



Expansion of the documented moth (Lepidoptera) diversity of Goa, India

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Abstract

Ecologically valuable and diverse, moths are a key part of insect biodiversity. A total of 180 moth species were sighted across different locations in Goa. This study expanded Goa's documented moth fauna via photographic surveys and field guide/database identification. We recorded 98 species for Goa; 95 were previously undocumented, one identified to species level from genus (*Lophosoma cuprea*) and two with colour polymorphism and sexual dimorphism respectively. Notably, *Attacus atlas*, the world's largest moth, was documented in the present study. This checklist highlights the rich diversity of moths in Goa and the necessity of ongoing biodiversity assessments for regional moth conservation.

Keywords: Atlas moth, *Attacus atlas*, Lepidoptera, Nocturnal fauna

Introduction

Invertebrates, with arthropods being numerically dominant, are critical contributors to ecosystem services (Dar *et al.*, 2021) [2]. Within Lepidoptera, moths constitute the majority, with approximately 160,000 described global species and likely many more undescribed (Heppner, 2008) [6]. India harbors a significant diversity, with 2,920 documented species (Sondhi *et al.*, 2024). Despite their ecological importance as pollinators, pest controllers, and bioindicators sensitive to environmental change (Walton *et al.*, 2020) [17], moths often receive less attention than butterflies (Rao Kulkarni *et al.*, 2022) [13] due to their cryptic appearance. Their ectothermic nature renders them particularly vulnerable to environmental stressors like habitat loss, deforestation, artificial light, and climate change, leading to declines in abundance and diversity (Fernandes, 2024; Nayak & Ghosh, 2020) [3, 11], underscoring the necessity of understanding their distribution and diversity.

Goa is a small State located in the center of Western Ghats, having lush green forests, beautiful coasts and dynamic plateaus, forming a wonderful ecologically diverse vegetation in itself harboring rich floral and faunal species of which many are endemic to the State (Fernandes, 2024) [3].

Prior investigations into the Lepidopteran fauna of Goa have yielded valuable insights. The first comprehensive report, conducted on the Goa University campus by Gurule and Brookes (2021) [5], documented 200 moth species, with 21 identified only to the genus level. Subsequently, Rao Kulkarni *et al.* (2022) [13] surveyed three selected locations in South Goa (Xeldem, Rivona, and Tilamol), recording 97 species of which 88 were new records. More recently, Fernandes (2024) [3] documented 193 moth species of which 128 were new records along with several caterpillars sighted in Verna village. Hence, the total number of moths documented in Goa comes to 511 species.

Given the limited number of studies conducted over a relatively short period that have revealed a significant

diversity of moth species in Goa, it is crucial to further investigate and document the region's moth fauna. Therefore, this study aims to contribute to the comprehensive checklist of moths in Goa by unveiling its rich and varied species.

Materials & Methods

The study was conducted from September 2023 to February 2025 [4] in various locations (Refer Supplementary material) in Goa, India. The state's location in the tropical region results in a pleasant climate, characterized by an average annual rainfall of approximately 330 mm (GTDC- Weather of Goa). Different locations visited weekly to ensure consistent data collection across specific locations. Moths were documented through live-photography using both DSLR (Sony DXV) and smartphone cameras during evening hours (17:00-22:00 hrs), a period of peak activity for many moth species. Two primary methods were employed for data collection: random sampling and opportunistic sightings. Efforts were made to minimize disturbance to the moths to ensure their natural behaviors were not affected. No specimens were collected or euthanized, in adherence to strict ethical protocols for non-invasive wildlife documentation. Species identification was performed primarily based on external morphological characters visible in the photographs. Due to the non-invasive nature of the study, advanced taxonomic methods such as genitalia dissection or DNA barcoding were not utilized. Identification was carried out by cross-referencing the photographs with several authoritative databases and field guides, including: Moths of India database, India Biodiversity Portal, iNaturalist database, Discover Life portal (Pattanaik *et al.* 2021) [12]. The taxonomic classification system followed the protocol established by Culin & Joseph (2025) [1]. When morphological features were insufficient for a definitive species-level identification, individuals were assigned to the genus level.

PLATE 1



1. *Acontia marmoralis*



2. *Aedia leucomelas*



3. *Aiteta musculina*



4. *Anticarsia irrorate*



5. *Arsacia rectalis*



6. *Beara dichromella*



7. *Crithote sp.*



8. *Cyclodes omma*



9. *Digama fasciata*



10. *Dysgonia torrida*



11. *Episteme adulatrix*



12. *Hypena iconicalis*



13. *Ischyja marapok*



14. *Mythimna separata*



15. *Netria viridescens*



16. *Olepa ricini*



17. *Ophisma gravata*



18. *Pandesma spp.*



19. *Peridae spp.*



20. *Progonia oileusalis*



21. *Rhesala spp.*



22. *Rusicada fulvida*



23. *Schrankia spp.*



24. *Simplicia bimarginata*



25. *Spirama helicina*



26. *Tephriopsis divulsa*



27. *Xanthodes intersepta*



28. *Amata cysssea*



29. *Creatonotos transiens*



30. *Cyana perornata*



31. *Euchromia polymena*



32. *Miltochrista spp.*



33. *Spilarctia spp.*



34. *Spilosoma spp.*



35. *Uthetheisa lotrix*



36. *Artaxa guttata*



37. *Calliteara sp.*



38. *Euproctis leithiana*



39. *Lymantria ampla*



40. *Lymantria incert*

PLATE 2



41. *Lymantria obfuscatе*



42. *Nygmiini spp.*



43. *Nygmiini sp.*



44. *Olene mendosa*



45. *Olene sp.*



46. *Hypsopygia costalis*



47. *Hypsopygia nigrivitta*



48. *Zitha torridalis*



49. *Agathodes ostentalis*



50. *Chabula acamasalis*



51. *Cnaphalocrocis sp.*



52. *Cnaphalocrocis trebuisalis*



53. *Duponchelia spp.*



54. *Ercta elutalis*



55. *Filodes fulvidorsalis*



56. *Filodes spp.*



57. *Glyphodes spp.*



58. *Isocentris filalis*



59. *Maruca amboinalis*



60. *Nausinoe geometralis*



61. *Notarcha aurolinealis*



62. *Nymphicula blandialis*



63. *Parapoynx stagnalis*



64. *Patania ruralis*



65. *Pycnarmon spp.*



66. *Sufetula spp.*



67. *Agathia lycaenaria*



68. *Chiasmisn emersaria*



69. *Comostola laesaria*



70. *Hypomecis lioptilaria*



71. *Idaeа spp.*



72. *Luxiaria sp.*



73. *Maxate spp.*



74. *Problepsis vulgaris*



75. *Scardamia spp.*



76. *Scopula divisaria*



77. *Scopula limboundata*



78. *Scotopteryx moeniata*



79. *Ruttellerona spp.*



80. *Agonopterix spp.*

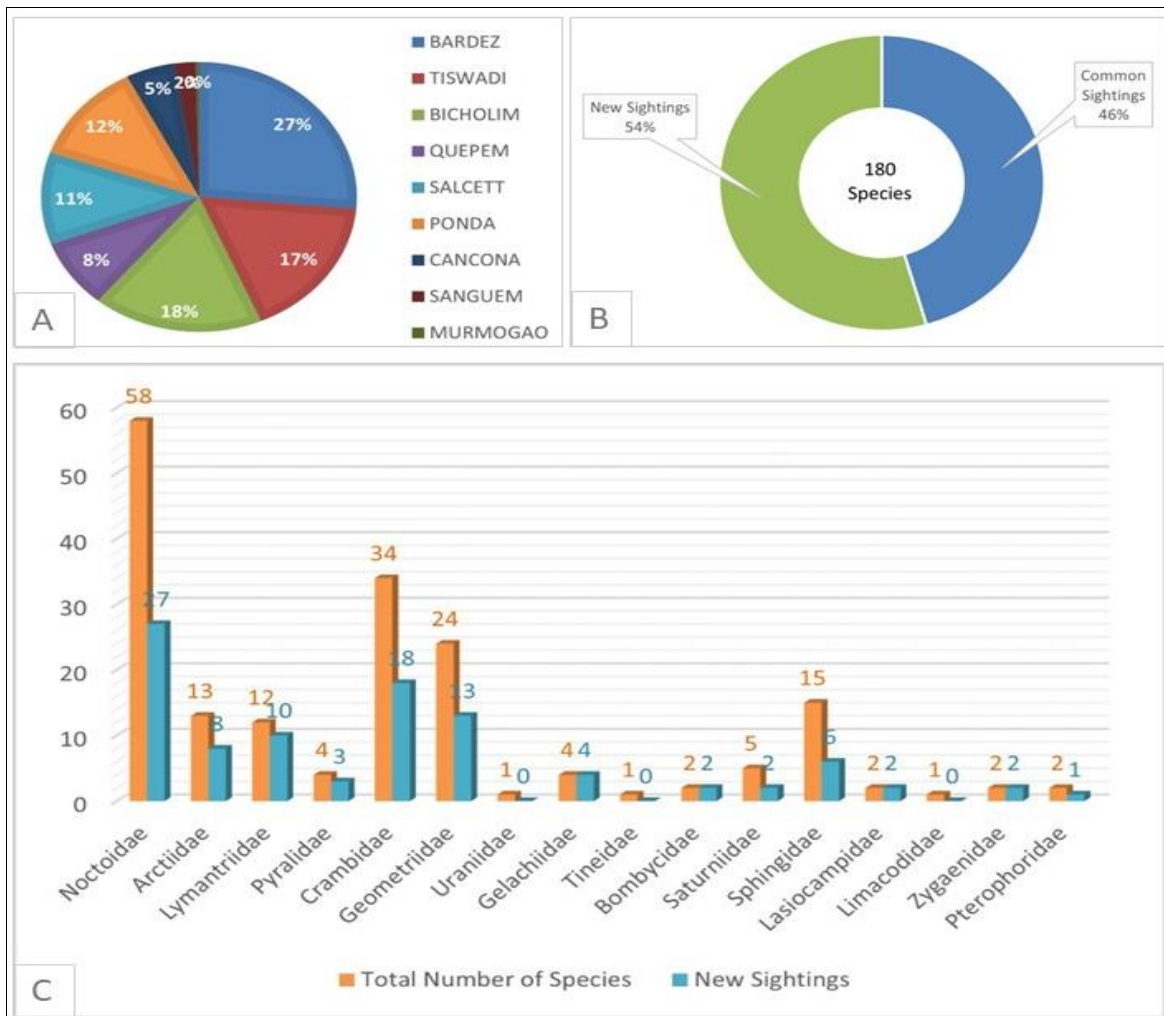
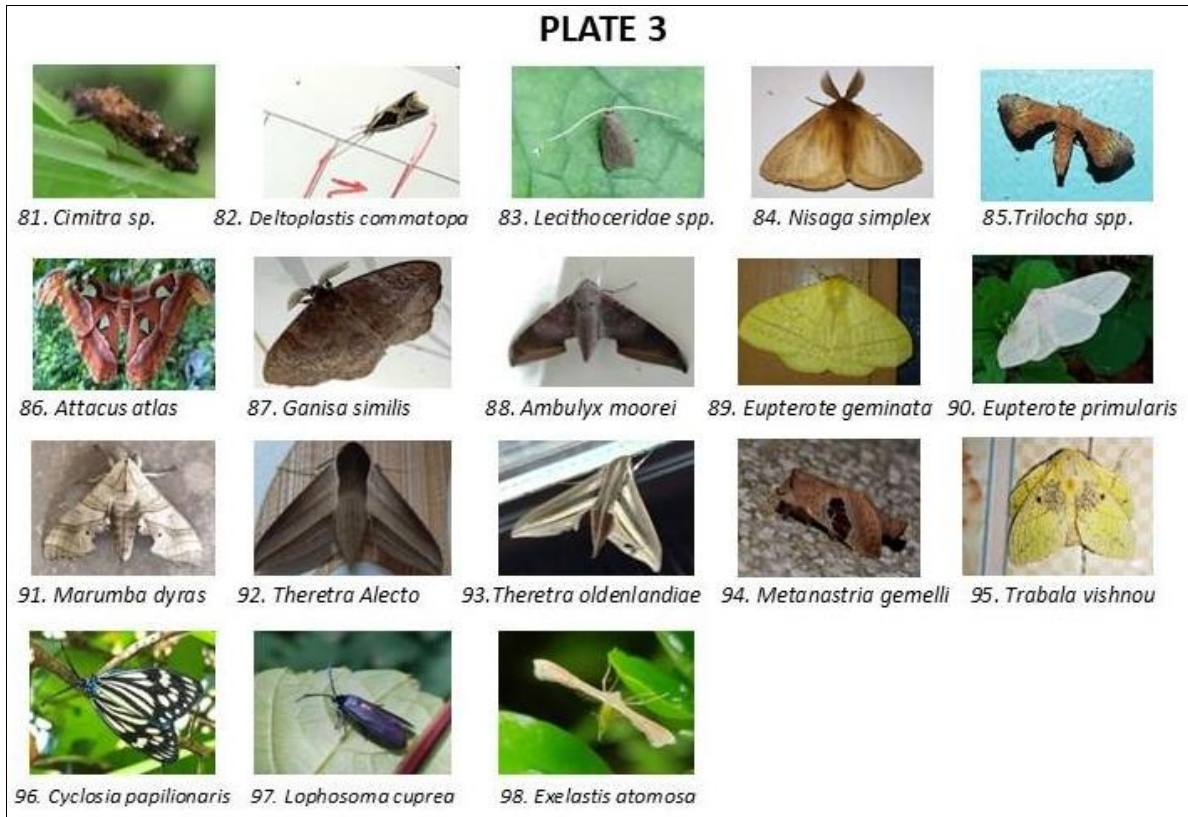


Fig 1: Summary of moth diversity and distribution in Goa. (A) Moth species distribution across the sampled Talukas of Goa. (B) Proportion of new sightings versus common sightings from the total 180 moth species recorded in the study area. (C) Family-wise distribution of total moth species and new sightings for each family recorded during the survey.

Table 1: Study points across different talukas in Goa

Taluka	Study Area	Coordinates Sampled
BARDEZ	Mapusa	15.5902, 73.8100
	Dangui colony	15.602806, 73.11712
	Colvale	15.6457050, 73.8404739
	Kamat Nagar, Porvorim	15.542674, 73.82627
	Calangute	15.560160, 73.755956
TISWADI	Goa University, Taleigao	15.4588, 73.8340
	Chimbel	15.4922, 73.8747
BICHOLIM	Haturlim, Mayem	15.5588855, 73.9164984
	Bandarwada	15.3512, 73.5656
	Kelbaiwada	15.5843630, 73.9312251
	Vargao	15.5586753, 73.9471101
	Sinquerim	15.5857184, 73.8930734
QUEPEM	Nanda lake, Cacora	15.236250, 74.10917
	Morpiria	15.115921, 73.996104
SALCETE	Raia	15.3039, 73.9918
	Curtorim	15.2863981, 74.0241367
	Cuncolim	15.1851203, 74.0008656
	Betalbatim	15.1743, 73.5508
	Gudi Paroda	15.238688, 74.025964
PONDA	Usgao	15.443855, 74.062875
CANCONA	Gaondongrim	15.0339920, 74.1249087
SANGUEM	Rivona	15.121108, 74.101894
MURMOGAO	Vasco	15.234360, 73.492509

Table 2: Picture Credits for all the moth photographs in the photo plate.

Vaishnavi Bharti	9,12,14,19,23,29,36,37,42,45,46,47,50,56,60,63,70,77,78,80,82,85,88,94,95
Aydan Rangel	1,2,4,5,6,7,10,18,21,24,25,27,28,31,40,44)♀(,61,71,72,81,83,97,98
Ameesha Fernandes	13,23,32,35,49,53,54,59,62
Afiya Beig	20,34,57,58,64,65,66,68
Masrifa Sheik	17,30,74,92,93
Sydelia Costa	16,76,79,89
Prerna Pednekar	3,41,69
Sweta Bhosle	26,39,87,90
Saloni Sahu	84, 43
Pankaj Nagvekar	8
Bipana	11
Akansha Kushwaha	15
Divya Falkar	33
Minal Desai	38
Shilpa Velip	44)♂(
Akshata Malwankar	48
Esha Sakhalkar	51
Shraddha Gaonkar	55
Nida Sayed	67
Neha Gaonkar	73
Valencia Andrede	75
Pretesh Chari	86
Kalpita Gaonkar	91
Sakshi Naik	96
Sakshi Choudhary	52

Table 3: Checklist of Moths sighted in Goa

.No	Species	New sighting	Bardez	Tiswadi	Bicholim	Quepem	Salcett	Ponda	Cancona	Sanguem	Murmogao
Family: Noctoidae											
1.	<i>Acontia marmoralis</i>	1	1								
2.	<i>Aedia leucomelas complex</i>	1		1							
3.	<i>Aiteta musculina</i>	1	1								
4.	<i>Anticarsia irrorata</i>	1	1								
5.	<i>Arsacia rectalis</i>	1		1							
6.	<i>Artena dotata</i>		1					1			

7.	<i>Ataboruza divisa</i>							1			
8.	<i>Bastilla fulvotaenia</i>						1				
9.	<i>Bastilla simillima</i>			1	1	1	1				
10.	<i>Beara dichromella</i>	1		1							
11.	<i>Chalciope mygdon</i>							1			
12.	<i>Chrysodeixis sp.</i>		1	1	1						
13.	<i>Crithote sp.</i>	1	1								
14.	<i>Cyclodes omma</i>	1						1			
15.	<i>Dierna patibulum</i>			1			1				
16.	<i>Digama fasciata</i>	1		1							
17.	<i>Digama marchalii</i>			1							
18.	<i>Dysgonia torrida</i>	1		1				1			
19.	<i>Episteme adulatrix</i>	1		1							
20.	<i>Erebus ephesperis</i>			1		1	1				
21.	<i>Erebus hieroglyphica</i>		1	1	1			1			
22.	<i>Erebus macrops</i>				1		1				
23.	<i>Ericcia sp.</i>		1		1			1			
24.	<i>Eublemma anachoresis</i>						1				
25.	<i>Eudocima homaena</i>							1			
26.	<i>Eudocima hypermnestra</i>							1	1	1	
27.	<i>Eudocima materna</i>		1	1		1	1	1			
28.	<i>Eudocima phalonia</i>			1							
29.	<i>Eustrotia marginata</i>		1								
30.	<i>Grammodes geometrica</i>		1								
31.	<i>Helicoverpa armigera</i>		1								
32.	<i>Helicoverpa sp.</i>		1								
33.	<i>Hypena iconicalis</i>	1	1								
34.	<i>Ischyja manlia</i>										
35.	<i>Ischyja marapok</i>	1	1								
36.	<i>Leucania sp.</i>		1	1							
37.	<i>Mocis frugalis</i> (Sugarcane looper)						1				
38.	<i>Mocis undata</i> (Brown striped semi looper)						1				
39.	<i>Mythimna separata</i>	1	1								
40.	<i>Netria viridescens</i>	1			1						
41.	<i>Olepa ricini</i>	1							1	1	
42.	<i>Ophisma gravata</i>	1		1							
43.	<i>Pandesma sp.</i>	1		1							
44.	<i>Peridae sp.</i>	1	1								
45.	<i>Phyllodes consobrina</i>							1			
46.	<i>Progonia oileusalis</i>	1	1		1						
47.	<i>Rhesala sp.</i>	1	1								
48.	<i>Rivula sp.</i>		1								
49.	<i>Rusicada fulvida</i>	1					1				
50.	<i>Schrankia sp.</i>	1					1				
51.	<i>Simplicia bimarginata</i>	1	1								
52.	<i>Spirama helicina</i>	1		1							
53.	<i>Spirama ritorta</i>				1						
54.	<i>Spodoptera litura</i>		1			1	1			1	
55.	<i>Spodoptera mouritia</i>		1					1			
56.	<i>Tephriopsis divulsa</i>	1			1						
57.	<i>Trigonodes hyppasia</i>		1								
58.	<i>Xanthodes intersepta</i>	1	1								
Family: Arctiida											
59.	<i>Amata cyssea</i>	1		1							
60.	<i>Asota caricae</i> (Tropical tiger moth)			1		1		1	1		
61.	<i>Creatonotos gangis</i>	1	1		1			1			
62.	<i>Creatonotos transiens</i>	1									
63.	<i>Cyana perornata</i>	1							1		
64.	<i>Euchromia polymena</i>	1	1	1		1					
65.	<i>Miltochrista rubricosa</i>			1							
66.	<i>Miltochrista semifascia</i>							1			
67.	<i>Miltochrista sp.</i>	1					1				
68.	<i>Spilarctia sp.</i>	1			1		1				
69.	<i>Spilosoma sp.</i>	1			1						
70.	<i>Syntomoides imacon</i>		1		1	1			1		

71.	<i>Utetheisa lotrix</i>	1			1					
Family: Lymantriidae										
72.	<i>Artaxa guttata</i>	1	1							
73.	<i>Calliteara horsfieldii</i>					1				
74.	<i>Calliteara sp.</i>	1		1						
75.	<i>Euproctis leithiana</i>	1		1		1	1			
76.	<i>Lymantria ampla</i>	1			1					
77.	<i>Lymantria incerta</i>	1		1						
78.	<i>Lymantria obfuscata</i>	1	1							
79.	<i>Nygmia icilia</i>			1						
80.	<i>Nygmia sp. (Tussock moth)</i>	1								
81.	<i>Nygmia sp. (Tussock moth)</i>	1	1	1	1	1				
82.	<i>Olene mendosa</i>	1		1				1		
83.	<i>Olene sp.</i>	1	1							
Family: Pyralidae										
84.	<i>Cadra cautella</i>		1							
85.	<i>Hypsopygia costalis</i>	1	1		1			1		
86.	<i>Hypsopygia nigrivitta</i>	1	1							
87.	<i>Zitha torridalis</i>	1								
Family: Crambidae										
88.	<i>Agathodes ostentalis (Coral tree moth)</i>	1					1			
89.	<i>Agrioglypta itysalis (Grass moth)</i>			1						
90.	<i>Chabula acamasalis</i>	1	1			1				
91.	<i>Cnaphalocrocis medinalis</i>		1	1	1	1		1		
92.	<i>Cnaphalocrocis poeyalis</i>		1			1				
93.	<i>Cnaphalocrocis sp.</i>	1	1	1	1		1	1		
94.	<i>Cnaphalocrocis trebiusalis</i>	1		1						
95.	<i>Diaphania indica</i>		1					1		
96.	<i>Duponchelia fovealis</i>		1			1				
97.	<i>Duponchelia sp.</i>	1	1							
98.	<i>Endocrossis flavibasalis</i>		1	1	1					
99.	<i>Ercta elutalis</i>	1					1			
100.	<i>Euclasta defamatalis</i>		1	1						
101.	<i>Filodes fulvidorsalis</i>	1					1			
102.	<i>Filodes sp.</i>	1	1							
103.	<i>Glyphodes bicolor</i>		1		1	1				
104.	<i>Glyphodes bivitalis</i>							1		
105.	<i>Glyphodes sp.</i>	1	1	1						
106.	<i>Hydriris ornatalis</i>		1			1		1		
107.	<i>Isocentris filalis</i>	1			1					
108.	<i>Maruca amboinalis</i>	1					1			
109.	<i>Nausinoe geometralis</i>	1	1							
110.	<i>Nausinoe perspectata</i>				1					
111.	<i>Notarcha aurolinealis</i>	1		1						
112.	<i>Nymphicula blandialis</i>	1					1			
113.	<i>Omiodes diemenalis</i>		1		1					
114.	<i>Parapoynx fluctuosalis</i>				1					
115.	<i>Parapoynx stagnalis (Rice case worm)</i>	1	1	1						
116.	<i>Patania ruralis</i>	1			1				1	
117.	<i>Pycnarmon sp.</i>	1			1					
118.	<i>Pygospila tyres (Spotted grass moth)</i>			1						
119.	<i>Spoladea recurvalis</i>		1	1	1	1	1	1		
120.	<i>Sufetula sp.</i>	1			1					
121.	<i>Synclera traducalis</i>							1		
Family: Geometriidae										
122.	<i>Agathia laetata</i>		1		1			1	1	
123.	<i>Agathia lycaenaria</i>	1	1	1						
124.	<i>Chiasmia eleonora</i>		1					1		
125.	<i>Chiasmia emersaria</i>	1			1					
126.	<i>Chiasmia fidoniata</i>		1							

127.	<i>Cleora spp.</i>						1				
128.	<i>Comibaena leucospilata</i>		1								
129.	<i>Comibaena sp.</i>		1								
130.	<i>Comostola laesaria</i>	1	1				1	1			
131.	<i>Dysphania percota (Blue tiger moth)</i>		1				1	1			
132.	<i>Eumelea ludovicata</i>							1		1	
133.	<i>Gonodontis clelia</i>		1								
134.	<i>Hypomecis lioptilaria</i>	1	1								
135.	<i>Idea sp.</i>	1		1							
136.	<i>Luxiaria sp.</i>	1		1							
137.	<i>Maxate sp.</i>	1	1		1	1			1		
138.	<i>Problepsis vulgaris (Eye looper moth)</i>	1		1				1			
139.	<i>Scardamia sp.</i>	1			1						
140.	<i>Scopula divisaria</i>	1				1					
141.	<i>Scopula limboundata</i>	1	1								
142.	<i>Scopula sp.</i>		1	1		1	1	1			
143.	<i>Scotopteryx moeniata</i>	1	1								
144.	<i>Sodoptera mauritia</i>		1								
145.	<i>Rutellerona sp.</i>	1									
Family: Uraniidae											
146.	<i>Micronia aculeata</i>			1	1	1	1	1	1	1	
Family: Gelachiidae											
147.	<i>Agonopterix sp.</i>	1	1	1							
148.	<i>Cimitra sp.</i>	1	1								
149.	<i>Deltoplastis commatopa</i>	1	1								
150.	<i>Lecithoceridae sp</i>	1	1								
Family: Tineidae											
151.	<i>Tineola bisselliella</i>		1								
Family: Bombycidae											
152.	<i>Nisaga simplex</i>	1									
153.	<i>Trilocha sp.</i>	1	1	1							
Family: Saturniidae											
154.	<i>Actias selene (Indian moon moth)</i>								1		
155.	<i>Antheraea mylitta (Indian tasar silk moth)</i>				1						
156.	<i>Attacus atlas (Atlas moth)</i>	1					1	1	1		
157.	<i>Ganisa similis</i>	1			1						
158.	<i>Loepa katinka (Goldem emperor moth)</i>				1	1		1		1	
Family: Sphingidae											
159.	<i>Agrius convolvuli (Convolvulus hawk moth)</i>				1				1		
160.	<i>Ambulyx moorei</i>	1			1						
161.	<i>Cephonodes hylas (Coffee Bee Hawkmoth)</i>										
162.	<i>Daphnis nerii (Oleander hawk moth)</i>				1						
163.	<i>Eupterote geminata</i>	1					1				
164.	<i>Eupterote mollifera</i>				1						1
165.	<i>Eupterote primularis</i>	1		1		1					
166.	<i>Eupterote undata</i>				1						
167.	<i>Marumba dyras</i>	1		1							
168.	<i>Nephele hespera</i>				1						
169.	<i>Pergesa acteus</i>								1		
170.	<i>Theretra alecto</i>	1		1							
171.	<i>Theretra boisduvalii</i>				1						
172.	<i>Theretra nessus</i>				1		1				
173.	<i>Theretra oldenlandiae</i>	1					1				
Family: Lasiocampidae											
174.	<i>Metanastris gemella</i>	1									
175.	<i>Trabala vishnou</i>	1								1	
Family: Limacodidae											

176.	<i>Aergina hilaris</i>				1						
Family: Zygaenidae											
177.	<i>Cyclosia papilionaris</i> (<i>Drury's jewel moth</i>)	1									
178.	<i>Lophosoma cuprea</i>	1									
Family: Pterophoridae											
179.	<i>Exelastis atomosa</i>	1			1						
180.	<i>Lantanophaga</i> <i>pusillidactyla</i>				1						
181.	<i>Total</i>	98	82	46	49	23	30	32	14	6	1

Results

A total of 180 moth species were recorded of which 98 moth species are newly recorded for Goa (Refer to Plates 1-3). Of the new sightings, 71 species were identified to the species level, while 27 species were identified only to the genus level. This represents a significant addition to the regional Lepidoptera fauna. Among the 13 moth families recorded, Noctuidae showed the highest number of species (27). Crambidae followed with 18 species, and Geometridae with 13. Lymantriidae comprised 10 species, Arctiidae 8, and Sphingidae 6. Gelechiidae had 4 species, and Pyralidae 3. Bombycidae, Saturniidae, Lasiocampidae, and Zygaenidae each contained 2 species, and Pterophoridae had only 1 species. The comprehensive list of all identified species, their respective families and location photographed is given in the supplementary material.

Our study documented *Attacus atlas* (Atlas moth), the world's largest moth, in Goa, for the first time. *Lophosoma cuprea*, previously recorded only to the genus level, was successfully identified to the species level.

Notably, two species (*Netria viridescens*, *Cretonotos transiens*) reported earlier were found to exhibit morphological and plumage differences. A photograph of female *Netria viridescens* is added in the present work, unlike the previous works. *Cretonotos transiens*, exhibiting a distinct color and pattern, was recorded during our study.

Discussion

This study significantly expands the documented Lepidoptera fauna of Goa, presenting a checklist of 98 newly recorded moth species, exhibiting rich moth diversity of the State. With these new additions, the total number of moth species observed in Goa now stands at 606.

Our study includes the first confirmed regional documentation of *Attacus atlas*, the World's largest moth, which has a broader distribution across tropical Asia (Tajchman P., 2021) [16].

The 28 individuals identified only to the genus level, underscore the limitations of our methodology of, only observation and photography, and not collecting the specimens, thus following the ethical norms; identification to species level of many species needs genital examination of the specimen.

Gurule and Brookes (2021) [5] documented the species *Netria viridescens* in Goa with a photograph of a male specimen, whereas our present work contributes a female photograph of the same species, exhibiting sexual dimorphism. Fernandes (2024) [3] documented the moth *Cretonotos transiens*, however our findings present the same species, exhibiting a distinct color and pattern, which is attributed to the species' known ability to display color polymorphism.

Rao Kulkarni *et al.*, (2022) [13] in the Moth checklist from South Goa, inadvertently included *Melanitis leda* (Common

Evening Brown), a butterfly (Lepidoptera: Rhopalocera). This publication notably reports the presence of three species in Goa that are new records for India: the Madagascan Sunset Moth (*Chrysidia rhipheus*), the Cecropis Moth (*Hyalophora cecropis*), and the Emperor Gum Moth (*Opodiphthera eucalypti*). These species are native to Madagascar, North America, and Australia, respectively, highlighting an intriguing expansion of their documented range. Hence, continued biodiversity assessments, employing rigorous taxonomic methods, are crucial for a more accurate understanding of Goa's moth diversity.

Furthermore, the numerous new records in the present study, accentuate the necessity of conservation strategies to safeguard Goa's diverse ecosystems. Continued biodiversity assessments, incorporating detailed morphological, anatomical and genetic analyses, are crucial for a comprehensive understanding and effective conservation of Goa's rich moth diversity.

The Western Ghats' potential for housing endemic species as mentioned by Joshi & Janarthnam, (2004) [9] indicates endemism of moths too, in this region. Detailed long-term research on moths is needed to identify endemic species within this group, as no such work is on record, so far.

Conclusion

This work presents a checklist of 180 moths of which 98 are new additions to Goa, considerably augmenting the known moth diversity of the State. The documentation of *Attacus atlas*, world's largest moth, in Goa reinforces the significance of this research. The identification of possible cryptic species highlights the necessity for comprehensive morphological, anatomical and molecular investigations. Systematic biodiversity evaluations are essential for comprehending and preserving Goa's abundant moth diversity.

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