

## Documenting moths (Lepidoptera, Heterocera) in Bengaluru urban district, Karnataka, India

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**ABSTRACT:** During the observation in three areas of Bengaluru Urban District, moths belonging to 42 genera, of which 39 were identified until the species level, belonging to seven families. Thirteen species of moths were identified from 18 samples in the study area I, and 17 species in II and 12 in study area III. This checklist would serve as a first milestone for further surveys on the diversity of moths of the Bengaluru region. © 2026 Association for Advancement of Entomology

**KEY WORDS:** Macromoths, checklist, genera, species

### INTRODUCTION

Urban moth communities consisted of multi-dimensional generalist species with larger distribution ranges, more variable colour patterns, longer reproductive seasons, broader diets, and were more likely to overwinter as eggs, more thermophilic, and occupied more habitat types compared with moth communities in surrounding areas (Markus *et al.*, 2020). Documentation of moth diversity from different parts of urban India has been reported (Chandra, 2007; Gadhikar *et al.*, 2015; Shubhalaxmi, 2018; Komal *et al.*, 2021; Nagaraja *et al.*, 2021; Nayak and Ghosh, 2020; Nayak and Sasmal, 2020; Paul, 2021; Singh *et al.*, 2021). Literature on documenting moth diversity in Peninsular India is minimal (Sondhi *et al.*, 2021). So far, 52 species of moths have been recorded in Bengaluru (Firos and Haneesh, 2020), part of

Peninsular India. In this paper, moths in the three areas of Bengaluru Urban District (12°58'24.43" N; 77°35'23.03" E), Karnataka, embodied. This region has a tropical savanna climate (Köppen climate classification Aw) with distinct wet and dry seasons. There is no record of a moth survey having been conducted in any of these areas.

### MATERIALS AND METHODS

The three study areas are located in the suburban part of Bengaluru, Karnataka. First study site is St. Joseph's College (now St. Joseph's University) (12.9629°N; 77.5964°E) is situated in the centre of the city between Lalbagh Botanical Garden and Cubbon Park (the campus has various trees and a huge lawn), the second one is Chikkalasandra, Uttarahalli Hobli (13.0804°N; 77.6528°E) and the third is Vidyapeeta (12.9296°N; 77.5585°E). The

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survey was conducted, covering the majority of the areas. Important wild trees of Bengaluru include: *Alstonia scholaris*, *Artocarpus heterophyllus*, *Azadirachta indica*, *Bombax cieba*, *Butea monosperma*, *Ficus bengalensis*, *F. religiosa*, *F. mysorensis*, *Gmelina arborea*, *Kigelia pinnata*, *Lagerstroemia speciosa*, *Mangifera indica*, *Madhuca longifolia*, *Melia composite*, *Michelia champaca*, *Neolamarkia kadamba*, *Pogamia pinnata*, *Pterocarpus marsupium*, *Syzigium cumini*, *Saraca indica*, *Swetenia* sp, *Terminalia arjuna*, *T. bellerica*, *Tabebuia spectabilis*, etc. Some of the exotic trees include: *Delonix regia*, *Enterolobium saman*, *Parkia biglandulosa*, *Peltophorum pterocarpum*, *Spathodea compannulata*, *Tabebuia spectabilis*, etc. Additionally, some flowering shrubs and medicinal plants include *Withania somnifera*, *Hibiscus* sp., and *Lawsonia inermis* (Hegde, 2012).

The samples were collected and preserved under cold conditions. The samples were then pinned onto a spreading board and placed in a hot air oven at 60°C for 1 hour. The dried moth samples were later pinned on a pinning board using an entomological pins. Moths collected during the present study were identified using the 'Moths of India' website (Sondhi *et al.*, 2023) and the resources listed therein.

## RESULTS AND DISCUSSION

Forty-two genera of which thirty-nine were identified to the species level, belonging to seven families during the observation undertaken in the three study areas of Bengaluru Urban District, Karnataka, India (Table 1, Fig. 1). The species recorded under seven families are—

Crambidae (8 species): *Chabula acamasalis*, *Herpetogramma rudis* group (Grass Webworm moth), *Maruca vitrata* (Lima bean pod borer/ Mung bean moth), *Nausinoe geometralis* (Asian hydrilla moth), *Poliobotys ablactalis* (Pearl grey moth), *Spoladea recurvalis* (Beet webworm moth/ Hawaiian beetle webworm), *Conogethes punctiferalis* (Yellow peach moth), *Cirrhochrista brizoalis* (Yellow margin moth).

Under Erebidae (22 species): *Ericeia pertendens*, *Eudocima phalonia* (Common fruit piercing moth), *Erebus macrops* (Common owl moth), *Simplicia* sp., *Achaea janata* (Castor semi looper moth), *Brunia antica* (Lichens moth), *Brunia cf. antica*, *Cyana peregrine* (Two spotted cyana moth), *Cyana* sp., *Dysgonia torrida* (Jigsaw moth), *Ercheia cyllaria* (Squirrel moth), *Eudocima homaena* (Fruit piecing moth), *Oeonistis cf. entella*, *Pandesma* sp., *Plecoptera* spp., *Siccia taprobanis*, *Amata passalis* (Crimson banded Handmaiden), *Lymantria marginata* (Mango Tussock), *Nepita conferta* (Footman moth), *Olepa ricini* agg. (Yellow underwing tiger), *Orvasca subnotata*, and *Syntomoides imaon* (Imaon Handmaiden).

Geometridae (7 species): *Chiasmia emersia* (Little chiasmia/ Pente tasil moth), *Idaea* sp., *Petelia* sp., *Chiasmia nora* (Banded geometrid), *Traminda mundissima*, *Anisephyra ocularia* (Four ringed yellow ruler moth), *Idaea costiguttata* (Three-line bogey moth).

Noctuidae (3 species): *Pandesma* sp., *Spodoptera litura* (Oriental leaf worm), *Chrysodeixis eriosoma* (Green garden looper).

Pyalidae (2 species): *Endotricha mesenterialis*, *Pyalis manihotalis* (Tropical meal moth).

Sphingidae (5 species): *Angonyx krishna* (Southern dark green hawkmoth), *Agrius convolvuli* (Convolvulus hawkmoth), *Daphnis nerii* (Oleander hawkmoth), *Hippotion celerio* (Celerio hawkmoth), *Cephonodes cf. picus* (Green Bumble-bee hawkmoth).

Eupterotidae (1 species): *Eupterote undata*

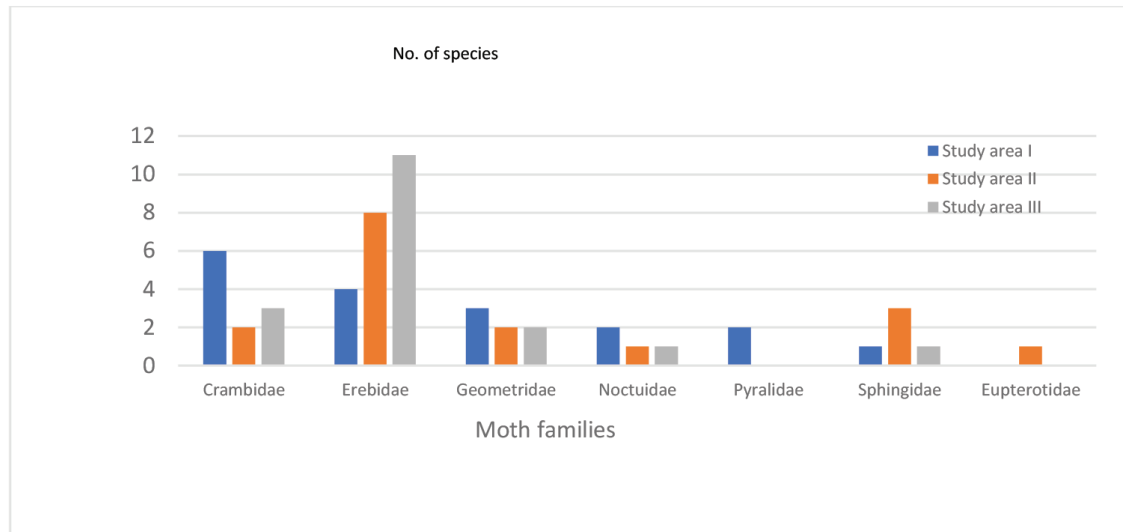
The study area I (St. Joseph's College campus) showed most species belonging to Crambidae (33%), followed by Erebidae (22%), Geometridae (17%), Noctuidae and Pyralidae (11% each) and Sphingidae (6%).

In the study area II (Chikkalasandra), the species recorded were belonging to the family Erebidae

**Table 1. Moth species recorded in the three study areas**

No	Study area I	Study area II	Study area III
1	<i>Angonyx krishna</i> Eitschberger & Haxaire, 2006	<i>Aemene taprobanis</i> Walker, 1854	<i>Achaea janata</i> (Linnaeus, 1758)
2	<i>Chabula acamasalis</i> (Walker, 1859)	<i>Agrius convolvuli</i> (Linnaeus, 1758)	<i>Anisephyra ocularia</i> (Fabricius, 1775)
3	<i>Chiasmia emersaria</i> (Walker, 1861)	<i>Amata passalis</i> (Fabricius, 1781)	<i>Brunia antica</i> (Walker 1854)
4	<i>Endotricha mesenterialis</i> (Walker, 1859)	<i>Chiasmia nora</i> (Walker, 1861)	<i>Brunia cf. antica</i> (Walker, 1854)
5	<i>Erebus macrops</i> (Linnaeus, 1768)	<i>Daphnis nerii</i> (Linnaeus, 1758)	<i>Cephonodes cf. picus</i> (Cramer, 1777)
6	<i>Ericeia pertendens</i> (Walker, 1858)	<sup>a</sup> <i>Dysgonia torrida</i> (Guenée, 1852)	<sup>a</sup> <i>Dysgonia torrida</i> (Guenée, 1852)
7	<i>Eudocima phalonia</i> (Male) (Linnaeus, 1763)	<i>Eupterote undata</i> Blanchard, [1844]	<i>Cirrhochrista brizoalis</i> (Walker, 1859)
8	<i>Herpetogramma rudis</i> sp. Group (Warren, 1892)	<i>Hippotion celerio</i> (Linnaeus, 1758)	<i>Conogethes punctiferalis</i> (Guenée, 1854)
9	<i>Idaea</i> sp.	<i>Lymantria marginata</i> Walker, 1855	<i>Cyana peregrina</i> (Walker, 1854)
10	<sup>b</sup> <i>Maruca vitrata</i> (F, 1787)	<sup>b</sup> <i>Maruca vitrata</i>	<sup>b</sup> <i>Maruca vitrata</i>
11	<i>Nausinoe geometralis</i> (Guenée, 1854)	<i>Nepita conferta</i> (Walker, 1854)	<i>Chrysodeixis eriosoma</i> (Doubleday, 1843)
12	<i>Pandesma</i> sp.	<i>Olepa ricini</i> agg. (Fabricius, 1775)	<i>Ercheia cyllaria</i> (Cramer, 1779)
13	<i>Petelia</i> sp.	<i>Orvasca subnotata</i> Walker, 1865	<i>Eudocima homaena</i> (Hübner, 1816)
14	<sup>c</sup> <i>Spodoptera litura</i> (F, 1775)	<sup>c</sup> <i>Spodoptera litura</i>	<i>Plecoptera</i> spp.
15	<sup>d</sup> <i>Spoladea recurvalis</i> (Fabricius, 1775)	<sup>d</sup> <i>Spoladea recurvalis</i> (Fabricius, 1775)	<i>Idaea costiguttata</i> (Warren, 1896)
16	<i>Simplicia</i> sp.	<i>Syntomoides imaon</i> (Cramer, 1780)	<i>Cyana</i> sp.
17	<i>Poliobotys ablactalis</i> (Walker, 1859)	<i>Traminda mundissima</i> (Walker, 1861)	<i>Oeonistis cf. entella</i> Cramer, [1779]
18	<i>Pyralis manihotalis</i> Guenee, 1854		<i>Pandesma</i> sp.

Note: Same alphabets in superscript indicate common occurrence of moth species in more than one study area



**Fig.1** Family-wise representation of moths among the study areas

(47%), Sphingidae (17%), Crambidae and Geometridae (12% each), and Eupterotidae and Noctuidae (6% each).

The study area III (Vidyapeeta) exhibited the highest number of species belonging to the family Erebidae (61%), followed by Crambidae (17%), Geometridae (11%), Sphingidae (6%) and Noctuidae (5%).

Members of the family Crambidae (grass moths) are the highest in number, mainly due to the presence of grass lawns on the campus, a well-known breeding ground for these insects. Nayak and Ghosh (2020) reported diversity of moths in Banaras Hindu University (Varanasi, India) campus and Ahire and Khobragade (2021) Ahmednagar College campus, Ahmednagar (Maharashtra). Nayak and Sasmal (2020) recorded monsoon moths of Midnapore town, West Bengal. Moths as pests in agri-horticultural ecosystems have been widely reported (Sharma *et al.*, 2008; Sharma and Ramamurthy, 2009; Muddasar *et al.*, 2017; Kotikal *et al.*, 2022). The moth species associated with agri-horticultural ecosystems recorded during the study are likely due

to landscaping, and peri-urban farms. They are *Conogethes punctiferalis*, *Spodoptera litura*, *Chrysodeixis eriosoma*, *Achaea Janata*, *Olepa ricini*, *Amata passalis*, *Eudocima phalonia*, *Spoladea recurvalis*, *Nausinoe geometralis*, *Maruca vitrata*, and *Herpetogramma rudis* sp. group. Three families, Crambidae, Erebidae, and Geometridae, represented more than 75% of the moth species documented during the present observations. The dominance of Crambidae could be attributed to the presence of grassy habitats in the study areas. The dominance of these families in other parts of India has also been recorded in Amravati (Gadhikar *et al.*, 2015); Midnapore (Nayak and Sasmal, 2020); Varanasi (Nayak and Ghosh, 2020), Chennai (Nagaraja *et al.*, 2021); Wardha (Chandrakar *et al.*, 2022). Numerous factors contribute to the decline of moths, such as rapid urbanisation, habitat loss, artificial light, intensive agriculture, pesticide pollution, and lack of conservation policies (Dennis *et al.*, 2019). This paper presents the findings from three areas of Urban Bengaluru, focusing on macro-moths. It is

the first time report of moths from the selected areas in Bengaluru.

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