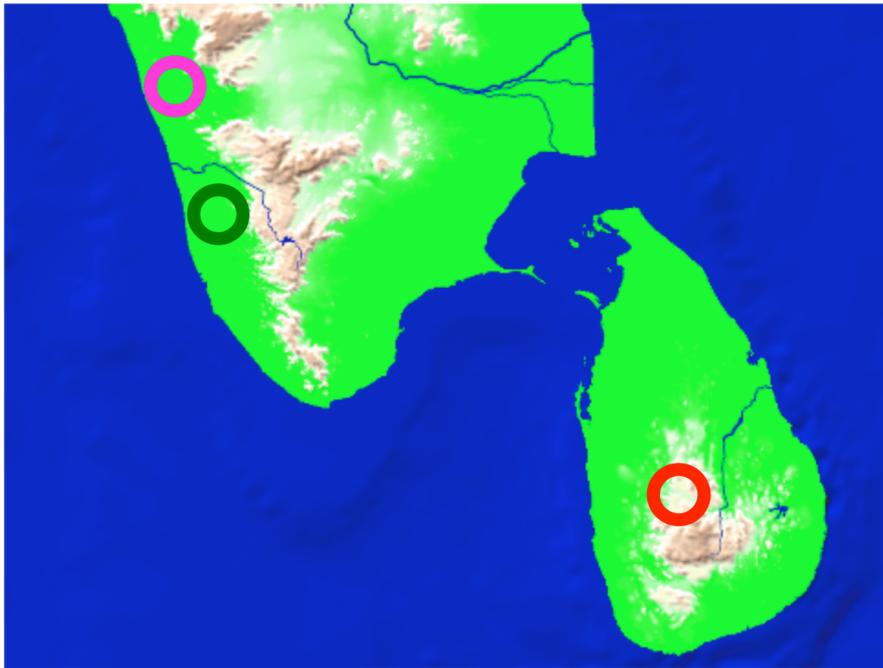


Figure 1. Distribution records for *Palpifer* in southern India and Sri Lanka: *Palpifer* sp. at Pathanamthitta (green circle) and Thumboor (crimson circle) and *P. taprobanus* at Wattedgama (red circle).



Image 1. *Palpifer* sp. at Pathanamthitta, Kerala. © Siyad Karim, 21 March 2017.



Image 2. *Palpifer* sp. at Thumboor, Kerala. © Rison Thumboor, 01 December 2017.

form part of southern Western Ghats, a region that includes the Ranni Forest Division and Konni Forest Division that is the state's first reserve forest. The forests mostly comprise evergreen, semi evergreen and moist deciduous trees. Rubber and teak plantations are also very common. There are many species (mostly odonates and ants) newly described from these reserves.

Identification of the moth as a species of *Palpifer* was confirmed by the diagnostic dark chocolate brown forewings, the large white basal spot and a dark spot at the center of the posterior wing margin (Grehan & Mielke 2019). Another notable feature of the live specimen is the dorsal arching of the posterior abdomen, which might only occur in males. This behavior occurs to some extent

in various other resting Hepialidae, but is particularly noticeable in *Palpifer* (Grehan & Mielke 2019). This record also came to public attention in *The Hindu* newspaper (<https://www.thehindu.com/news/national/kerala/student-stumbles-upon-new-moth-species/article26156090.ece>)

Two other *Palpifer* live individuals have also since been observed in Kerala State, at Thumboor on 1 December 2017 by Rison Thumboor (pers. comm. 06 December 2017) (Image 2), and at Elanthoor in January 2018 by Mebin Varghese (pers. comm. 29 January 2018). The Elanthoor record is located within an area of residential housing interspersed with forested patches while Thumboor also includes a mixture of farmland, housing,

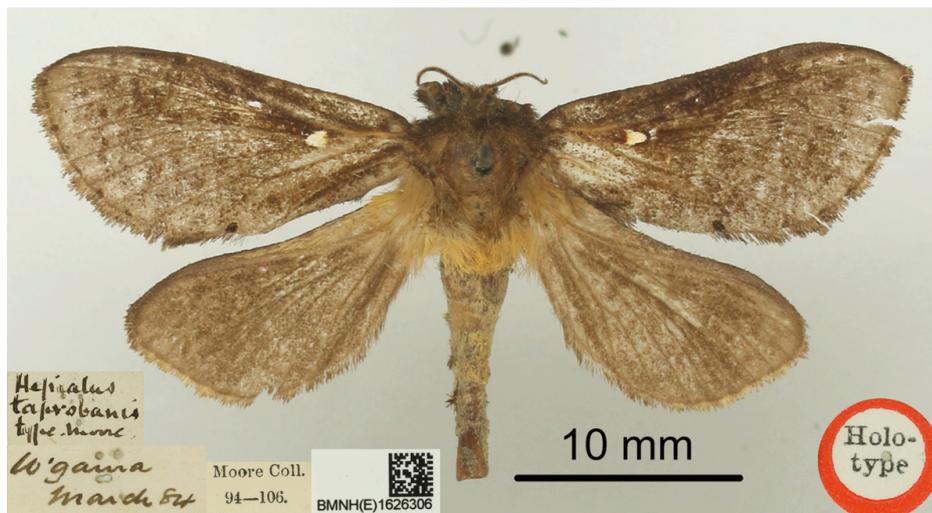


Image 3. Holotype of *Palpifer taprobanus*, Sri Lanka. (© Natural History Museum, United Kingdom). Photo by David Lees.

and forested patches. These records altogether indicate that *Palpifer* is widespread in Kerala, and likely also to be present across much of the southern Indian continent along the Western Ghats and surrounding lowlands, and perhaps also the Eastern Ghats where suitable habitat is present. The Kerala records also suggest that *Palpifer* is able to persist in residential areas in southern India, at least where adequate vegetation cover is present. Species of *Palpifer* in other parts of Asia appear to all occur in areas with forest climates ranging from tropical (India, Sri Lanka, southeastern Asia) to temperate (northern China, Korea, Japan) (Grehan & Mielke 2019).

The March and December records coincide with the beginning (March) and end (December) of the monsoon season (<https://en.climate-data.org/asia/india/kerala/pathanamthitta-34524/> last accessed 09 March 2019). This periodicity is not surprising for moths where eggs drop to the ground and may not survive excessive or prolonged ground water and flooding although they require high humidity to successfully enclose. The early instars most likely live among plant debris and humus on the surface of the ground before tunneling into the soil to feed on host plant roots as this pattern of development is widespread among Hepialidae (Grehan 1989). It is very possible that *Palpifer* is an unrecognized agricultural pest in southern India. Larvae are subterranean root feeders of monocotyledonous plants and in Java and Japan; they are known to infest the tubers of some food crops (Grehan & Mielke 2019).

Future assessment of the taxonomic status of the Pathanamthitta record would ideally involve collecting specimens and making a detailed morphological comparison with the Sri Lanka species *P. taprobanus* (Moore, 1887) which is currently known from only the

type specimen (Image 3) from Wattedgama (Figure 1). Dr. Krushnamegh Kunte at the National Centre for Biological Sciences, Bengaluru, is interested to receive any future specimens for the purposes of description and naming if the southern Indian *Palpifer* populations prove to represent a new species.

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