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Attacus Atlas Linnaeus, 1758 (Saturniidae): A New Distribution Recorded from Coimbatore District, South India

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Abstract: The genus Attacus Linnaeus belongs to the Saturniidae family and is only found in India. Adults of this genus include largest moths. In India an atlas is reared for silk on a small scale in North Eastern States of India. Attacus atlas is one of the largest Saturniid which is common in Western Ghats region in Coimbatore district, Tamilnadu state, India. In this paper deals with distribution, threats and conservation measures.

Keywords: New record, distribution, atlas moth, south India.

1. Introduction

Butterflies and moths are the most prevalent insects seen in forest environments and agricultural fields, and they are frequently referred to as ecosystem biological indicators. Lepidoptera is the second largest and most varied order in the Insecta class (Benton, 1995). The majority of biologists have utilized Lepidoptera as a model organism to examine the influence of human and pollution disturbances on forest ecosystems and forest ecosystem management practices (Willottet al., 2000; Lewis, 2001). Butterflies and moths are known for their ability to look like other things and hide. On the other hand, most research on insect mimicry has been about how poisonous species changed to look like poisonous species or how poisonous species developed similar warning signals to scare away predators. Sericigenous insects have been studied for millennia because they generate commercial silk. There are around 1500 sericigenous species in the Saturniidae family. The Indian subcontinent is home to more than 50 species of Saturniidae (Nassig et al., 1996) Jolly et al. (1975) discovered close to 80 species of moths that produce silk throughout Africa and Asia. According to Lemaire and Minet (1998), Saturniidae is the largest subfamily of the superfamily Bombycoidea, which includes several notable Sericigenous Lepidoptera species. They live in both temperate and tropical regions. Depending on the weather, they can have one or more generations (Regier et al., 2008; Kakati and Chutia, 2009).

The Saturniidae family contains approximately 1200-1500 species from all over the world. Approximately fifty species may inhabit the Indian subcontinent (from Himalaya to Sri Lanka) (Nassiget al.1996). In contrast, Arora and Gupta (1979) documented around India alone has 40

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species of silk moths. Based on the viewpoints and classifications of Lemaire and Minet (1998), this family is the largest of the Bombycoidea, with more than 1861 species split across 162 genera and 9 subfamilies. The tropical Asian saturnid genus Attacus has the largest moths in the Saturniidae family (Michener, 1952).

2. Study Area

The species recorded from Near UPASI tea research institute at Valparai (Figure 1). Valparai is a Taluk and hill station in the Coimbatore district of Tamil Nadu, India. It includes Anamalai Tiger Reserve, formerly known as Anaimalai Wildlife Sanctuary. It is situated 2,287 metres above sea level on the Western Ghats' Anaimalai Hills range. There are 56 estates in all here. The foothill begins precisely at Monkey Falls, which is 38 kilometres (24 miles) from Valparai. The path from the foothills to Valparai comprises of forty hairpin turns. Malakkappara, the state border town of Kerala, is located 42 kilo metres from Valparai Despite the fact that private tea companies hold the majority of the property, large swaths of forest remain off-limits.

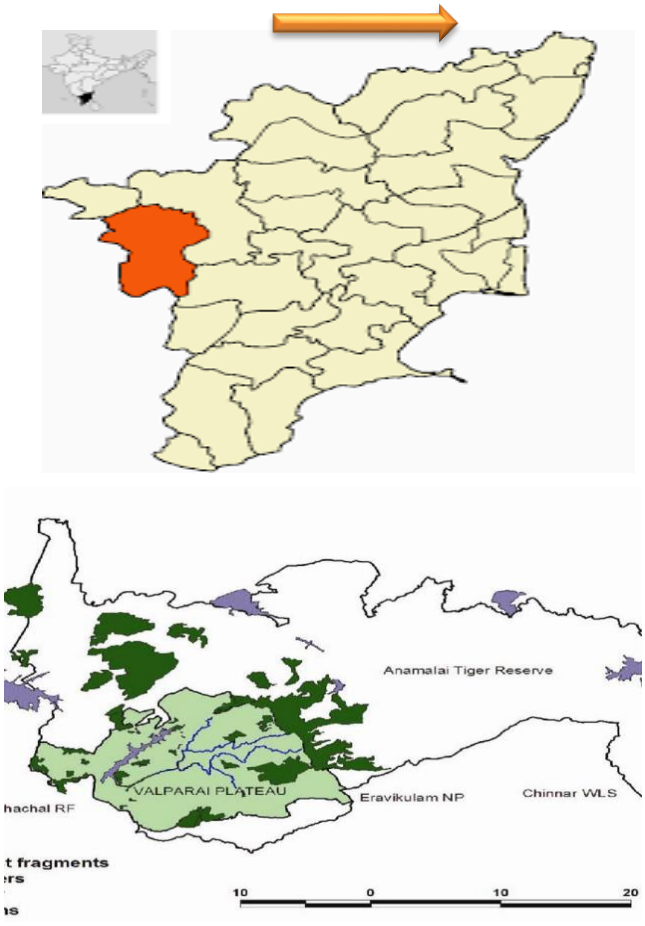

Figure 1. A map showing study area of valaprai,Coimbatore district ,Tamilnadu.

Figure 2. AttacusAtlas (Atlas Moth) female species.

Table 1. Scientific Classification

Kingdom	Animalia
Phylum	Arthropoda
Class	Insecta
Order	Lepidoptera
Family	Saturniidae
Genus	Attacus
Species	Attacus atlas
Binomial name	Attacus atlas (Linnaeus, 1758)

3. Description

The Atlas Moth is a huge insect, magnificent insect with a wing span of approximately 17 centimeters. Each wing has a huge, irregular white patch and a double white band.

Initially, the species was L.W. Rothschild characterized it as a subspecies of A. dohertyi from the Oriental Region, and it was recognized as such for a long time. (E.g. Common 1990). However, Peigler (1989) and Edwards (2000) viewed it as a separate species closely related to A. inter medius (1996). Attacuswardi is the genus's smallest species.

Flights: Atlas Moths are found everywhere. The year, with the highest populations occurring between November and January.

Habitat: The Atlas Moth primarily inhabits tropical woods and the plains surrounding their host plants.

Host Plant: The larvae consume a wide range of host plants, including Cinnamomum, Citrus, Salix, Annona, Clerodendrum, and Muscenda.

Life History: At night, females emit pheromones that are capable of attracting males. After mating, the female will deposit her eggs on the underside of the host's leaves in small clusters. When a caterpillar hatches from its egg, it consumes the host plant until it becomes a cocoon.

4. Discussion

Mature moths are ready to emerge from their cocoons after four weeks (Badri, et al. 2008; Robinson, et al. 2001). Among female moths, the Atlas moth, Attacus atlas Linnaeus, 1758, has the biggest wing surface area (400 cm2) and wing span (25-30 cm) (Watson and Whalley, 1983). The tropical and subtropical woods of India, Southeast Asia, and the Malay Archipelago are home to this moth. It belongs to the Saturniidae family (Veenakumari, et al. 1994; Holloway, 1987). Western Ghat, Deradhun, Assam, Sikkim, and Nagaland are among the Indian states where this species has been discovered (Methew, 1999; Sondhi, 2009; Seitz, 1933; Bhattacharya, et al. 2004; Singh & Chakravorty, 2006; Thangavelu, et al. 2002). Nonetheless, no previous study has reported this species in the Valparai Hills. The recent observation of this species in the Coimbatore district of Valparai validated its new geographical spread. According to Jurriaanse and Lineman's (1920) work, Attacus species are not listed as serious agricultural pests. In Indonesia, Southeast Asia, and the Philippines, they attack diverse cultivated plants, including avocado, guava, quinine, citrus, and tea (Navarro, 1911).

Mitochondrial genome (mitogenome) information can help with genomic structure, phylogenetic analysis, and evolutionary biology (Miao-Miao Chenet., al., 2014). Attacus atlas (Lepidoptera: Saturniidae), the atlas moth, is a well-known silk-producing and ornamental insect having the largest wing surface area of all moths. The mitogenome of A. atlas is a 15,282-bp circular molecule with a nucleotide composition that is heavily biassed toward As and Ts, with As and Ts accounting for 79.30 percent of the total. Thirteen protein-coding genes, two ribosomal RNA genes, twenty-two transfer RNA genes, and an A+T-rich region make up this genome.

4.1. Threats

The reduction of the Atlas Moth in the Darwin region is likely due to the massive use of insecticides during World War II, the damage of habitat brought on by Cyclone Tracey in 1974, and more recent urbanisation (G. Martin pers. comm.). After hurricane Tracey, the coastal monsoon rainforest areas at East Point and Lee Point, the most likely habitats for the Atlas Moth in Darwin, took decades to recover (Panton 1993; Franklin et al. 2010). The species appears to have failed to recolonize these areas from other locations.

Lane et al. (2010) identified two potential threatening processes:

- 1. Inappropriate fire regimes, especially destructive fires that penetrate forest edges and destroy cocoons containing moulting pupae during the protracted Dry season; and
- 2. African grassy weed invasion, which modifies and worsens the fire regime. Invasion of exotic Acacia mangium into rainforest and vine-thickness margins on the Tiwi Islands represents a further potential threat.

5. Conclusion

There is no current management programme for the Atlas Moths population in the wild. Priorities for research include conducting surveys on Cobourg Peninsula and other coastal regions of the Top End to determine if the species is still extant and locating more populations and developing a monitoring programme in areas where the species persists in order to detect potential range or abundance changes and assess hazardous factors.

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