

New Larval Host Plant of *Nausinoe perspectata* (Fabricius, 1775) from Kolkata, West Bengal, India (Lepidoptera: Crambidae)

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Abstract

Jasmin acts as a larval host plant and nectar plant for many insects including different Lepidoptera. *Nausinoe perspectata* (Fabricius, 1775) a particular species in common mostly feeds on leaves of *Jasminum sambac* (L.) Aiton. *Jasminum multiflorum* (Burm. f.) Andrews, under family Oleaceae popularly known as winter jasmine, Indian jasmine, and / or star jasmine is hereby reported as a new larval food plant or host plant for this species, *Nausinoe perspectata* (Fabricius, 1775) for 1st time from India.

Keywords: Lepidoptera, Crambidae, larval host plant, life cycle, *Nausinoe perspectata*, India.

**Nueva planta hospedadora de larvas de *Nausinoe perspectata* (Fabricius, 1775) de Calcuta,
Bengala Occidental, India
(Lepidoptera: Crambidae)**

Resumen

El jazmín actúa como planta hospedadora de larvas y planta nectarífera para muchos insectos, incluidos diferentes Lepidoptera. *Nausinoe perspectata* (Fabricius, 1775) una especie particular en común se alimenta principalmente de hojas de *Jasminum sambac* (L.) Aiton. *Jasminum multiflorum* (Burm. f.) Andrews, bajo la familia Oleaceae popularmente conocida como jazmín de invierno, jazmín indio y/o jazmín estrella es aquí registrada como una nueva planta nutricia o planta huésped para esta especie, *Nausinoe perspectata* (Fabricius, 1775) por primera vez de la India.

Palabras clave: Lepidoptera, Crambidae, planta nutricia, ciclo biológico, *Nausinoe perspectata*, India.

Introduction

Family Oleaceae consists of more than 600 species of flowering plants shrubs and trees and is distributed worldwide but is mainly diverse in East Asia. The Jasmineae subfamily is monotypic which covers the genus *Jasminum* with more than 300 species. The *Jasminum* species are mainly found in tropical to warm temperate climates in the Old World, nonetheless some species are found in tropical America (Stevens, 2012). *Jasminum* is the genus of true jasmines, this name probably coming from ‘yâsmîn’ or ‘yasaman’ words in Arabic and Persian which means “gift of gods” (Green, 1965; Bhattacharjee, 1980). Many foliage insects like caterpillars of moths and butterflies and a few other invertebrates cause visual damage to the leaves of a plant. *Jasminum sambac* (L.) Aiton is a native small shrub of Bhutan and India which is cultivated for its fascinating fragrant and showy flowers. A major commercial flower crop of India is Jasmine. Approximately 90 species of jasmine grow in India (Ashoka

et al. 2017). *Jasminum multiflorum* (Burm. f.) Andrews, *Jasminum sambac*, *Jasminum grandiflorum* L., and *Jasminum auriculatum* Vahl are the most cultivated jasmine species (Ashoka et al. 2017). *Jasminum sambac* is regarded as the host plant of many insects, molluscs like cotton mealybug, giant African land snails, hawkmoth, midges, thrips, aphids etc. (Leonhardt & Teves, 2002). *Jasminum multiflorum* popularly known as winter jasmine, or commonly identified as Indian jasmine, downy jasmine, and / or star jasmine, is an evergreen, cultivated, and ornamental shrub. The plant is known to have severe effects on the bowels; and thus, is used to treat fever, dysentery, stomachache, ulcers, and kidney stones (Perry & Metzger, 1980). This star jasmine serves as the larval host plant of the Pioneer butterfly and the nectar plant of Grass Demon and Blue Demon (Nitin et al. 2018). Another plant *Murraya paniculate* of the family Rutaceae which is known as Orange Jasmine or Kamini, not in the family Oleaceae is a larval host plant of Lime Blue and Common Mormon (Churi & Kawthankar, 2023).

Nausinoe perspectata (Fabricius, 1775) are found in many parts of the world including India, Sri Lanka, Burma, Malaysia, Australia, etc. (Gurule, 2013). In India, this species is found in Assam, and Uttarakhand (Rose, 2002; Sondhi & Sondhi, 2016). The genus name is derived from the Greek mythology character Nausinous. This species is regarded as a serious pest of the jasmine flower plant, *Jasminum sambac*. Larvae of *Nausinoe perspectata* can cause a huge economic loss for jasmine farmers. This study aims to determine relationships between moth species and host plants to conserve them in their native habitat. It also helps to control pests when the host plant is a commercial cultivable garden plant.

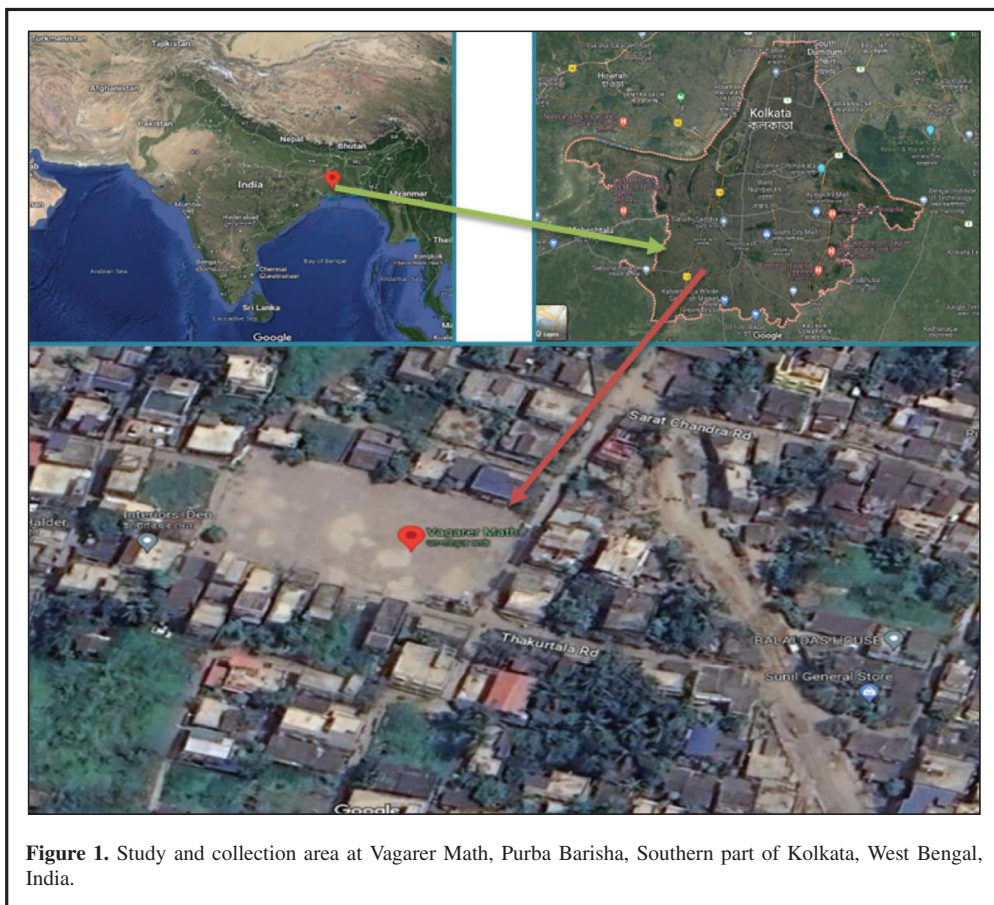


Figure 1. Study and collection area at Vagarer Math, Purba Barisha, Southern part of Kolkata, West Bengal, India.

Result and Discussion

In the process of observing *Jasminum multiflorum* plants in pots and in garden areas at Barisha, Kolkata, West Bengal during June-September 2020 (Figure 1). The moth life cycle was also observed in the same duration. Previous literature survey reports helped greatly in the identification of the plant sample and also the insect species. Photographs were taken using a mobile camera and Canon PowerShot (Make-Canon, Model-SX430 IS).

Different parts like leaves, petioles, and branches of the plant, *Jasminum multiflorum* (Burm. f.) Andrews (Oleaceae) infected with moth larvae from Barisha, Kolkata was examined.

In the month of IX-2020, four specimens of *Nausinoe perspectata* moth larvae (living) were observed and identified in human habitat near Vagarer math, Purba Barisha, Southern part of Kolkata, West Bengal, India (Table 2, Figure 1).

Table 2. Study site, from where the moth was collected and reared.

Name of the site	Latitude	Longitude	Habitat
Vagarer math, Purba Barisha, Kolkata, West Bengal, India	22.4711° N	88.3191° E	Urbanized city

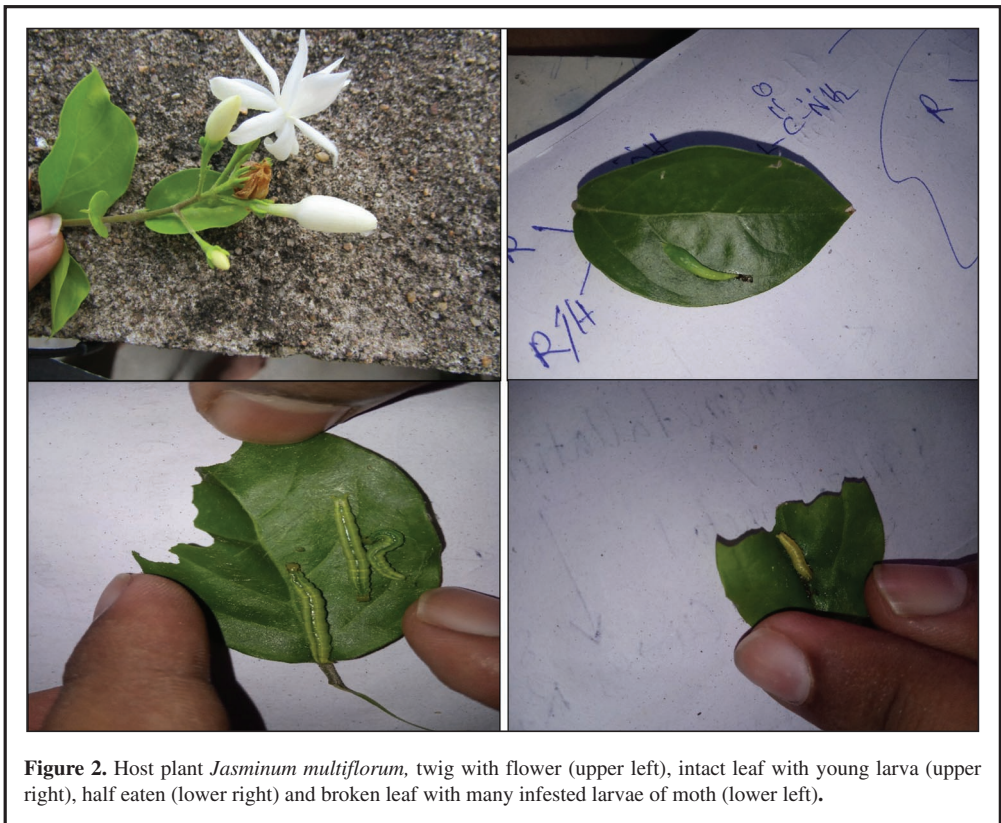


Figure 2. Host plant *Jasminum multiflorum*, twig with flower (upper left), intact leaf with young larva (upper right), half eaten (lower right) and broken leaf with many infested larvae of moth (lower left).

It was seen that these larvae feed on fresh leaves of the Star jasmine (*Jasminum multiflorum*) plant. They made it their potential larval host plant although there are no previous reports of star jasmine to be considered as a larval host plant of this moth species (Figure 2). Now, 3 plant species

have been reported as their host plants so far (Table 1). They made their nest by binding/folding the leaves of the host plant with their saliva net hiding under this nest and continuously eating leaves. Larvae skeletonize the leaves by eating away the parenchyma. They mostly start feeding from the apical margin of the fresh leaves.

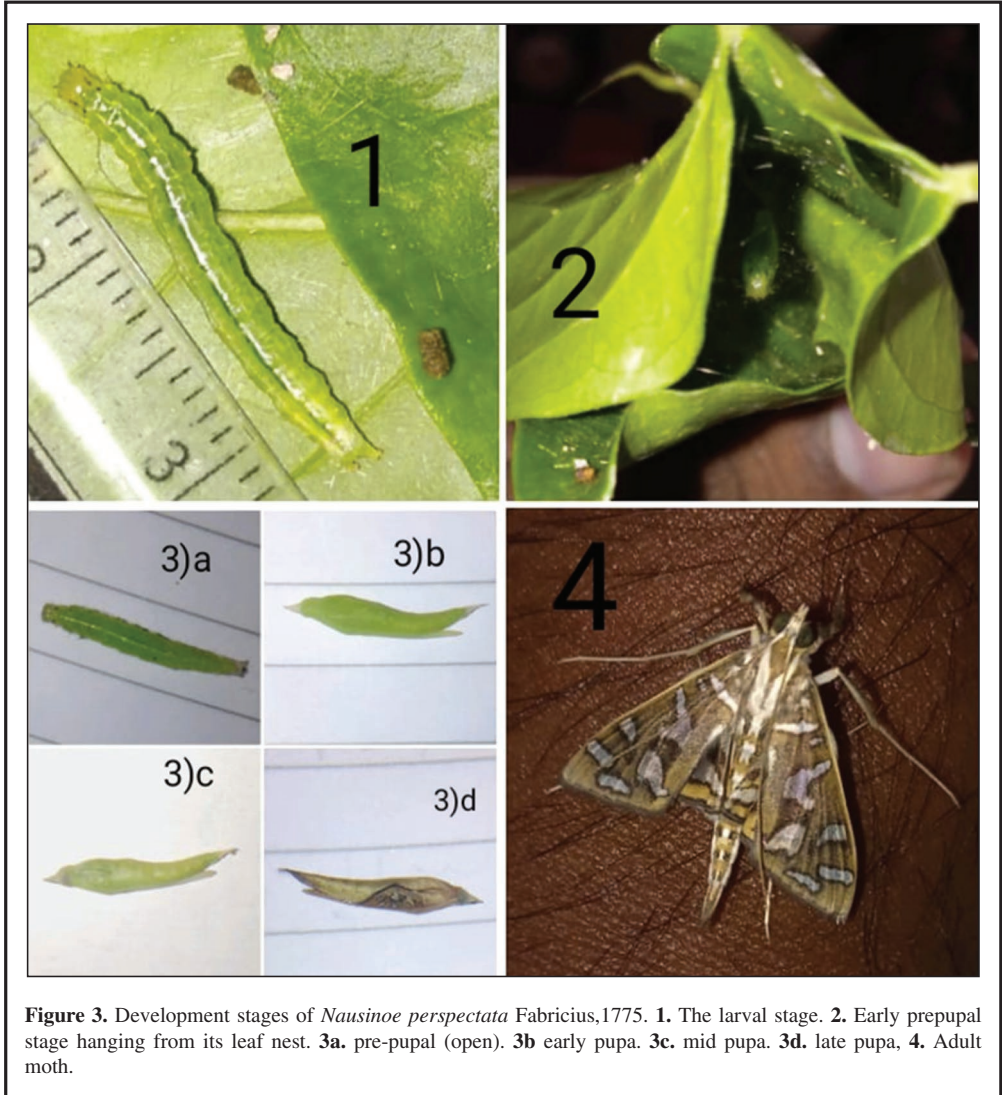


Figure 3. Development stages of *Nausinoe perspectata* Fabricius, 1775. **1.** The larval stage. **2.** Early prepupal stage hanging from its leaf nest. **3a.** pre-pupal (open). **3b** early pupa. **3c.** mid pupa. **3d.** late pupa, **4.** Adult moth.

Table 1. Worldwide previous record of larval host plant of *Nausinoe perspectata*.

Host Plant	Family	References
<i>Jasminum sambac</i>	Oleaceae	1. De Prins & De Prins (2017).
<i>Nyctanthes arbor-tristis</i>	Oleaceae	2. https://www.mothsofindia.org/nausinoe-perspectata
<i>Spinacia oleracea</i>	Amaranthaceae	

It was observed that the duration of the pre-pupal stage lasted for an average of 2 days, whereas the pupal stage continued for about 5 days (Figure 3).

Four larvae of *Nausinoe perspectata* were observed feeding on the leaves of star jasmine. The colour of the larvae was green. The average length of the larva was estimated at approx. 2.33 cm and the average weight was measured at 73 mg for the mature larva. During the larval period, they continuously eat leaf of the host plant, *Jasminum multiflorum*. Their body length and weight were increasing continuously until before the pre-pupa stage was attained. From the pre-pupa stage to becoming adult they stop feeding. They were hanging from the net of their own leaf nest from the early pre-pupal stage to the late pupal stage. The colour of the pupa in its early state was light green and then changed to dark. Late pupa had shown adult moth colour (Figure 3). In the pupa stage average length is 1.7 cm and the average weight is 54 mg.

We have identified the moth by observing some morphological characteristics of adult individuals.

The adult moth was identified by studying a few characteristics which are available in many published references and website materials, like the head, thorax, and abdomen. Wings are light yellowish brown in colour, abdomen is with white bands. Antennae are longer than fore wing and almost simple. Fore wing has two black-edged white sub-basal bands not touching the costa; a spot in the cell; and a wedge-shaped mark is present on the inner margin and also a disco-cellular white band forming with a patch below the cell a Y-shaped band, with its outer arm shortest. The hind wing is basically with the basal area white, its outer edge angled and with a black-edged yellow-brown prominent disco-cellular mark (Figure 3).

Conclusion

This species mainly feeds on leaves of *Jasminum sambac* but we have observed that they also use another Jasmine plant *Jasminum multiflorum* as their potential larval host plant. However, this Jasmine also functions as a larval host plant of *Saissetia coffeae* Walker, 1852 (Hemiptera) (Saikia et al. 2019). So here we have reported that star jasmine is recognized as a new host plant for larval development of the moth, *Nausinoe perspectata*.

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