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A note on the biology, host plants and distriutional record of Goa's state butterfly- *Idea malabarica*

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Abstract

The Malabar tree nymph butterfly, *Idea malabarica* (Moore, 1877) (Nymphalidae: Lepidoptera) was declared as state butterfly of Goa at the fifth Goa bird festival – December 2021 by Government of Goa. This butterfly is familiar for its captivating black and white wing pattern and unique gliding flight hence it is also known "Paperkite". *Idea malabarica* is endemic to the moist evergreen forests of Western Ghats and is categorized as "near threatened" species by International Union for Conservation of Nature (IUCN). It undergoes complete metamorphosis with six week of life period. Five instar larval phase feeds mainly on *Aganosma cymosa,* a species of Apocynaceae family. Losses of habitat and climate change are the major concerns to be dealt for the conservation of butterflies, which are indicators of healthy ecosystem and healthy environment.

Keywords: Malabar tree nymph, Butterfly, Western Ghats, IUCN, climate change

Introduction

Idea malabarica, the Malabar tree nymph is one of the largest milkweed butterfly confined to wet evergreen forests of Indian peninsula. This attractive butterfly is in current news of India because the state government of Goa (India) has declared Malabar tree nymph butterfly as their state butterfly on December 2021. Goa, a tiny state of India with rich biodiversity of different flora and fauna is sandwiched between the Arabian Sea and Western Ghats. Though being the smallest state of the country, Goa has endowed with 215 species of butterflies (Gaude and Janarthanam, 2015). The steps like, the state butterfly status will encourage in developing conservation measures of Malabar tree nymph butterfly in this region as it falls under the "Near Threatened" category of International Union for Conservation of Nature (IUCN). This review article emphasizes on the classification, biology, habit, habitat, host plants and importance of Malabar tree nymph butterfly *I. malabarica*. These studies would be helpful in developing broad approaches for conservation of *I. malabarica* and other butterfly diversity.

Scientific classification of Malabar tree nymph butterfly

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Lepidoptera
Family:	Nymphalidae
Genus:	*Idea*
Species:	*malabarica*
Binomial name:	*Idea malabarica* (Moore, 1877)

Biology

Malabar tree nymph butterfly experiences a holometabolous life cycle consisting of four stages: egg, larva, pupa and adult. The butterflies of genus *Idea* takes around six weeks to complete their life cycle (Cabras et al., 2015).

Egg: Adult butterfly lays oval shaped, white creamy or translucent eggs singly on under surface of the host plant leaves (Figure 1). The cream-colored eggs turn pinkish on the 4th and 5th day when they are about to hatch (Cabras *et al*., 2015). The maximum egg duration may vary according to the season and climatic condition (Evans, 1932).

Larva: The caterpillar (Figure 2) is stout and smooth which undergoes five instars (Instars I, II, III, IV, V) of developmental stages. After hatching, the neonate larva starts feeding on empty egg shell and epidermis of the host plant leaves. Later instars feed rigorously on the different parts of the host plant and grow bigger in size. The morphological characters of fully grown matured caterpillar are black body with white stripes and red spots on its lateral side. One can see varying number of long black spikes/horn like structures protruding on the dorsal surface of the body, which are used for protection against predators. Before entering into the pupal stage, the last larval instar stops feeding, becomes lethargic and shrinks in its body size (Pre-pupal stage). Usually, the butterflies of genus *Idea* take around three weeks to complete the larval period (Kumar, 2005; Cabras *et al.,* 2015).

Pupa: The pupal form is known as "Chrysalis" which is initially golden colour ornamented with black shiny spots over its surface (Figure 3). Later from 8^{th} day onwards black pigmentation starts to appear on the surface and on 14^{th} day, a day before adult emergence it turns black. On the under surface of leaves the chrysalis suspends free from the anal hook or cremaster without any silken girdle (Cabras *et al.,* 2015)**.**

Adult: Malabar tree nymph appears as a white butterfly with black markings and the wingspan measures generally about 120-154 mm (Figure 4). The upper sides of both the wings are semitransparent white with powdery black scales. These have long black antennae with rounded clubs at the end, head and thorax spotted and streaked with black and abdomen is white, with broad dusky black streak above (Moore, 1890; Thomas, 1905; Varshney and Smetacek 2015).

Habit

Malabar tree nymph butterfly is slow and week flier with flapping movement of wings. A gliding flight is common habit of the genus *Idea* so these are also called as "Paperkite". They can be seen often gliding above the forest tree canopy but infrequently move lower down in forest openings (Evans, 1932).

Habitat and distribution

Idea malabarica have specific habitat requirements depending upon their feeding and reproduction needs. It is endemic to the wet evergreen forests with heavy rainfall areas which include Western Ghats stretches of Maharashtra, Goa, Karnataka and Kerala (Bringham, 1905; Manoj and Sharma, 2013). Also found in few parts of Tamil Nadu bordering to Kerala state (Arun, 2003; Dunstan and Raj, 2005; Alagumurugan *et al.,* 2011). In Goa it is found mainly in the areas of swamp vegetation of Ajobachi Tali, Bibtyan, Nirankarachi Rai and Mharinginichi Rai in Sattari and Bhati, and Savari in Sanguem (Gaude and Janarthanam, 2015). Numerical abundance study by Rao *et al.,* 2021 at Rivona near the foothills of Western Ghats - Goa reported Malabar tree nymph under "Very Rare" status with 0.026 relative abundance.

Host Plants

The larva of *Idea malabarica* mainly feed on the species of Apocynaceae *Aganosma cymosa* (Wynter-Blyth 1957; Kunte, 2000) and according to few recent reports the medicinal plants *Parsonsia spiralis* and *P. alboflavescens* (Apocynaceae) are also considered as larval host plants of *I. malabarica* (Susanth 2005; Aishwarya and Revanna, 2018).

Conclusion

By declaring, Goa's "State butterfly' status to the Malabar tree nymph butterfly, endemic to Western Ghats is recognized as biodiversity indicator of this region. Butterflies are important component of rich biodiversity, have been on planet around for at least 50 million years and these have special aesthetic, educational, scientific, ecosystem and economic value. Butterflies are widely used as model organism by ecologists to study the impact of habitat loss and fragmentation, and climate change because these are indicators of a healthy environment and healthy ecosystems. In the present global scenario, loss of wildlife habitat in a large scale and unpredictable shifting of climate and weather patterns in response to pollution of the atmosphere are the major issues related to decreasing trend of wildlife including butterflies. In this case, a broad and scientific approach for butterfly conservation is necessary. Butterfly distribution and population status assessment, diagnosing the driving factors causing decline trend of the species, identifying effective species recovery solutions and application of long-term sustainable solutions are the stepping factors for butterfly conservation. By gaining Goa's "State butterfly' status, the Malabar tree nymph butterfly endemic to Western Ghats is recognized as biodiversity indicator of this region.

Figure 1. Egg

(Source: Vinayraj, Wikimedia)

Figure 2. Larva

(Source: Ashok Senagupta, Wikimedia)

Figure 3. Pupa

(Source: Ashok Senagupta, Wikimedia)

Figure 4. Adult butterfly

(Source: Ajith Unnikrishnan, Wikimedia)

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