

The First Record on the Diversity of Moths (Lepidoptera: Sub-Order Glossata) from Bandh Talav Kudwa, Gondia Eastern Maharashtra, India

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Abstract: The present study was conducted regularly from the month of June to September 2025 (Monsoon season) on the diversity of moths in the study area of Bandh Talav Kudwa, Gondia Eastern Maharashtra India. Total of 58 species belonging to 48 genera under 7 super families and 10 families of moths are observed and identified first time from study area. Most species of moths are nocturnal habit but it is noticeable that the most of the moths observed and recorded in the study area in day light time naturally from Bandh Talav, Gondia Eastern Maharashtra, India.

In the present investigation dominant host plants are *Mesosphaerum suaveolens* or *Hyptis* (Mint plant) followed by *Lantana camara* (Tick berry), *Parthenium hysterophorus* (Congress grass) and *Cassia tora* (Tora). Out of these most of the moths were found and reported on host plant *Hyptis* from Bandh Talav, Gondia, Eastern Maharashtra.

The Shanon –Wiener diversity of index for genus $H=1.67$, Evenness 0.43 and Richness 12.14 while the diversity index of species $H=1.72$ and Evenness 0.42 and Richness 14.03 are calculated. Similarly Simpsons index of diversity for genus $D=0.18$, $1-D=0.82$ and $1/D=5.55$. While diversity index for species $D=0.18$, $1-D=0.82$ and $1/D=5.55$ indices are calculated.

Keywords: Moths, Diversity, Host plant *Hyptis*, Bandh Talav, Gondia.

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I. INTRODUCTION

Moths are cosmopolitan in distribution and a most diverse group within order Lepidoptera (Glossata). Moths are mostly nocturnal, pollinators and play a important role in pollination plant species (Pradhan *et al.*, 2024). Moths as ecological indicators and affected by a minute changes in climate (Dar and Jamal, 2021). Over 160000 described species and equal number of undescribed species of moth's worldwide (Merckx *et al.*, 2015). There are approximately 12000 species of moths in India (Chandra and Nema, 2007). The Sub-order Glossata is used to include all butterflies and majority of moth's species. Glossata has replaced in place of Heterocera according to modern taxonomy. A record of 58 species belonging to 48 genera under 10 families with 7 super families was reported from Bandh Talav, Kudwa Gondia Eastern Maharashtra, India.

Total 338 moths species belonging to 32 families, 14 super families were illustrated checklist based on museum specimens and surveys from New Delhi, India (Komal *et al.*, 2021).

II. MATERIALS AND METHODS

Present study was carried out in Bandh Talav Kudwa Gondia, Eastern Maharashtra India. Gondia is the district of Talav (Ponds). One of them is a Bandh Talav Kudwa Gondia. Bandh Talav is situated at eastern side of district Gondia. Bandh Talav is 1.6 k.m. from Gondia city. Bandh Talav is located at Co- ordinates $21^{\circ}08'N$ and $80^{\circ}43'E$. The schedule was regularly survey for the period of 4 months from June 2025 to September 2025. The data has been observed and examined during day light time and evening period. Digital camera used for digital photography. The species were observed, reported and identified by available literature, references, publications, standard keys and by experts (Hampson, 1892, Holloway 2005,

Komal, *et al.*, 2021, Kulkarni *et al.*, 2022, Chandra and Nema, 2007)



Fig.1 Bandh Talav Kudwa, Gondia Eastern Maharashtra, Satellite Image, Host plant *Hyptis*

III. SYSTEMATIC CLASSIFICATION

Class -Insecta -Linnaeus 1758, Order –Lepidoptera Linnaeus 1758, Sub- order- Glossata Fabricius 1775

A. Superfamily- *Pyroloidea* Family- *Crambidae* Latreille 1810

Table No.1 Checklist of moths first reported from Bandh Talav, Kudwa, Gondia

SN	Common Name	Scientific Name	Observed Status
1	Variegated pearl	<i>Synclera traducalis</i> Zeller 1852	Day light
2	Waved China mark	<i>Parapoynx fluctuosalis</i> Meyrick 1899	Day light
3	Rice case bearer	<i>Parapoynx stagnalis</i> Zeller 1852	Day light
4	Grass webworm	<i>Herpetogramma</i> sp. Lederer 1863	Day light
5	Serpentine webworm	<i>Herpetogramma aeglealis</i> Walker 1859	Evening period
6	Rice stem borer	<i>Scirpophaga incertulas</i> Treitschke 1832	Evening period
7	-	<i>Isocentris filalis</i> Guenee 1854	Day light
8	Bean pod borer	<i>Maruca vitrata</i> Fabricius 1787	Day light
9	Beet webworm	<i>Spoladea recurvalis</i> Fabricius 1775	Day light
10	Rasp berrymoth	<i>Pyrausta signatalis</i> Walker 1866	Day light
11	Perilla leaf moth	<i>Pyrausta phoenicealis</i> Hubner 1818	Day light
12	Jasmin leaf webworm	<i>Nausinoe geometralis</i> Guenee 1854	Day light
13	Ocimum leaf folder	<i>Orphanostigma abruptalis</i> Walker 1859	Day light
14	Crambid snout moth	<i>Metoea foedalis</i> Guenee 1854	Day light
15	Fruit shoot borer	<i>Leucinodes orbonalis</i> Guenee 1854	Day light
16	Bicoloured Pearl	<i>Glyphodes bicolor</i> Swainson 1821	Day light
17	White pearl	<i>Palpita vitrealis</i> Rossi 1794	Day light

Superfamily- *Pyroloidea* Family-*Pyralidae* Latreille 1809

SN	Common Name	Scientific Name	Observed Status
1	European corn borer	<i>Ostrinia nubilalis</i> Hubner 1796	Day light

Superfamily- *Noctuoidea* Family- *Erebidae* Leach 1815

SN	Common Name	Scientific Name	Observed Status
1	Passenger moth	<i>Dysgonia algira</i> Linnaeus 1767	Day light
2	Fruit piecer moth	<i>Grammodes geometrica</i> Fabricius 1775	Day light
3	Hubner's wasp moth	<i>Amata huebneri</i> Boisduval 1829	Day light

4	Sandalwood defoliator	<i>Amata passalis</i> Fabricius 1781	Day light
5	Handmaiden moth	<i>Amata cyssea</i> Stoll 1782	Day light
6	Sugarcane looper	<i>Mocis frugalis</i> Fabricius 1775	Day light
7	African peach moth	<i>Gesonia obeditalis</i> walker 1859	Day light
8	Triangular stiped moth	<i>Chalciope mygdon</i> Cramer 1777	Day light
9	Erebid moth	<i>Attonda adspersa</i> R. Felder& Rogenhofer 1874	Day light
10	Castor silk moth	<i>Olepa ricini</i> Fabricius 1775	Evening period
11	Owl moth	<i>Anticarsia irrorata</i> Fabricius 1781	Day light
12	Vetch looper moth	<i>Caenurgia chloropha</i> Hubner 1818	Day light
13	Ficus feeding erebid	<i>Rhesala moestalis</i> Guenee 1854	Day light
14	-	<i>Plecoptera sp.</i> Guenee 1852	Day light
15	Green cloverworm	<i>Hypena scabra</i> Fabricius 1798	Day light
16	Yellow tail moth	<i>Euprocis similis</i> Fussli 1775	Day light

Superfamily- Noctuoidea Family- Noctuidae Latreille1809

SN	Common Name	Scientific Name	Observed Status
1	Rice army moth	<i>Leucania sp.</i> Ochsenhemer 1816	Day light
2	Green garden looper	<i>Chrysodeixis eriosoma</i> Doubleday 1843	Day light
3	Tobacco cut worm	<i>Spodoptera litura</i> Fabricius 1775	Day light
4	Paddy army worm	<i>Spodoptera mauritia</i> Boisduval 1833	Day light
5	Chinese marble moth	<i>Acontia marmoralis</i> Fabricius 1794	Day light
6	Owlet moth	<i>Arsacia rectalis</i> Walker 1863	Day light

Superfamily- Noctuoidea Family- Nolidae Bruand 1847

SN	Common Name	Scientific Name	Observed Status
1	Common moth	<i>Carea angulata</i> Fabricius 1793	Day light

Superfamily-Geometroidea Family- Geometridae Leach 1815

SN	Common Name	Scientific Name	Observed Status
1	Plain wing virbia moth	<i>Petelia medardaria</i> Herrich-Schaffer 1856	Day light
2	Wave moth	<i>Scopula emissaria</i> Walker 1861	Day light
3	Cream wave moth	<i>Scopula floslactata</i> Haworth 1809	Day light
4	Lesser cream wave	<i>Scopula immutata</i> Linnaeus 1758	Day light
5	Geometrid moth	<i>Scopula pulchellata</i> Fabricius 1794	Day light
6	Acacia blood vein moth	<i>Traminda mundissima</i> Walker 1861	Day light

Superfamily-Tortricoidea Family- Tortricidae Latreille1802

SN	Common Name	Scientific Name	Observed Status
1	Leaf webber moth	<i>Loboschiza koenigiana</i> Fabricius 1775	Day light
2	Oriental fruit moth	<i>Grapholita molesta</i> Busck 1916	Day light
3	Clover seed moth	<i>Grapholita compositella</i> Fabricius 1775	Day light
4	Rose shoot moth	<i>Notocelia</i> Hubner 1825	Day light
5	Mango flower webworm	<i>Dudua aprobola</i> Meyrick 1886	Day light

Superfamily-Pterophoroidea Family- Pterophoridae Zeller 1841

SN	Common Name	Scientific Name	Observed Status
1	T-plume moth	<i>Emmelina monodactyla</i> Linnaeus 1758	Day light
2	White plume moth	<i>Pterophorus pentadactyla</i> Linnaeus 1758	Day light
3	Ragwort plume moth	<i>Platyptilia isodactylus</i> Zeller 1852	Day light

Superfamily-Gelechioidea Family- Scythrididae Rebel 1901

SN	Common Name	Scientific Name	Observed Status
1	Flower moth	<i>Eretmocera impectella</i> Walker 1864	Day light

Superfamily-Thyridoidea Family- Thyrididae Herrich-Schaffer1846

SN	Common Name	Scientific Name	Observed Status
1	Leaf webber	<i>Striglina scitaria</i> Walker 1862	Day light
2	-	<i>Hypolamprus striatalis</i> Swinhoe 1885	Day light

IV. RESULTS AND DISCUSSION

A total of 58 moths species belonging to 48 genera under 7 superfamilies viz., Pyroloidea, Noctuoidea, Geometroidea, Tortricioidea, Pterophoroidea, Gelechioidea and Thyridoidea and 10 families namely Pyralidae (1 species, 1 genera), Crambidae (17 species, 14 genera), Erebididae (16 species, 14 genera), Noctuidae (6 species, 5 genera), Nolidae (1 species, 1 genera), Geometridae (6 species, 3 genera), Tortricidae (5 species, 4 genera), Pterophoridae (3 species, 3 genera), Scythrididae (1 species, 1 genera) and Thyrididae (2 species, 2 genera) were observed and identified from Bandh Talav, Gondia Eastern Maharashtra India. Out of which the superfamily Noctuoidea had dominant and family Crambidae had 14 genera and 17 species had found to be the dominant.

In the present study, dominant host plants *Hyptis suaveolens* (Mint plant) and *Lantana camara* (Tick berry) are commonly abundant in study area. It had been noticeable that most of the moths were observed and found on Mint plant and Tick berry plant. Then followed by *Parthenium hysterophorus* (Congress grass) and *Cassia tora* (Tora) from Bandh Talav, Gondia Eastern Maharashtra, India.

A total of 39 moth species were identified belonging to 9 different families from Ravet and Wadgaonsheri Pune in India

(Salunke and Kudale, 2023). A total of 159 species were identified moths species under 139 genera, 23 families and 14 superfamilies from Campus of forest Research Institute (TFRI), Jabalpur, Madhya Pradesh (Paunikar *et al.*, 2023).

A total 69 moth species were recorded and identified from Balaghat City Southern Madhya Pradesh, India (Tabassum and Bisen, 2022). Total 30 moth species belonging to 9 families, 29 genus were recorded from Bargi region of Jabalpur M.P (Shukla and Tiwari, 2024). A total 97 species belonging to 87 genera under 27 families were recorded from Western Ghats, South Goa (Kulkarni *et al.*, 2022)

Total 128 moths' species were recorded from Dhamtari district, Chhatisgarh (Chandrakar *et al.*, 2025). A total 300 moth species were collected and identified from Kullu and Mandi districts of Himachal Pradesh (Thakur, *et al.*, 2024). A total of 23 species belonging to 21 genera were collected from Western Ghats, India (Katewa and Pathonia, 2024). A total of 140 moth species were documented belonging to family.

Erebididae, Crambidae from Garbhanga Reserve Forest, Basistha, Assam, India (Ahmed, 2024). A total of 12 species belonging to 12 genera under 6 families and 11 sub-families from Khamgaon Taluka Buldhana district, India (Hushare and Nikam, 2025).

Table 2 Showing Diversity of Index Distributed with Genus and Species of Moths from Bandh Talav, Kudwa Gondia Eastern Maharashtra

SN	Moths	Simpsons Diversity Index			Shanon-Wiener Diversity Index	Evenness	Richness
	Indices	D	1-D	1/D	'H'	'E'	'd'
1	Genus	0.18	0.82	5.55	1.67	0.43	12.14
2	Species	0.18	0.82	5.55	1.72	0.42	14.03

Note: D- Simpsons Index, 1-D is always consider Simpsons Diversity Index, 1/D –Simpsons Reciprocal Index, E- Evenness, d- Richness, H- Shanon-Wiener Diversity Index

Here, lower the value of 'D' it means higher the diversity of genus and species of moths. Higher the value of 'H' indicates higher the diversity of genus and species of moths. Similarly, higher the value of 'd' indicates higher the diversity of genus and species of moths (Simpson, 1949). The value of $H < 3$ indicate more the diversity of genus and species of moths. The evenness index value approaches 1 that means the distribution of genus and species is evenly distributed. (Latumahina *et al.*, 2020).

Here, Simpson's diversity index for genus and species are relatively same but Shannon –Wiener diversity index of the species is higher than the index of genus. For the above indices represent the rich biodiversity of moth fauna in study area of Bandh Talav Gondia. It is first record documentation of moth's diversity within said area. The moths are important to use for pollination, bioindicator, source of food, agriculture pest, seed production and research studies. In the present study some moth predators were observed in Bandh Talav, such as Spiders, Dragonflies, Lizards, Calotes, Ants, Mantis and Birds.



Fig: 2 The Pictures Represented the First Record of Moths from BandhTalav, Kudwa, Gondia

Fig. 2. 1. *Synclera traducalis* 2. *Parapoynx fluctuosalis* 3. *Parapoynx stagnalis* 4. *Maruca vitrata* 5. *Spoladea recurvalis* 6. *Isocentris filalis* 7. *Amata huebneri* 8. *Amata cyssea* 9. *Syntomoides imaon* 10. *Mocis frugalis* 11. *Gesonina obditalis* 12. *Chalciope mygdon* 13. *Anticarsia irrorata* 14. *Caenurgina chloropha* 15. *Rhesala moestalis* 16. *Glyphodes bicolor* 17. *Orphanostigma abruptalis* 18. *Ostrinia nubilalis* 19. *Pyrausta signatalis* 20. *Pyrausta phoenicealis* 21. *Dysgonia algira* 22. *Grammodes geometrica* 23. *Nausinoe geometralis*

24. *Traminda mundissima* 25. *Arsacia rectalis* 26. *Strigina scitaria* 27. *Scopula ornata* 28. *Scopula emissaria* 29. *Metoea foedalis* 30. *Scopula immutata* 31. *Eretmocera impectella* 32. *Euproctis similis* 33. *Grapholita compositella* 34. *Loboschiza koenigiana* 35. *Hypena scabra* 36. *Hypolamprus striatalis* are first recorded from Bandh Talav Kudwa Gondia Eastern Maharashtra, India.

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