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FIRST RECORD IN 129 YEARS OF THE TAMIL TREEBROWN *LETHE DRYPETIS TODARA* MOORE, 1881 (LEPIDOPTERA: NYMPHALIDAE: SATYRINAE) FROM ODISHA, INDIA BY FRUIT-BAITING

Anirban Mahata, Sudheer Kumar Jena & Sharat Kumar Palita

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FIRST RECORD IN 129 YEARS OF THE TAMIL TREEBROWN *LETHE DRYPETIS TODARA* MOORE, 1881 (LEPIDOPTERA: NYMPHALIDAE: SATYRINAE) FROM ODISHA, INDIA BY FRUIT-BAITING

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Abstract: The first record of a butterfly species, the Tamil Treebrown *Lethe drypetis todara* Moore, 1881 (Nymphalidae: Satyrinae) is described from Deomali Hill range of southern Odisha, in Eastern Ghats of India, collected by fruit-baiting. This is the first record from Odisha almost 129 years after its first report from Khurda in coastal Odisha by Taylor & de Niceville in the year 1888. The ecology and sampling of the species are described in this study.

Keywords: Bait trap, butterfly, Eastern Ghats, ecology, Koraput.

The subfamily Satyrinae, with about 2,500 described species, is one of the most diverse groups of butterflies (Peña & Wahlberg 2008), comprising over a third of the Nymphalidae diversity and found on all continents except Antarctica (Ackery et al. 1999; DeVries 2000). The group is particularly diverse in the Neotropics, with approximately 1,200 species in 137 genera (Lamas et al. 2004), occurring in all habitats with vegetation from sea level to the highlands of the Andes (DeVries 1987). Satyrinae butterflies in India are represented by 190 species under five tribes and 18 genera (Varshney & Smetacek 2015) and 30 species in peninsular India (Kunte 2000).

The Tamil Treebrown *Lethe drypetis todara* Moore, 1881, is a butterfly belonging to the subfamily Satyrinae and the family Nymphalidae. The global distribution

of the taxon is Sri Lanka, southern India to Pachmarhi, Kashmir to Assam and Myanmar (Mathew & Soumya 2013). Older literature report it from Sri Lanka to peninsular India (Bingham 1905; Antram 1924), common, widespread and endemic to these regions (Gaonkar 1996). It is locally very common in the low jungles of the Western Ghats and the Nilgiris (Wynter-Blyth 1957). Talbot (1947) reported this species as “not-rare” from peninsular India to Odisha region. Gaonkar (1996) reported it from Kerala, Tamil Nadu, Karnataka, Goa, Gujarat, and Maharashtra. In recent times, it has been reported from Kotagiri in the Nilgiris, the moist-deciduous forests in Biligiriranga Hills and Wyanad, the Nadgani Ghat and Silent Valley (Mathew & Soumya 2013). The species has also been reported from Kalakad-Mundanthurai Tiger Reserve, Tamil Nadu (Devy & Davidar 2001). There are quite a few reports of its occurrence from various parts of southern India particularly from the states of Karnataka (Districts of Chikkamagaluru, Kodagu, Shivamogga, Uttara Kannada, Hassan, Mysore, and Dakshina Kannada), Kerala (Districts of Idukki, Palakkad, Malappuram, Wayanad, and Kozhikode), Maharashtra (Sindhudurg District) and Tamil Nadu (Districts of Theni, Nilgiri, and Dindigul) (Ogale 2019).

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From central India, the species was reported from the Kanger Valley National Park and from Bilaspur, Chhattisgarh (Chandra 2006; Chandra et al. 2007) as well as from Pench Tiger Reserve, Madhya Pradesh (Tiwari et al. 2010). The first record of the Tamil Treebrown in Eastern Ghats is from Maredumilli and Jalatarangini waterfalls of Papikonda National Park in northern Eastern Ghats of Andhra Pradesh (Goswami et al. 2018). The species was recorded from wet riparian vegetation near waterfalls.

The Eastern Ghats hill range of southern Odisha is one of the biodiversity rich areas in Odisha (Dash et al. 2015). Although several studies on butterfly diversity has been carried out in different parts of the Eastern Ghats (Nandi 1987; Nair 2007; Paria et al. 2018), southern Odisha remains poorly explored except for some recent faunal inventories (Mohapatra et al. 2014; Debata et al. 2015; Purohit et al. 2017; De & Palita 2018; Debata & Palita 2018; Mahata et al. 2018). There is, however, no record of this species from Odisha except that of a report on its occurrence from Khurda (Figure 1) by Taylor & de Nicéville (1888), 129 years ago. In the present study, the first record of Tamil Treebrown from Odisha since its last sighting is described from the Deomali Hill range of

southern Odisha, in Eastern Ghats of India, trapped by fruit-baiting.

Materials and Methods

For the past two and half years (September 2015 to March 2018), we have been studying the diversity and distribution of butterflies in different parts of Koraput District. During our surveys, we used the fruit-baiting technique in Deomali Hills (18.644–18.681 °N and 82.968–83.016 °E) to capture nymphalid butterflies (Figure 1). Deomali is the highest peak of Odisha (1,672m). The fauna and flora show marked similarity with high altitude species of the Himalayan and Western Ghats regions. The vegetation of the hill is tropical moist deciduous type. The valleys and slopes are covered with riparian semi-evergreen forests (Image 1), where species like *Diospyros malabarica*, *Mangifera indica*, *Ficus* spp., *Rubus ellipticus*, *Pittosporum wightii*, *Chionanthus ramiflorus*, *Neolitsea cassia*, *Zanthoxylum armatum* and *Zanthoxylum rhetsa* are dominant. The plateau is covered with grassland and meadows with several species of grasses of Poaceae and Cyperaceae families such as *Cyperus leucocephalus*, *Fimbristylis pierotii*, *Arundinella holocoides*, *Themeda mooneyi* and

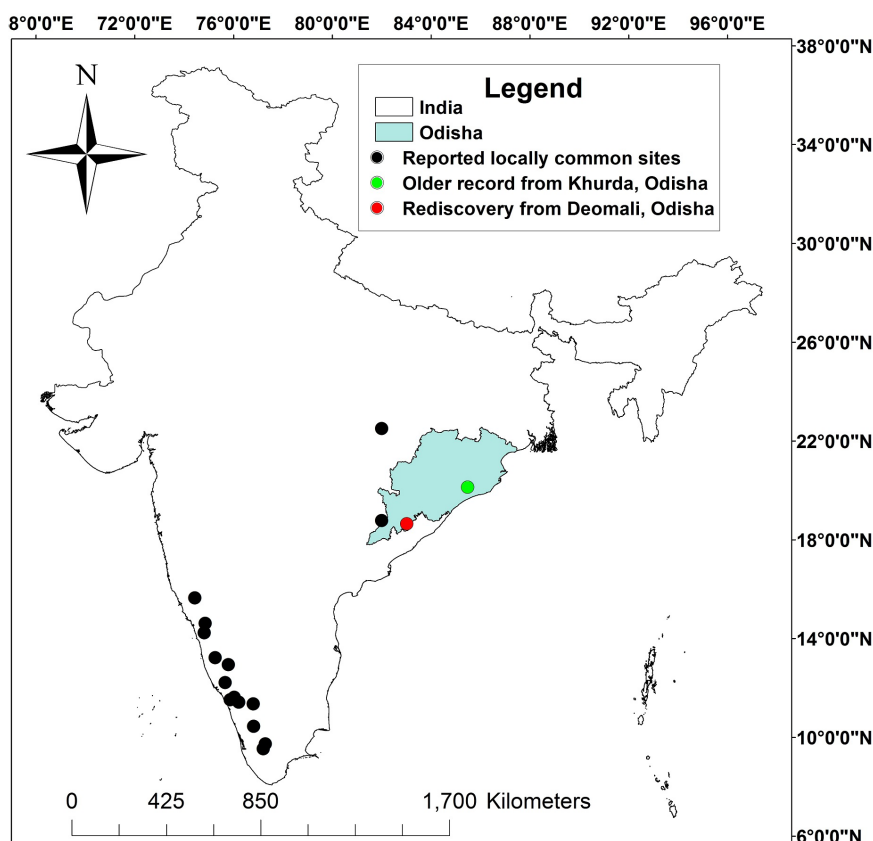


Figure 1. Map showing the distribution of *Lethe drypetis todara* in India and its first record in Odisha from Deomali Hills, Southern Odisha, Eastern Ghats, India.



Figure 2. Placement of butterfly traps on both side of the transect line in three altitudinal bands (800–1,000 m, 1,000–1,200 m and 1,200–1,400 m) at Deomali Hill range, southern Odisha.



Image 1. Habitat of the study sites at Deomali Hill range, southern Odisha, Eastern Ghats, India.

Themeda triandra. Wide varieties of bryophytes (around 43 species) and pteridophytes (45 species) have been recorded from this region (Dash et al. 2015). Bamboo brakes are found in riparian regions of Deomali. Rainfall is heavy and well distributed. It covers an altitudinal range of 800–1,672 m and above 1,400m it is devoid of arboreal species.

Butterfly sampling

Butterfly sampling was carried out by both transect counting and fruit-baiting technique once a month from September 2015 to March 2018 at four different sites. For butterfly trapping, we used a homemade butterfly trap (Shuey 1997) and prepared fruit based bait for capturing Nymphalid butterflies. We placed a total of six



Image 2. Home-made butterfly trap used for baiting of Nymphalidae butterflies in Deomali Hill range, southern Odisha.

traps; two traps each in 200m altitude bands, e.g., 800–1,000 m, 1,000–1,200 m, and 1,200–1,400 m. In each altitude band, two traps were placed at the midpoint of the 500m transect on both sides with a distance of 5m from the midpoint (Figure 2). The base of the trap

was placed one meter above the ground (Image 2). We placed the trap at 16:00h for 24 hours.

Transects and baited traps were placed with the help of GPS (GPSMAP® 64s, Garmin, US). Microclimate parameters, such as temperature, humidity, and wind speed were measured through digital anemometer (AVM-06, HTC, India). Canopy cover was measured through GLAMA application (Lubomír Tichý, Dept. of Botany and Zoology, MU Brno, Czech Republic, 2014–2015), installed in Smart phone (Moto G4 plus, 4th generation, Lenovo, China). The picture of the vegetation was taken by a 16 MP rear inbuilt camera of the smart phone at breast height and analysed by the app (Navarro-Martínez et al. 2017; Mahata et al. 2018). Light intensity was measured by Digital Light meter (LX-103, Lutron, India). Morphological features of the captured Tamil Treebrown (Image 3) were studied after Mathew & Soumya (2013).

Bait preparation

We prepared bait for six traps from the following.

1. Four medium-sized (10–14 cm length and 9–12 cm diameter) overripe bananas were sliced into two centimetres thick pieces and kept in a wide mouth 500ml beaker with a lid.
2. Sugar syrup was prepared with 50g of sugar in 200ml of water in another beaker and was boiled. It was stirred until dissolved.
3. The sugar syrup was added to the wide mouth beaker and to this 10ml of beer (United Breweries, Bangalore, India) was added and stirred.
4. It was left for 24 hours for fermentation.

Results and Discussion

Out of six traps, a male of *Lethe drypetis todara* was captured only in one trap at the GPS location of 18.648°N & 83.009°E on 18.03.2017 at 15:35h at an altitude of 1,296m. Along with this, three Common Bushbrown *Mycalesis perseus*, two individuals of Dark-brand Bushbrown *Mycalesis mineus* and two Bamboo Treebrown *Lethe europa*, all satyrine butterflies, were also captured in the same trap. The trap site was beside

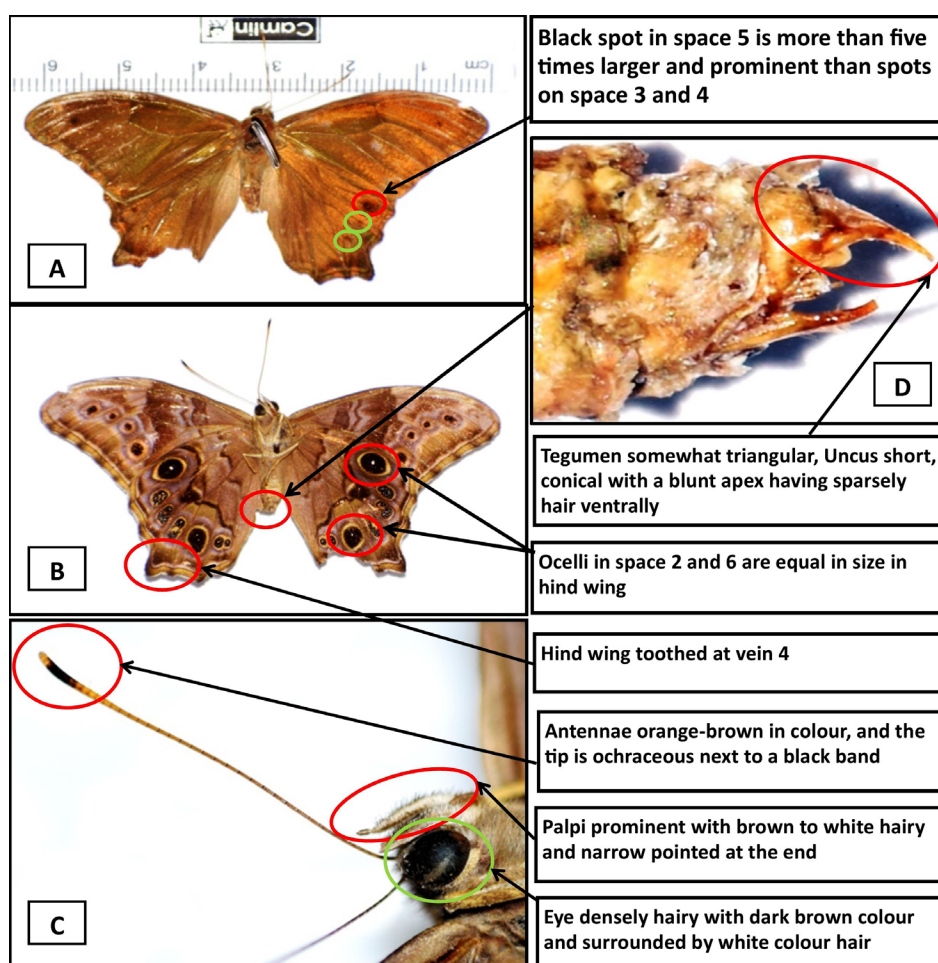


Image 3. *Lethe drypetis todara*. A—upperside view of male | B—underside view of male | C—head with antennae | D—male genitalia lateral view. © Anirban Mahata.

a perennial hill stream and the major vegetation was moist deciduous along with bamboo brakes. It was a sunny day with an average ambient temperature of 32.38°C, relative humidity 35.48%, wind speed 1.98 m/s, light intensity- 899.66 × 100 lux and tree canopy cover of 43.50%.

The Tamil Treebrown is generally found in forests having bamboo brakes on which their larvae develop (Mathew & Soumya 2013). Its larvae feed mostly on bamboos (*Bambusa arundinacea*) (Sevastopulo 1973) but they also seem to feed on other grasses. The eggs are laid singly on the underside of leaves (Mathew & Soumya 2013). In the present study at Deomali in Odisha, Tamil Treebrown was captured through fruit-baiting from riparian regions close to bamboo brakes.

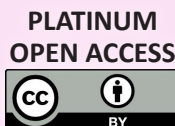
The present report of Tamil Treebrown *Lethe drypetis todara* from Deomali Hills of Koraput after 129 years of its report from Khurda, Odisha in the year 1888, is the first record from Odisha and second from the Eastern Ghats of India in recent times. The earlier recorded locations of this species from Kanger Valley National Park of Chhattisgarh (Chandra 2006) and Papikonda National Park of Andhra Pradesh (Goswami et al. 2018) are geographically close to the current site. Of these locations Papikonda and Deomali are in the northern Eastern Ghats (Figure 1). As an endemic, common and widespread species from Sri Lanka and southern India (Gaonkar 1996), its range has extended from southern India towards Central India (Chandra 2006). The findings of the present study, further connect the distribution link of this species to Odisha (Figure 1). The rediscovery of *Lethe drypetis todara* from Deomali Hills indicates that this species is very habitat specific. We are of the opinion that distribution of this species can be best understood with more sampling studies through fruit-baiting along the Eastern Ghats hill ranges.

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