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Cover: Orange Oakleaf *Kallima inachus* with colour pencils and watercolor wash by Elakshi Mahika Molur adapted from a workshop by Lenin Raj.



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SHORT COMMUNICATION

## Preliminary observations of moth (Lepidoptera) fauna of Purna Wildlife Sanctuary, Gujarat, India

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**Abstract:** Purna Wildlife Sanctuary is located in the Sahyadri range in Dang District of Gujarat State. A survey of the sanctuary was conducted to explore moth fauna from the area, as no previous work is available on this group. Thus, an attempt has been made to study the moth fauna based on collections made from April 2019 to March 2021 under the various ranges of the sanctuary. During the studies, a list of 42 species referable to 39 genera and nine families have been provided.

**Keywords:** Dang, moths, Gujarat, Sahyadri, sanctuary

Gujarat is the fifth largest state of India and is situated on the western coast with a coastline of 1,600 km under the Kathiawar peninsula. There are 33 districts in Gujarat. Purna Wildlife Sanctuary (WS) (Dang District, Gujarat), known as a hotspot for its biodiversity, is situated on the extreme northern side of the Western Ghats. It has tropical moist deciduous forests with various flora and fauna in it. It comprises of two protected areas - Purna WS and Vansda National Park (NP). They are known to protect the precious fauna of the area, but limited information is available on the invertebrate fauna from the sanctuary. Purna WS is rich in its fauna because of its different terrain, landscapes, and forest.

Purna WS is located at Dang District of Gujarat under the coordinates 20.91793°N, 73.7007°E with an area of

160.84 km<sup>2</sup>. It has southern moist deciduous forests and southern dry deciduous forests (Champion & Seth 1968; Singh et al. 2000), with a normal rainfall of 1,600 mm annually. The topography of the WS is undulant with an altitudinal range of 130–1,100 m. Thus, the WS has a varied range of flora and fauna.

Moths play an important role as indicators of the health of an ecosystem (Bachanda et al. 2014). Most moth larvae are herbivorous and are predators of vegetables & crops, thus playing ecological roles throughout the life cycle (Scriber & Feeny 1979) while adults and larvae are food sources for other animals, and some are night pollinators (Holt 2002; Hahn & Bruhl 2016).

In class Insecta, moths are among the most varied groups (Soggard 2009). There are almost 1,65,000 species of moths throughout the world (Khan 2018), out of which about 12,000 species are described from India (Cotes & Swinhoe 1887–1889; Hampson 1893, 1894, 1895, 1896; Bell & Scott 1937; Chandra 2007; Chandra & Nema 2007; Smetacek 2011; Gurule & Nikam 2011, 2013; Uniyal et al. 2013; Sondhi & Sondhi 2016). Four-hundred-and-one species of moths have been recorded from Gujarat (Nurse 1899; Mosse 1929; Gupta & Thakur 1990), but no information is available on the moths

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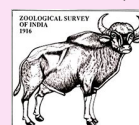
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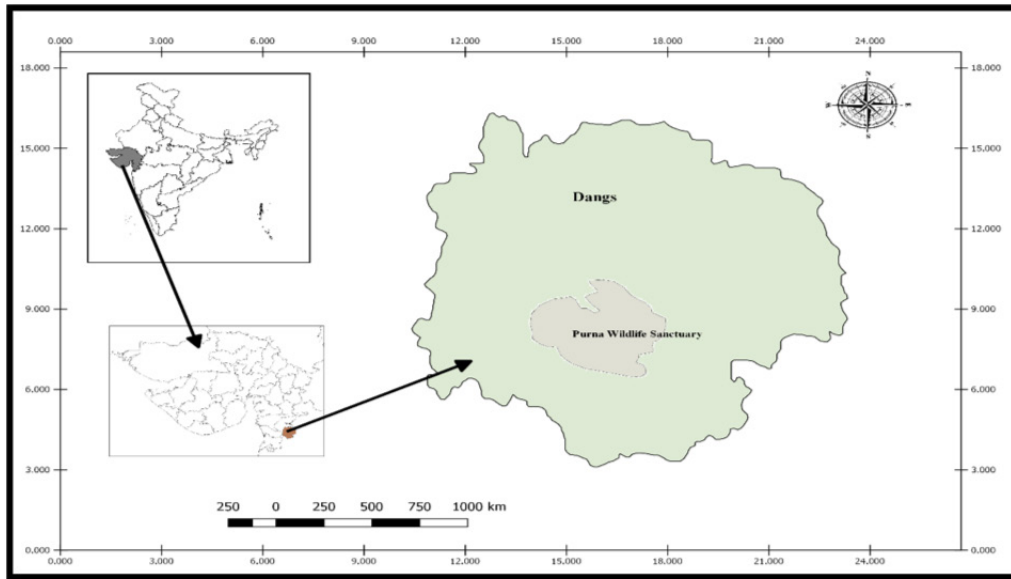


Figure 1. Map of the surveyed area of the Purna Wildlife Sanctuary.

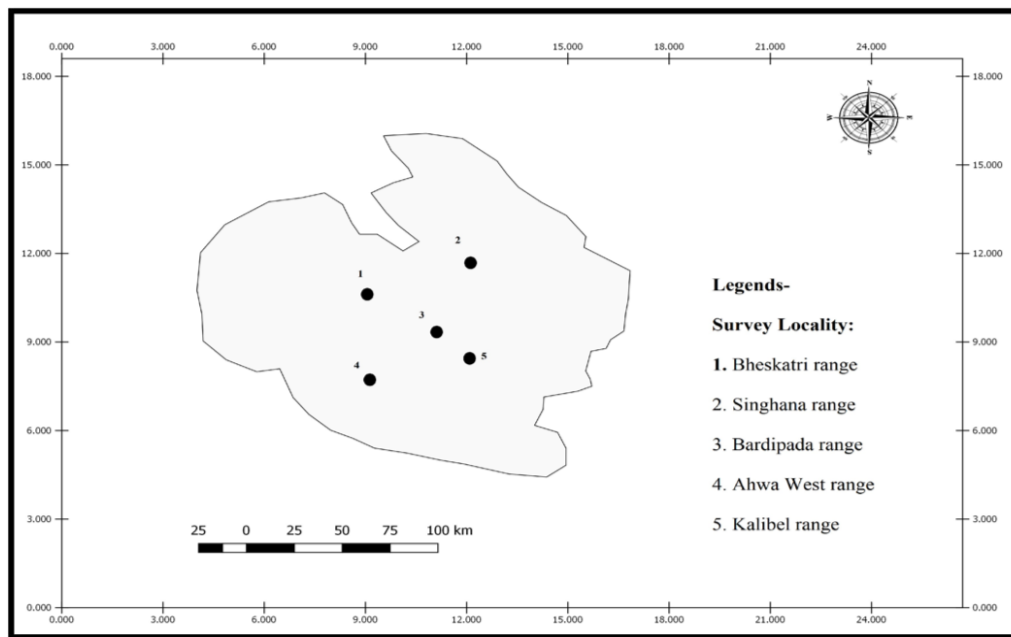


Figure 2. Survey localities of the Purna Wildlife Sanctuary.

from the Purna WS and therefore the present study was conducted for the first time.

**Collection and identification**

Survey of Purna WS was carried out from 2019–2022. Various localities were visited, viz.: Bardipada range, Bheskatri range, Kalibel range, and Singhana range of Dang & Ahwa districts of Gujarat (Table 1). For the collection, night traps for 5–6 hours were used for

Table 1. Collection of data from various localities of the study area.

	District	Sites surveyed	Individuals collected
1	Dang	Bardipada range	153
2		Bheskatri range	26
3		Kalibel range	141
4		Singhana range	48
5	Ahwa	Ahwa West range	39
<b>Total</b>			<b>407</b>

Table 2. List of preliminary observation moth fauna from Purna Wildlife Sanctuary.

	Scientific name	Status	Image numbers according to Annexure 1
<b>Superfamily: Pyraloidea</b>			
<b>Family: Crambidae</b>			
1	<i>Botyodes asialis</i> Guenée, 1854	Common	1
2	<i>Conogethes punctiferalis</i> (Guenée, 1854)	Rare	
3	<i>Cydalima laticostalis</i> (Guenée, 1854)	Common	
4	<i>Diaphania indica</i> (Saunders, 1851)	Common	
5	<i>Parotis marginata</i> (Hampson, 1893)	Rare	2
<b>Superfamily: Noctuoidea</b>			
<b>Family: Erebidae</b>			
6	<i>Achaea janata</i> (Linnaeus, 1758)	Common	3
7	<i>Amata cyssea</i> (Stoll, [1782])	Rare	
8	<i>Anomis flava</i> (Fabricius, 1775)	Rare	
9	<i>Argina astrea</i> (Drury, 1773)	Common	4
10	<i>Arna bipunctapex</i> (Hampson, 1891)	Rare	5
11	<i>Asota caricae</i> (Fabricius, 1775)	Common	6
12	<i>Asota ficus</i> (Fabricius, 1775)	Common	7
13	<i>Chalciope mygdon</i> (Cramer, [1777])	Common	8
14	<i>Cretonotos gangis</i> (Linnaeus, 1763)	Common	9
15	<i>Eudocima phalonia</i> (Linnaeus, 1763)	Common	
16	<i>Lymantria serva</i> (Fabricius, 1793)	Rare	10
17	<i>Lyncestis amphix</i> (Cramer, [1777])	Rare	11
18	<i>Nepita conferta</i> (Walker, 1854)	Rare	
19	<i>Orvasca subnotata</i> Walker, 1865	Rare	
20	<i>Perina nuda</i> (Fabricius, 1787)	Common	
21	<i>Spilarctia</i> sp.	Rare	12
22	<i>Spirama helicina</i> (Hübner, 1824)	Common	13
23	<i>Sphrageidus similis</i> (Füssli, 1775)	Common	14
24	<i>Syntomoides imaon</i> (Cramer, [1779])	Common	15

	Scientific name	Status	Image numbers according to Annexure 1
25	<i>Thyas coronata</i> Fabricius (1775)	Common	16
26	<i>Thyas honesta</i> Hübner, [1824]	Common	17
27	<i>Trigonodes disjuncta</i> (Moore, 1882)	Common	18
28	<i>Utetheisa lotrix</i> (Cramer, [1777])	Common	19
<b>Family: Noctuidae</b>			
29	<i>Spodoptera litura</i> (Fabricius, 1775)	Common	20
<b>Superfamily: Geometroidea</b>			
<b>Family: Geometridae</b>			
30	<i>Biston suppressaria</i> (Guenée, [1858])	Rare	21
31	<i>Hypomecis</i> sp.	Rare	22
<b>Superfamily: Lasiocampoidea</b>			
<b>Family: Lasiocampidae</b>			
32	<i>Trabala ganessa</i> Roepke, 1951	Rare	23
33	<i>Trabala vishnou</i> (Lefebvre, 1827)	Rare	24
<b>Superfamily: Pyraloidea</b>			
<b>Family: Pyralidae</b>			
34	<i>Cadra cautella</i> (Walker, 1863)	Rare	25
<b>Superfamily: Bombycoidea</b>			
<b>Family: Saturniidae</b>			
35	<i>Actias selene</i> (Hübner, [1807])	Rare	26
36	<i>Antheraea paphia</i> (Linnaeus, 1758)	Rare	27
<b>Superfamily: Bombycoidea</b>			
<b>Family: Sphingidae</b>			
37	<i>Daphnis nerii</i> (Linnaeus, 1758)	Common	28
38	<i>Marumba dyras</i> (Walker, 1856)	Common	29
39	<i>Nephele hespera</i> (Fabricius, 1775)	Common	30
40	<i>Psilogamma</i> sp.	Common	31
41	<i>Theretra nessus</i> (Drury, 1773)	Rare	32
<b>Superfamily: Zygaenoidea</b>			
<b>Family: Limacodidae</b>			
42	<i>Parasa lepida</i> (Cramer, 1799)	Rare	

trapping moths per night.

Observation and collection of moths was done using a mercury vapor bulb of 200 W on a white sheet. A collection permit for moths was received from the Gujarat Forest Department vide letter no. WLP/RES/28/C/119-120/2020-21, dated 01/09/2020.

Collected specimens were labeled with locality labels in the field. Later on, they were sorted out, relaxed, pinned, and after identification up to the species level, they were labeled in the laboratory. Their identification was done with the help of identification keys, standard reference books, and available literature (Hampson 1894, 1895; Gurule et al. 2010, 2011; Gurule & Nikam 2013; Gurule 2013). Further, the specimens are deposited at the National Zoological Collection of Desert Regional

Centre, Jodhpur.

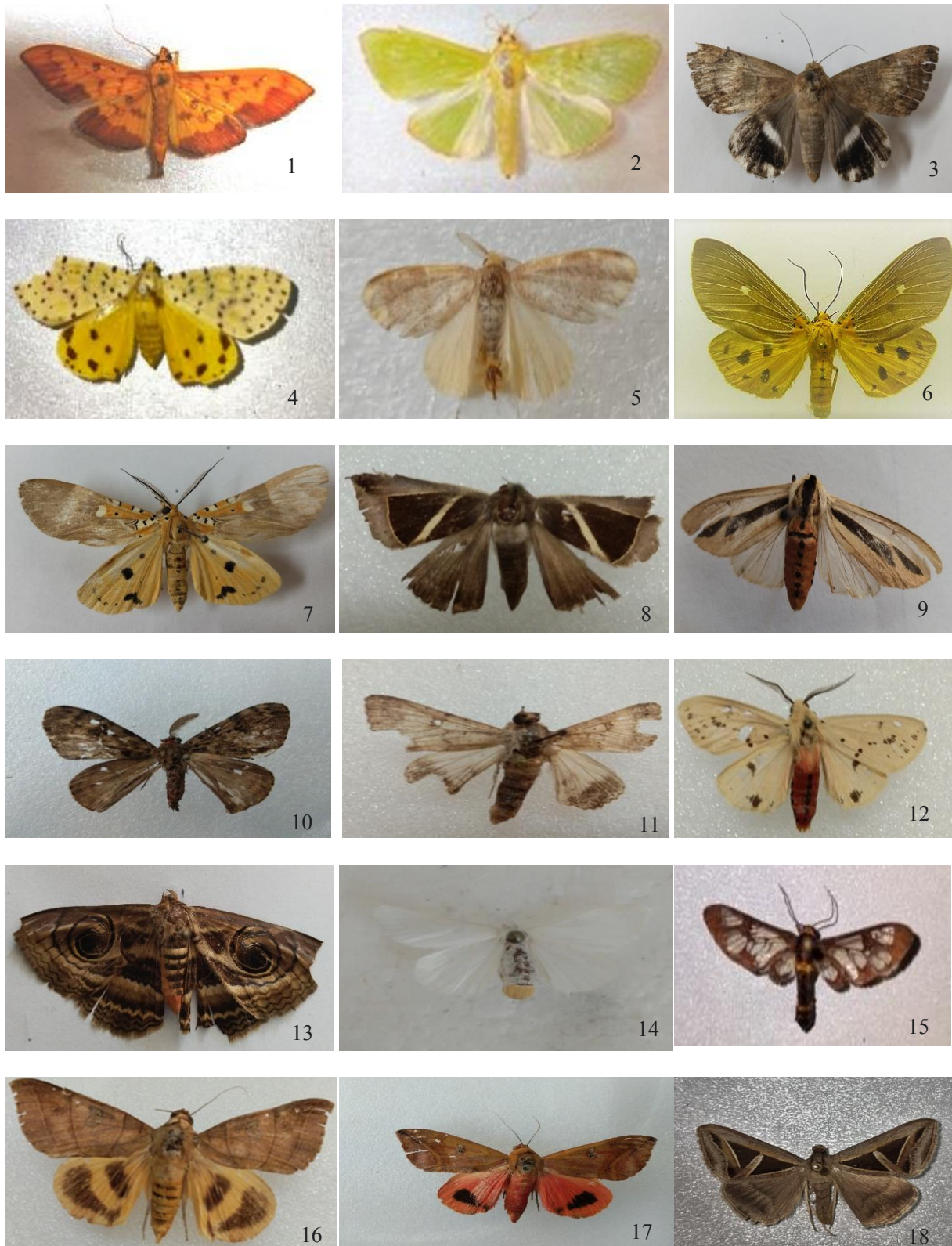
## RESULTS

Four-hundred-and-seven moth specimens were collected and further identified to 42 species under 39 genera and nine families (Table 2, Annexure 1). During the study, it was found that Erebidae is a dominant family of moths followed by Sphingidae, Crambidae, Saturniidae, Geometridae, Lasiocampidae, Noctuidae, Limacodidae, and Pyralidae in the Purna WS.

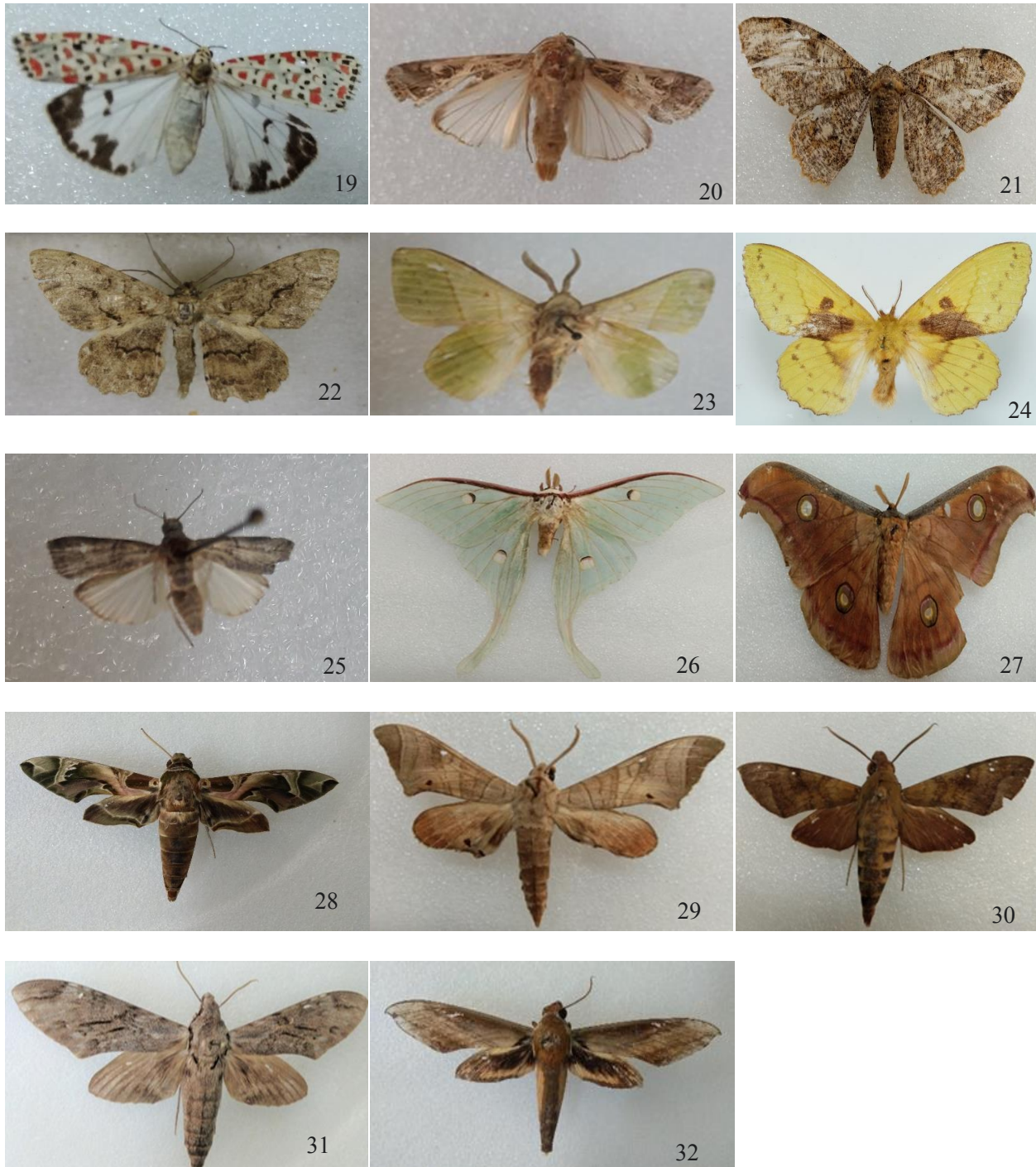
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Annexure 1. Photoplate of the species collected from the study sites. 1—*Botyodes asialis* Guenée, 1854 | 2—*Parotis marginata* (Hampson, 1893) | 3—*Achaea janata* (Linnaeus, 1758) | 4—*Argina astrea* (Drury, 1773) | 5—*Arna bipunctapex* (Hampson, 1891) | 6—*Asota caricae* (Fabricius, 1775) | 7—*Asota ficus* (Fabricius, 1775) | 8—*Chalciopie mygdon* (Cramer, [1777]) | 9—*Cretonotos gangis* (Linnaeus, 1763) | 10—*Lymantria serva* (Fabricius, 1793) | 11—*Lyncestis amphix* (Cramer, [1777]) | 12—*Spilarctia* sp. | 13—*Spirama helicina* (Hubner, 1824) | 14—*Sphrageidus similis* (Fussli, 1775) | 15—*Syntomoides imaoon* (Cramer, [1779]) | 16—*Thyas coronata* Fabricius (1775) | 17—*Thyas honesta* Hubner, [1824] | 18—*Trigonodes disjuncta* (Moore, 1882). © Preeti Choudhary.



Annexure 1 (cont.). Photoplate of the species collected from the study sites. 19—*Utethesia lotrix* Cramer, [1777] | 20—*Spodoptera litura* (Fabricius, 1775) | 21—*Biston suppressaria* (Guenee, [1858]) | 22—*Hypomecis* sp. | 23—*Trabala ganesha* Roepke, 1951 | 24—*Trabala vishnou* (Lefebvre, 1827) | 25—*Cadra cautella* (Walker, 1863) | 26—*Actias selene* (Hübner, [1807]) | 27—*Antheraea paphia* (Linnaeus, 1758) | 28—*Daphnis nerii* (Linnaeus, 1758) | 29—*Marumba dyras* Walker, 1856 | 30—*Nephele hespera* (Fabricius, 1775) | 31—*Psilogamma* sp. | 32—*Theretra nessus* (Drury, 1773). © Preeti Choudhary.

**Note:** There are 10 species of moths, whose photographs have not been provided in the Annexure because the species were represented by single specimens and have been thoroughly investigated/ identified with the help of stereo zoom motorized microscope and were not good enough to take photographs of dorsal/ventral view. The species have been identified by studying the key characters including other morphological features as demanded by the study. Further, the images provided in this manuscript are without scale.



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