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A study on the moth (Insects: Lepidoptera: Heterocera) diversity during rainy season from Tirora, District Gondia, Maharashtra

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Abstract
A study on moth diversity of Tirora, district Gondia, Maharashtra was carried out during rainy season. A field survey of 2 months from August 2021- September 2021was done to prepare a list of moth species. A total 34 species of moths belonging to 8 families and 17 subfamilies were recorded from different sites of Tirora, district Gondia. Family Erebidae (12 species) was found to be the dominating taxon, followed by Crambidae (9 species), 4 species from Saturnidae, 3 species from Geometridae, 2 species each from Eupterotidae and Noctuidae and only 1 species was recorded each from family Pyralidae and Uranidae. There found dominancy of moth species from family Erebidae as compared to other family while the very least moth species were recorded from families Pyralidae and Uraniidae.
The present study on the moth diversity with a checklist of 34 is the first study on moth in the Tirora of Gondia District of Maharashtra.

Keywords: Moths, diversity, Karanja (Ghadge), Vidarbha, Maharashtra

1. Introduction
Moths and butterflies belong to order Lepidoptera of class Insecta and is one of the largest order of insects. Many researchers have studied the diversity of moth fauna during their survey in different region of Maharashtra state. Hampson (1891) [8] have reported total 611 species of moths from Maharashtra. Gurule *et al.,* 2010 [4] have recorded 70 species of moths from Nashik district of Maharashtra from family Noctuidae (including Ereidae). Gurule and Nikam (2013) [5] have reported 245 species of moths from northern Maharashtra. Gurule (2013) [6] in his further studies reported total 405 species of moths from northern Maharashtra. Shubhalaxmi *et al.,* 2011 [13] have recorded 418 moth taxa from 28 families & 15 super families from Northern Western Ghats of Maharashtra and also reported 11 species of moths from 5 families as a new record from India. Pathre *et al.,* 2019 [12] have recorded total 112 species of Moths from Marathwada region belonging to 88 genera and 15 families.
Ahire and Khobragade (2021) [1] recently reported a preliminary checklist of 34 moth species from Ahmednagar College campus. Gurule and Brookes (2021) [7] also recently recorded 200 moth's species belonging to 23 families and 13 superfamilies from Goa University campus.
Many workers have studied the diversity of moth from different region of Maharashtra, but no data available on the diversity of moths from Tirora of Gondia district of Maharashtra. Therefore, in the present survey a first preliminary attempt was done to record the diversity of moths from Tirora, district Gondia of Maharashtra.

2. Material and Methods
A field survey was done from the month of August 2021 to September 2021 during rainy season. The moths observed in and nearby area of Tirora during day and evening in their natural environmental condition were considered for the study. The moths observed were photographed with the help of mega plexus camera. The moths observed were identified with the help of research paper and literature available (Sachin A Gurule and Santosh M Nikam (2013) [5], Sachin A Gurule and Ryan D Brookes (2021) [7]. Those moths which were not possible to identify at species level were identified at their genus level. The list of moth species sequence (super families and families) prepared was according to Nieukerken *et al.* (2011) [11].

3. Results and Discussion

In the present survey total 34 species of moths belonging to 8 families 17 subfamilies were recorded from different sites of Tirora (Table 1). Family Erebidae (12 species) was found to be the dominating taxon, followed by Crambidae (9 species), 4 species from Saturnidae, 3 species from Geometridae, 2 species each from Eupterotidae and Noctuidae and only 1 species was recorded each from family Pyralidae and Uranidae.

In the present study there found dominancy of moth species from family Erebidae as compared to other family while the very least moth species were recorded from families Pyralidae and Uraniidae.

Ahire and Khobragade (2021) [1], Gadhikar *et al.*, (2013) [3], Gurnule SA, Nikam (2013) [5], Kalawate A and Sharma RM (2017) [10], Pathre *et al.*, (2019) [12] in their research work also reported about the dominancy of moth species from family Erebidae from different region such as Ahmednagar college campus, Amravati, North Maharashtra region, Pench National Park and North Western Ghats of Maharashtra respectively.

Chandra K (2007) [2] also revealed that Family Noctuidae (including Erebidae) and Crambidae were found to be the dominant families from the study of moth diversity from the 142 moths recorded belonging to 90 genera and 16 families of Madhya Pradesh and Chhattisgarh.

Gadhikar *et al.*, (2013) [3], Jadhav *et al.*, (2016) [9] and Pathre *et al.*, (2019) [12] also recorded single moth species (*Micronia aculeate*) from family Uraniidae.

The present study on the moth diversity with a checklist of 34 moth species from Tirora is the first study from Tirora, district Gondia of Maharashtra. Further detailed survey from Tirora tahsil during different season is requiring for checking the complete diversity of moth from this area.

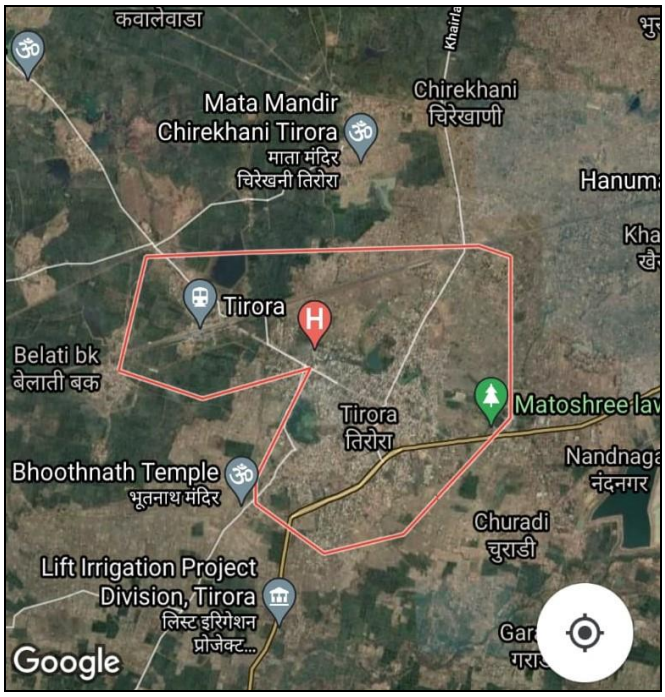


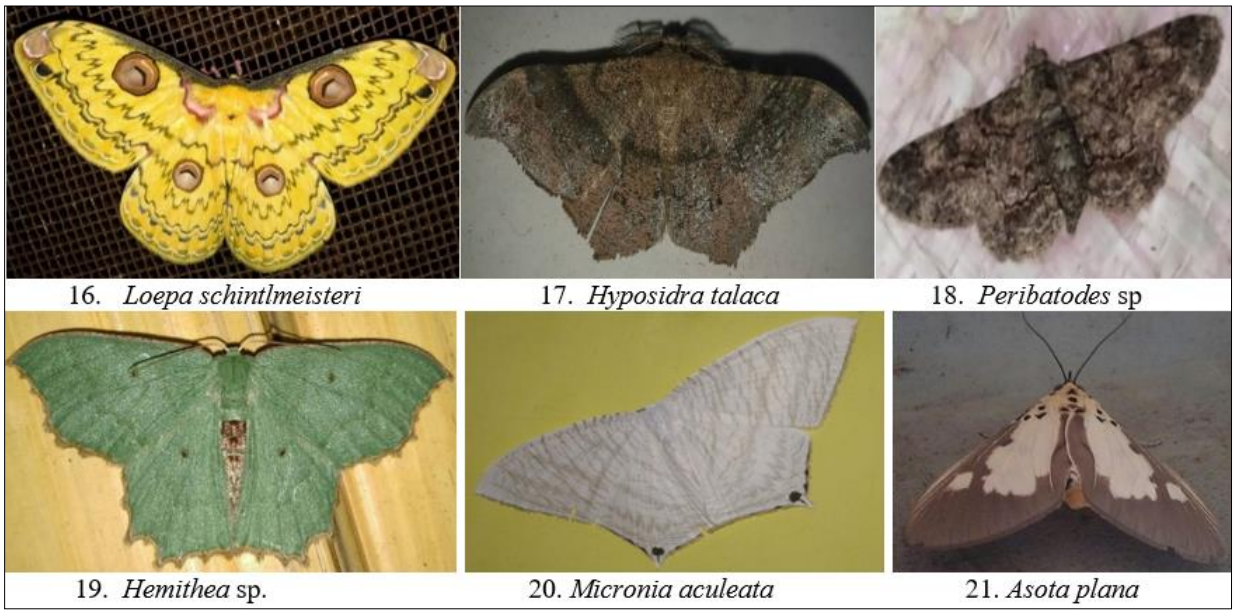
Fig 1: Google Map of Tirora of District Gondia, Maharashtra (India)

Table 1: List of moth species recorded during rainy season in Tirora, District Gondia (Maharashtra)

Sr. No	Taxon	Sr. No	Taxon
I	Superfamily: Pyraloidea	17.	*Hyposidra talaca* (Walker, 1860)
1.	**Family: Crambidae**	18.	*Peribatodes* sp.
	Subfamily: Acentropinae		Subfamily: Geometrinae
1.	*Parapoynx fluctuosalis* (Zeller, 1852)	19.	*Hemithea aestivaria* (Hubner, 1799)
	Subfamily: Spilomelinae	6.	**Family: Uraniidae**
2.	*Glyphodes actorionalis* (Walker, 1859)		Subfamily: Microniinae
3.	*Haritalodes derogata* (Fabricius, 1775)	20.	*Micronia aculeata* (Guenée,1857)
4.	*Herpetogramma* sp.	IV	Superfamily: Noctuoidea
5.	*Palpita vitrealis* (Rossi, 1974)	7.	**Family: Erebidae**
6.	*Synclera traducalis* (Zeller, 1852)		Subfamily: AGANAINAE
	Subfamily: Crambinae	21.	*Asota plana* (Walker, 1854)
7.	*Crambus* sp.		Subfamily: arctiinae
	Subfamily: Pyraustinae	22.	*Creatonotos gangis* (Linnaeus, 1763)
8.	*Pyrausta panopealis* (Walker, 1859)	23.	*Olepa ricini* (Fabricius, 1775)
9.	*Paliga damastesalis* (Walker, 1859)		Subfamily: EREBINAE
2.	**Family: Pyralidae**	24.	*Achaea janata* (Linnaeus, 1758)
	Subfamily: Phycitinae	25.	*Bastilla arcuata* (Moore, 1877)
10.	*Plodia interpunctella* (Hubner, 1813)	26.	*Erebus macrops* (Linnaeus, 1768)
II	Superfamily: Bombycoidea	27.	*Polydesma boarmoides* (Guenée, 1852)
3.	**Family: Eupterotidae**		Subfamily: Herminiinae
	Subfamily: Eupterotinae	28.	*Bocana manifestalis* (Walker, 1858)
11.	*Eupteorte undata* (Blanchard, 1844)	29.	*Hydrillodes* sp.
12.	*Eupteorte* sp.	30.	*Nodaria externalis* (Guenée, 1854)
4.	**Family: Saturniidae**		Subfamily: Lymantriinae
	Subfamily: Saturniinae	31.	*Euproctis* sp.1
13.	*Actias selene* (Hubner, 1807)	32.	*Euproctis* sp. 2
14.	*Antheraea mylitta* (Drury, 1773)	8.	**Family: Noctuidae**
15.	*Attacus atlas* (Linnaeus, 1758)		Subfamily: Eustrotiinae
16.	*Loepa schintlmeisteri* (Brechlin, 2000)	33.	*Ozarba* sp.
III	Superfamily: Geometroidea		Subfamily: Xyleninae
5.	**Family: Geometridae**	34.	*Spodoptera litura* (Fabricius, 1775)
	Subfamily: Ennominae		


1 Parapoynx fluctuosalis
2. Glyphodes actorionalis
3. Haritalodes derogate
4. Herpetogramma sp.
5. Palpita vitrealis
6. Synclera traducalis
7.Crambus sp
8. Pyrausta panopealis
9. Paliga damastesalis
10. Plodia interpunctella
11. Eupterote undata
12. Eupterote sp.
13. Actias selene
14. Antheraea mylitta
15. Attacus atlas

Plate 1.


16. Loepa schintlmeisteri
17. Hyposidra talaca
18. Peribatodes sp
19. Hemithea sp.
20. Micronia aculeata
21. Asota plana

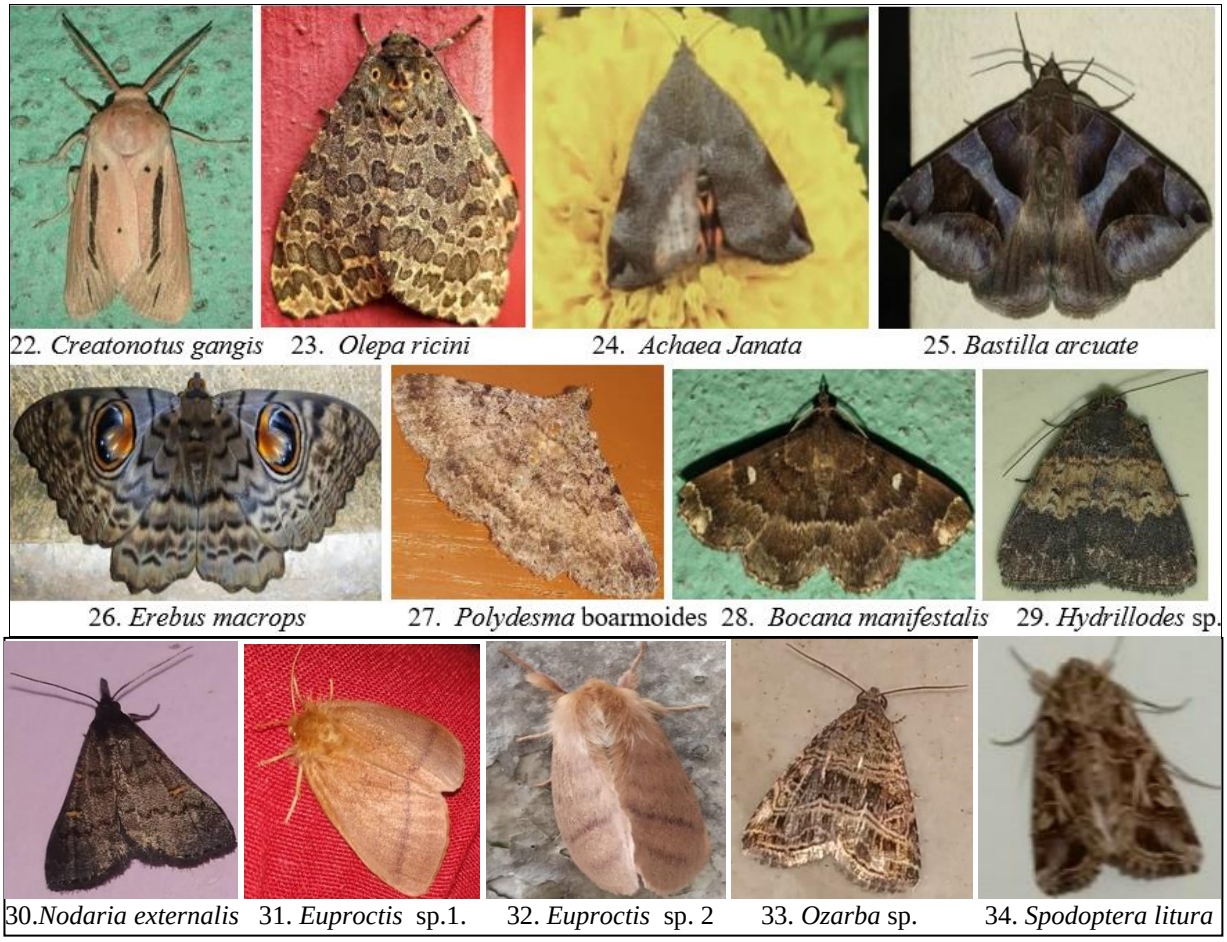


Plate 2.

4. Acknowledgement

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