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First record of the Oak processionary caterpillar from Jaulake khurd, Pune, part of North-West Ghats (MS), India

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ABSTRACT

An European originated Oak processionary caterpillar (*Thaumetopoea processionea*) moth is widely distributed in Southern and Central Europe. The *Thaumetopoea processionea*(Lepidoptera),caterpillars are illustrated and redescribed based on the morphological and dermatitis epidemic causes. The Oak processionary is first time recorded in Jaulake Khurd, Pune, part of Northern Western Ghats, Maharashtra, India and reviewed based on available literatures. The processionary caterpillar, found for the first time in India, can become a cause of infectious disease and poses a serious threat to public health. The caterpillars are human irritants because of their venomous urticating hairlike setae. The larva may lead to serious dermatitis, conjunctivitis, and pulmonary affection on contact with the setae. In August 2025 child observed symptoms of lepidopterism such as skin and eye irritation, skin redness, rashes and dermatic swelling and respiratory trac infection (Asthma).

Figures : 02 References : 21 Table : 00

KEY WORDS : Dermatitis, Lepidopterism, North-West Ghats, Oak processionary, Public health

Introduction

The oak processionary moth is native from Europe that develops on oak trees and develops mimicry or to host plant. The distribution range of the oak processionary moth through Europe[6]. In UK, this moth was first time detected on imported plant and plant products[5,16]. In the warmer temperature often rise development stages of oak processionary caused by climatic changes and established in Netherlands, the UK, and Germany[8,14,16,21]. According to models, all oak stands in Switzerland could potentially be colonised today, as the primary Oak sites are not located in regions with extremely low winter temperature[13]. The Oak processionary moth expands its range, both naturally and through unintentional introduction caused by human activities[1].

The Oak processionary moth completes its life-cycle in one year and adult emerge between mid-July to September[2]. Between April and mid-May, younger caterpillar emerge on Oak bud burst in long head-to-tail lines; hence called 'processionary',typically progressing through six larval growth stages[20]. Young larvae feed together actively during the day, while older caterpillars become nocturnal and resting during daytime[2]. At night, the caterpillar emerges from their nest in a distinct multi row procession to climbon to the plant canopy, where they consume oak leaves, reducing to their midribs[20]. In optimal climatic conditions with an adequate availability of host plants, the Oak processionary moth is prone to rapid population growth.Jaulake Khurd is the agricultural village in Khed Tehasil and having average forest area and good geographical coverage.

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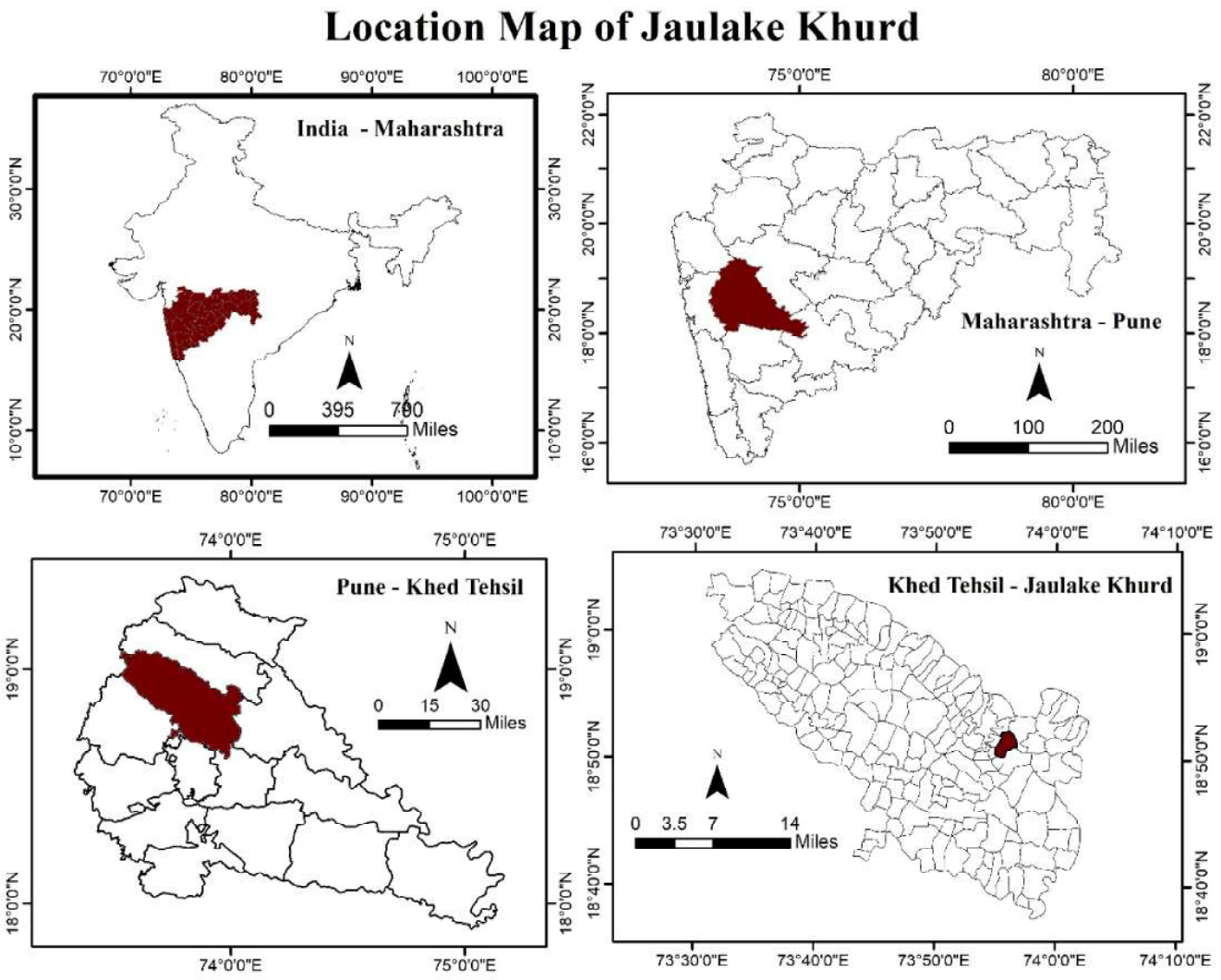

Fig. 1 : Specimen collection locality and first record of *Thaumetopoea processionea* from Northern Western Ghats (MS), India

Materials and Methods

The specimen caterpillar was collected from Jaulake Khurd Village, Pune, part of northern Western Ghats, Maharashtra, India. It is located approximately 650 m from the sea level on 18° 50' 36" N and 73° 55' 29" E. The collected specimen was further processed in laboratory of Department of Zoology, Hutatma Rajguru Mahavidyalaya Rajgurunagar and identified as per the standard Identification Keys[4,7,9,10]. The photograph was taken into Canon EOS 360DDSLR camera and labelled it. After an identification, distribution records have been verified by standard procedure.The specimen was observed under Olympus Stereo microscope (CH 20i). The survey locality map was created using the freely accessible, ArcGIS software.

Result and Discussion

During rainy season in August, Oak processionary caterpillars were recorded first time in India in the cluster (Fig. 2). A dense cluster of hairy caterpillars occurred on the host plant, Guava green leaves. A white, slender, segmented body of oak processionary having shiny grey or white hairs and oak silk nets.

Systematic Position

Kingdom	-	Animalia
Phylum	-	Arthropoda
Class	-	Insecta
Order	-	Lepidoptera
Family	-	Thaumetopoeidae
Genus	-	*Thaumetopoea*
Species	-	*processionea*

Material Examined- 01/08/2025; 10:02am; 01 Male, Jaulake Khurd, Pune (MS), India (18°50'36" N and 73°55'29" E, 650m elevation)

Larva measured about 2-3.5cm long and 13 segmented abdomens.Head is small, black, and

Fig. 2 : Photograph of hairy oak processionary caterpillar

retractable.Body having dark brown or black dots or stripes which looks like miniature armoured train. Body cover thousands of urticating setae. They are microscopic harpoons, filled with thaumetopoein, a protein toxin. After a contact with setae within 2 to 4 hours the skin erupts in pruritic papules, swell into urticatial wheals. The rash spreads in streaks and whorls. It itches with a ferocity, burning, stinging and throbbing. The eyes swell shut with conjunctivitis, pharyngeal irritation and hypotension.

Since the Oak processionary moth thrives in warm condition, its mass reproductions are relatively uncommon in Switzerland. The Oak processionary moth primarily preferred host plant such as Pedunculate oak (*Q. robur*), Sessile oak (*Q. petraea*), Downy oak (*Q. pubescens*), Pyrenean oak (*Q. pyrenaica*), and Turkey oak (*Q. cerris*)[2]. It has also been occasionaly observed on other deciduous broad-leaved trees, including Birch (*Betula* Spp), beech (*Fagus* Spp.), Sorbus (*Sorbus* Spp.), Robinia (*Robinia* Spp.) and Hawthorn (*Crataegus* Spp)[2]. However successful completion of its development cycle is limited to Oak and beech[20].

Thaumetopoein, a toxic protein found in the urticating hairs of various processionary moth species, appear in caterpillar from third instar, around late May, when they develop thousands of tiny stinging hairs for defence[20]. These hairs penetrate the skin, breaks off and release the toxin thaumetopoein, causing allergic symptoms. The older caterpillar having half a million of urticating fine barbed hairs and their spinesare active up to 10 years and varies their clinical symptoms[3,12,17]. Potential reaction includes skin and eye redness itching, raised red patches, rashes, irritation of the moth's and nose mucus membrane[14]. Intraocular penetration of Oak caterpillar also caused ophthalmia nodosa[12,18]. Additional common symptoms can include fever, dizziness, tiredness and conjunctivitis[20]. The systematic health caused by insect moth to caterpillar varies from medical condition referred to as lepidopterism to erucism or dermatitis[12,21].

The result of this investigation shows that the Oak processionary caterpillar exhibit and introduced first time in India, part of Northern Western Ghats, Maharashtra.This hairy caterpillar better adopted in stress condition and developed physiological adaptions caused human health disease or dermatitis. Due to their clinical symptoms or Lepidopterism causes, its urgent need is to manage their species population before common diverse occurrence using IPM. Future research should prioritize on diversity, host ranges and climate modelling are recommended to asses risk of Oak Processionary.

Conflict Interest

The author declares no conflict of interest.

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