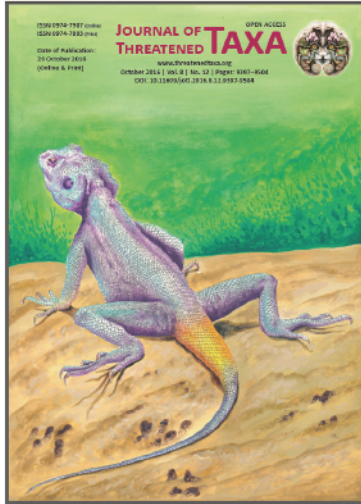


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NOTE

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A CHECKLIST OF BUTTERFLIES OF DAKSHINA KANNADA DISTRICT, KARNATAKA, INDIA

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The Western Ghats, which covers about 60% of the forest area of Karnataka and one among the 36 biodiversity hotspots of the World, forms an important ecosystem (State of Environment Report 2003). Dakshina Kannada is situated in the southwestern part of Karnataka, which comprises of 4,560km² of geographical area. Of this, 2,860km² is covered by forest area (Forest Survey of India 2011). India has 1,800 species and subspecies of butterflies (Kunte 2014) of which peninsular India hosts 350 species, and 331 species are found in the Western Ghats (Kunte 2001). Butterflies, which depend on plants, reflect the overall plant diversity in a given area. Hence, they act as good indicators of health of the ecosystem (Padhye et al. 2006) and can be used as model organisms to study the various threats posed to Western Ghats (Gaonkar 1996; Kunte 2000, 2008; Kehimkar 2008). The average conservation value of butterflies found in the evergreen forests was more than any other habitat, followed by riparian patches, deciduous forests, grassland and shrubs. In the Western Ghats, deforestation, as well as plantation activities are taking place on a large

scale (Jha et al. 2000). Monitoring of the butterflies is essential for formulating conservation priorities and management of biodiversity. As part of the Western Ghats Biodiversity Monitoring Programme, a study was carried out on butterfly species distribution in Sullia Taluk of Dakshina Kannada recording 86 species of butterflies (Nayak et al. 2004). Mohandas (2004) studied butterfly species distribution in Kudremukh National Park. Ramachandra (2007) recorded 59 species of butterflies during the inventorying and mapping of biodiversity, in Yekkaru Grama Panchayat, Mangalore Taluk. Except for these reports, no detailed investigations have been made on the biodiversity of butterflies in Dakshina Kannada District. It was in this context that the present study was undertaken to generate baseline data of the butterfly fauna of Dakshina Kannada District.

Study site: The Dakshina Kannada District is located in southwestern part of Karnataka and Western Ghats adjoining the Arabian Sea. The geographical area is 4,560km² extending between 12°30'00"–13°11'00"N and 74°35'00"–75°33'30"E (Image 1). The altitudinal range varies from 23–960 m. The annual rainfall range is from 3,700–3,900 mm. The temperature range from a minimum 22°C to a maximum 38°C.

Materials and Methods: The field survey was carried out in the different landscape elements like evergreen forest, semievergreen forest, riparian forest, plantations of arecanut, coconut, rubber, cashew plantation, rubber plantation, paddy fields, and also along the coastal



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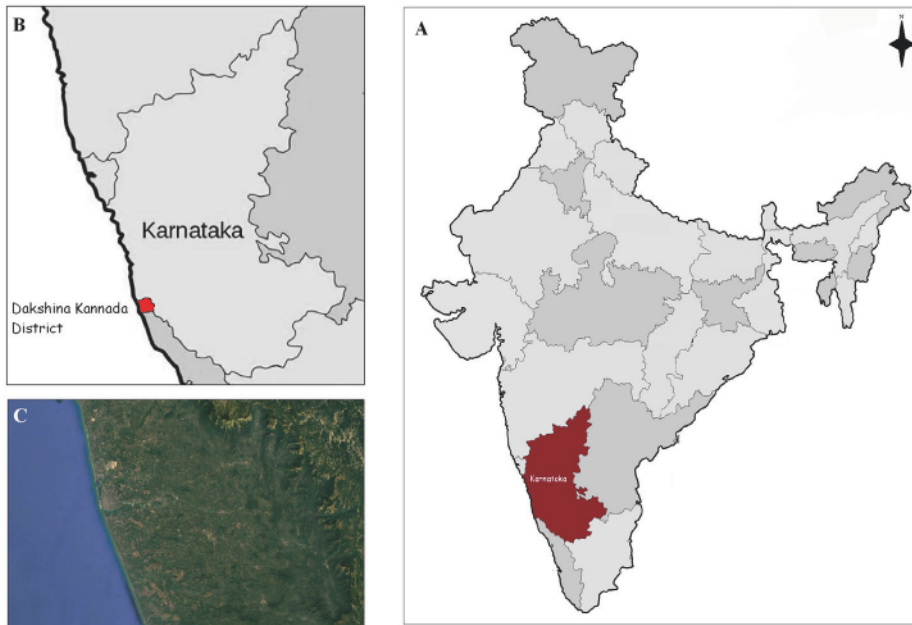


Image 1. Study area - map of (A) India, (B) Karnataka & (C) Dakshina Kannada

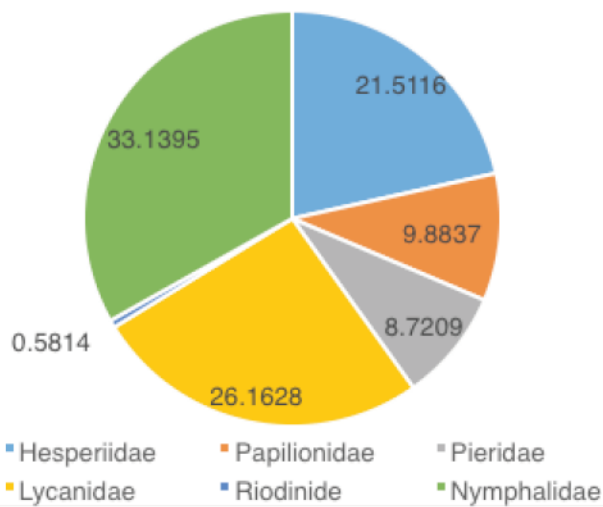


Figure 1. Pie chart depicting the percentage of species present in five families of butterflies found in Dakshina Kannada.

region during September 2012 to December 2015. Data of butterfly fauna was collected by conducting random surveys by all out search method from 09:00–18:00 hr. Literature were reviewed during the study period from different sources. Collection of specimens was avoided to the extent possible. The butterflies were photographed for subsequent identification and when identification was not possible through photographs, the individuals were collected using insect net and were identified in the field and later released. The identification of

butterfly species was based on Gunathilagaraj (1998), Kunte (2000), and Kehimkar (2008).

Results and Discussion: A total of 172 species (Images 2–163), belonging to 117 genera belonging to 18 subfamilies under six families (Table 1). Nymphalidae with 57 species (33.13%) was the dominant family followed by Hesperidae 37 species (21.51%), Lycaenidae 45 species (26.16%), Papilionidae 17 species (9.88%), Pieridae 15 species (8.72%) and Riodinidae one species (0.58%) (Fig. 1). It was interesting to note that the sightings included nine species (*Thoressa honorei*, *Papilio dravidarum*, *Papilio buddha*, *Troides minos*, *Appias wardii*, *Idea malabarica*, *Kallima horsfieldi*) that are endemic to the Western Ghats, as well as another four species (*Prioneris sita*, *Discophora lepida*, *Cethosia nietneri*, *Cirrochroa thais*) that are endemic to the Western Ghats and Sri Lanka (Kunte 2008). Twenty-six species are protected under the Indian Wildlife (Protection) Act (1972). Ten species belong to Schedule I, 12 species to Schedule II and four species to Schedule IV. Data generated in this study indicates the faunal richness of Dakshina Kannada District of Karnataka warranting adoption of appropriate conservation strategies.

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Table 1. A checklist of butterflies recorded during September 2012 to December 2015 in Dakshina Kannada District (Karnataka)

Family/ Subfamily	Scientific name	Common name	Remarks	Image number
Hesperiidae				
Coeliadinae	1. <i>Hasora chromus</i> Cramer	Common Banded Awl		2
Pyrginae	2. <i>Celaenorrhinus leucocera</i> Kollar	Common Spotted Flat		3
	3. <i>Spialia galba</i> Fabricius	Indian Skipper		4
	4. <i>Sarangesa dashara</i> Moore	Common Small Flat		5
	5. <i>Coladenia indrani</i> Moore	Tri- colored Pied Flat		6
	6. <i>Tagiades gana</i> Moore	Suffused Snow Flat		7
	7. <i>Tagiades litigiosa</i> Moschler	Water Snow Flat		8
	8. <i>Gerosis bhagava</i> Moore	Common Yellow-breasted Flat		9
	9. <i>Odontoptilum angulata</i> C. & R. Felder	Chestnut Angle		10
	10. <i>Caprona ransonnetti</i> C. & R. Felder	Golden Angle		11
	11. <i>Caprona agama</i> Moore	Spotted Angle		12
	Hesperiinae	12. <i>Taractrocera ceramas</i> Hewitson	Tamil Grass Dart	
13. <i>Taractrocera maevis</i> Fabricius		Common Grass Dart		14
14. <i>Oriens goloides</i> Moore		Common Dartlet		15
15. <i>Telicota ancilla</i> Herrich-Schaffer		Dark Palm Dart		16
16. <i>Telicota colon</i> Fabricius		Pale Palm Dart		17
17. <i>Potantus</i> sp.		Dartlet sp.		18
18. <i>Borbo cinnara</i> Wallace		Rice Swift		19
19. <i>Pelopidas conjuncta</i> Herrich-Schaffer		Conjoined Swift		20
20. <i>Pelopidas mathias</i> Fabricius		DakhanSmall Branded Swift		21
21. <i>Parnara bada</i> Moore		Oriental Variable Swift		22
22. <i>Baoris farri</i> Moore		Complete Paint-brush Swift		23
23. <i>Caltoris philippina</i> Herrich-Schaffer		Philippine Swift		24
24. <i>Caltoris kumara</i> Moore		Sahyadri Blank Swift		25
25. <i>Suastus gremius</i> Fabricius		Indian Palm Bob		26
26. <i>Gangara thyrus</i> Fabricius		Gaint Redeye		27
27. <i>Erionota torus</i> Evans		Rounded Palm-redeye		28
28. <i>Matapa aria</i> Moore		Common Branded Redeye		29
29. <i>Iambrix salsala</i> Moore		Chestnut Bob		30
30. <i>Notocrypta curvifascia</i> C. & R. Felder		Restricted Demon		31
31. <i>Notocrypta paralyssos</i> Wood-Mason		Common Banded Demon		32
32. <i>Udaspes folus</i> Cramer	Grass Demon		33	
33. <i>Ampittia dioscorides</i> Fabricius	Bush Hopper		34	
34. <i>Aeromachus pygmaeus</i> Fabricius	Pygmy Scrub Hopper		35	
35. <i>Halpe porus</i> Mabille	Bispot Banded Ace		36	
36. <i>Psolos fuligo</i> Mabille	Dusky Partwing		37	
37. <i>Thoressa honorei</i> de Niceville	Sahyadri Orange Ace	Endemic to the Western Ghats (Kunte 2008)	38	
Papilionoidea Papilioninae	38. <i>Graphium teredon</i> Felder & Felder	Narrow-banded Bluebottle		39
	39. <i>Graphium dason</i> C. & R. Felder	Common Jay		40
	40. <i>Graphium antiphates</i> Cramer	Five-bar Swordtail		No image
	41. <i>Graphium agamemnon</i> Linnaeus	Tailed Jay		41

Family/ Subfamily	Scientific name	Common name	Remarks	Image number
	42. <i>Papilio clytia</i> Linnaeus	Common Mime	Schedule I	42
	43. <i>Papilio polytes</i> Linnaeus	Common Mormon		43
	44. <i>Papilio dravidarum</i> Wood-Mason	Malabar Raven	Endemic to the Western Ghats (Kunte 2008)	44
	45. <i>Papilio helenus</i> Linnaeus	Red Helen		45
	46. <i>Papilio polymnestor</i> Cramer	Blue Mormon	Endemic to Peninsular India (Kunte 2008)	46
	47. <i>Papilio liomedon</i> Moore	Malabar Banded Swallowtail	Endemic to the Western Ghats (Kunte 2008) Schedule I	47
	48. <i>Papilio demoleus</i> Linnaeus	Lime Butterfly		48
	49. <i>Papilio paris</i> Linnaeus	Paris Peacock		49
	50. <i>Papilio buddha</i> Westwood	Malabar Banded Peacock	Endemic to the Western Ghats (Kunte 2008) Schedule II	50
	51. <i>Pachliopta aristolochiae</i> Fabricius	Common Rose		51
	52. <i>Pachliopta hector</i> Linnaeus	Crimson Rose	Endemic to Peninsular India (Kunte 2008) Schedule I	52
	53. <i>Pachliopta pandiyana</i> Moore	Malabar Rose	Endemic to the Western Ghats (Kunte 2008)	No image
	54. <i>Troides minos</i> Cramer	Southern Birdwing	Endemic to the Western Ghats (Kunte 2008)	53
Pieridae Coliadinae	55. <i>Eurema blanda</i> Boisduval	Three-spot Grass Yellow		54
	56. <i>Eurema hecabe</i> Linnaeus	Common Grass Yellow		55
	57. <i>Catopsilia pomona</i> Fabricius	Common Emigrant		56
	58. <i>Catopsilia pyranthe</i> Linnaeus	Mottled Emigrant		57
Pierinae	59. <i>Hebomoia glaucippe</i> Linnaeus	Great Orange-tip		58
	60. <i>Ixias pyrene</i> Linnaeus	Yellow Orange-tip		59
	61. <i>Pareronia valeria</i> Cramer	Common Wanderer		60
	62. <i>Appias lycida</i> Cramer	Chocolate Albatross	Schedule II	61
	63. <i>Appias albina</i> Biosduval	Common Albatross	Schedule II	62
	64. <i>Appias wardii</i> Evans	Sahyadri Albatross	Endemic to the Western Ghats (Kunte 2008) Schedule II	63
	65. <i>Appias indra</i> Moore	Sahyadri Plain Puffin	Schedule II	64
	66. <i>Cepora nadina</i> Lucas	Sahyadri Lesser Gull	Schedule II	65
	67. <i>Delias eucharis</i> Drury	Common Jezebel		66
	68. <i>Prioneris sita</i> Felder & Felder	Painted Sawtooth	Endemic to the Western Ghats and Sri Lanka (Kunte 2008) Schedule IV	67
	69. <i>Leptosia nina</i> Fabricius	Psyche		68
Lycaenidae Curetinae	70. <i>Curetis siva</i> Evans	Shivas Sunbeam	Narrowly Endemic to the Western Ghats (Kunte 2008)	69
	71. <i>Curetis thetis</i> Drury	Indian Sunbeam		70
Theclinae	72. <i>Arhopala pseudocentaurus</i> Doubleday	Centaur Oakblue		71
	73. <i>Arhopala abseus</i> Hewitson	Indian Aberrent Oakblue		No image
	74. <i>Arhopala bazaloides</i> Hewitson	Dusted Oakblue		No image
	75. <i>Surendra quercetorum</i> Moore	Common Acacia Blue		No image
	76. <i>Zesius chrysomallus</i> Hubner	Red spot		72
	77. <i>Iraota timoleon</i> Stoll	Silver streak Blue		73
	78. <i>Loxura atymnus</i> Stoll	Yamfly		74

Family/ Subfamily	Scientific name	Common name	Remarks	Image number
	79. <i>Rathinda amor</i> Fabricius	Monkey Puzzle		75
	80. <i>Cheritra freja</i> Fabricius	Common Imperial		76
	81. <i>Tajuria cippus</i> Fabricius	Peacock Royal		77
	82. <i>Rachana jalindra</i> Horsfeild	Sahyadri Banded Royal		No image
	83. <i>Bindahara phocides</i> Fabricius	Plane	Schedule II	78
	84. <i>Zeltus amasa</i> Hewitson	Indian Fluffy Tit		79
	85. <i>Hypolycaena othona</i> Hewitson	Orchid Tit		No image
	86. <i>Rapala manea</i> Hewitson	Slate Flash		80
	87. <i>Catapaecilma major</i> Druce	Common Tinsel		81
	88. <i>Spindasis vulcanus</i> Fabricius	Common Silverline		82
	89. <i>Spindasis lohita</i> Horsfield	Long-banded Silverline	Schedule II	83
Polyommatae	90. <i>Anthene emolus</i> Godart	Common Ciliate Blue		No image
	91. <i>Anthene lycaenina</i> C. & R. Felder	Pointed Ciliate Blue		84
	92. <i>Caleta caleta</i> Hewitson	Angled Pierrot		85
	93. <i>Discolampa ethion</i> Westwood	Banded Blue Pierrot		86
	94. <i>Tarucus ananda</i> de Niceville	Dark Pierrot	Schedule IV	87
	95. <i>Catalius rosimon</i> Fabricius	Common Pierrot	Schedule I	88
	96. <i>Leptotes plinius</i> Fabricius	Zebra Blue		89
	97. <i>Ionolyce helicon</i> Felder	Pointed Lineblue		90
	98. <i>Petrelaea dana</i> de Niceville	Dingy Lineblue		91
	99. <i>Prosotas nora</i> C. Felder	Common Lineblue		92
	100. <i>Prosotas dubiosa</i> Semper	Indian Tailless Lineblue		93
	101. <i>Jamides celeno</i> Cramer	Common Cerulean		94
	102. <i>Jamides alecto</i> Felder	Metallic Cerulean	Schedule II	No image
	103. <i>Euchrysops cnejus</i> Fabricius	Gram Blue		95
	104. <i>Catochrysops strabo</i> Fabricius	Forget-me-not		96
	105. <i>Lampides boeticus</i> Linnaeus	Pea Blue	Schedule II	97
	106. <i>Zizina otis</i> Fabricius	Lesser Grass Blue		98
	107. <i>Zizula hylax</i> Fabricius	Tiny Grass Blue		99
	108. <i>Talicauda nyseus</i> Guerin-Meneville	Red Pierrot		100
	109. <i>Neopithecops zalmora</i> Butler	Quaker		101
	110. <i>Megisba malaya</i> Horsfield	Malayan		102
	111. <i>Acytolepis puspa</i> Horsfield	Common Hedge Blue	Schedule I	103
	112. <i>Celastrina lavendularis</i> Moore	Plain Hedge Blue		104
	113. <i>Chilades lajus</i> Stoll	Lime Blue		105
	114. <i>Chilades pandava</i> Horsfield	Plains Cupid		106
Riodinidae Riodininae	115. <i>Abisara bifasciata</i> Moore	Suffused Double-banded Judy		107
Nymphalidae Danainae	116. <i>Tirumala limniace</i> Cramer	Blue Tiger		108
	117. <i>Tirumala septentrionis</i> Butler	Dark Blue Tiger		109
	118. <i>Danaus genutia</i> Cramer	Striped Tiger		110
	119. <i>Danaus chrysippus</i> Linnaeus	Plain Tiger		111
	120. <i>Parantica aglea</i> Stoll	Glassy Tiger		112
	121. <i>Euploea core</i> Cramer	Common Crow		113
	122. <i>Idea malabarica</i> Moore	Malabar Tree-Nymph	Endemic to the Western Ghats (Kunte 2008)	114

Family/ Subfamily	Scientific name	Common name	Remarks	Image number
Charaxinae	123. <i>Polyura athamas</i> Drury	Common Nawab		115
	124. <i>Polyura schreiber</i> Godart	Blue Nawab		116
	125. <i>Charaxes psaphon</i> Westwood	Plain Tawny Rajah		117
	126. <i>Charaxes solon</i> Fabricius	Black Rajah		No image
	127. <i>Discophora lepida</i> Moore	Southern Duffer	Endemic to the Western Ghats and Sri Lanka (Kunte 2008)	118
Satyrinae	128. <i>Melanitis leda</i> Linnaeus	Common Evening Brown		119
	129. <i>Melanitis phedima</i> Cramer	Dark Evening Brown		120
	130. <i>Melanitis zitenius</i> Herbst	Sahyadri Great Evening Brown	Schedule II	121
	131. <i>Lethe drypetis</i> Hewitson	Dakhan Treebrown	Endemic to Peninsular India (Kunte 2008)	122
	132. <i>Lethe europa</i> Fabricius	Bamboo Treebrown	Schedule I	123
	133. <i>Elymnias caudata</i> Butler	Tailed Palmfly		124
	134. <i>Mycalesis mineus</i> Linnaeus	Dark-brand Bushbrown		125
	135. <i>Mycalesis perseus</i> Fabricius	Common Bushbrown		126
	136. <i>Mycalesis patnia</i> Moore	Gladeye Bushbrown	Endemic to the Western Ghats and Sri Lanka (Kunte 2008)	127
	137. <i>Orsotrioena medus</i> Fabricius	Medus Brown		128
	138. <i>Ypthima baldus</i> Fabricius	Common Five-ring		129
	139. <i>Ypthima huebneri</i> Kriby	Common Four-ring		130
Apaturinae	140. <i>Rohana parisatis</i> Westwood	Sahyadri Black Prince		131
Heliconiinae	141. <i>Acraea violae</i> Fabricius	Tawny Coster		132
	142. <i>Cethosia nietneri</i> C. & R. Felder	Tamil Lacewing	Endemic to the Western Ghats and Sri Lanka (Kunte 2008)	133
	143. <i>Vindula erota</i> Fabricius	Crusier		134
	144. <i>Cirrochroa thais</i> Fabricius	Tamil Yeoman	Endemic to the Western Ghats and Sri Lanka (Kunte 2008)	135
	145. <i>Cupha erymanthis</i> Drury	Rustic		136
	146. <i>Phalanta phalantha</i> Drury	Common Leopard		137
	147. <i>Moduza procris</i> Cramer	Commander		138
Limnitiinae	148. <i>Athyma perius</i> Linnaeus	Common Sergeant		139
	149. <i>Athyma ranga</i> Moore	Blackvein Sergeant		140
	150. <i>Athyma nefte</i> Cramer	Colour Sergeant		141
	151. <i>Pantoporia hordonia</i> Stoll	Common Lascar		142
	152. <i>Neptis hylas</i> Linnaeus	Common Sailer		143
	153. <i>Neptis jumbah</i> Moore	Chestnut-streaked Sailer	Schedule I	144
	154. <i>Parthenos sylvia</i> Cramer	Clipper	Schedule II	145
	155. <i>Euthalia aconthea</i> Cramer	Common Baron		146
	156. <i>Euthalia lubentina</i> Cramer	Gaudy Baron	Schedule IV	147
	157. <i>Tanaecia lepidea</i> Butler	Grey Count		148
	158. <i>Dophla evelina</i> Stoll	Redspot Duke	Schedule I	149
	159. <i>Cyrestis thyodamas</i> Boisduval	Common Map		150
Biblidinae	160. <i>Ariadne ariadne</i> Linnaeus	Angled Castor		151
	161. <i>Ariadne merione</i> Cramer	Common Castor		152
Nymphalinae	162. <i>Vanessa cardui</i> Linnaeus	Painted Lady		153
	163. <i>Libythea laius</i> Trimen	Sahyadri Lobed Beak		154

Family/ Subfamily	Scientific name	Common name	Remarks	Image number
	164. <i>Kaniska canace</i> Linnaeus	Sahyadri Blue Admiral		155
	165. <i>Junonia iphita</i> Cramer	Chocolate Pansy		156
	166. <i>Junonia atlites</i> Linnaeus	Grey Pansy		157
	167. <i>Junonia lemonias</i> Linnaeus	Lemon Pansy		158
	168. <i>Junonia almana</i> Linnaeus	Peacock Pansy		159
	169. <i>Hypolimnna misippus</i> Linnaeus	Danaid Eggfly	Schedule I	160
	170. <i>Hypolimnna bolina</i> Linnaeus	Great Egg fly		161
	171. <i>Kallima horsfieldi</i> Kollar	Blue Oak leaf	Endemic to the Western Ghats (Kunte 2008)	162
	172. <i>Doleschallia bisaltide</i> Cramer	Autumn Oak leaf	Schedule I	163

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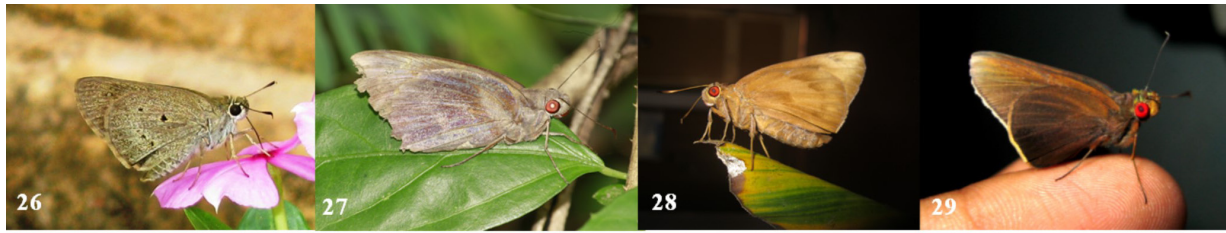
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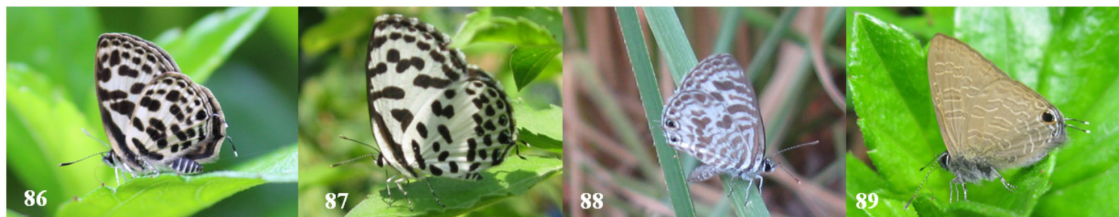
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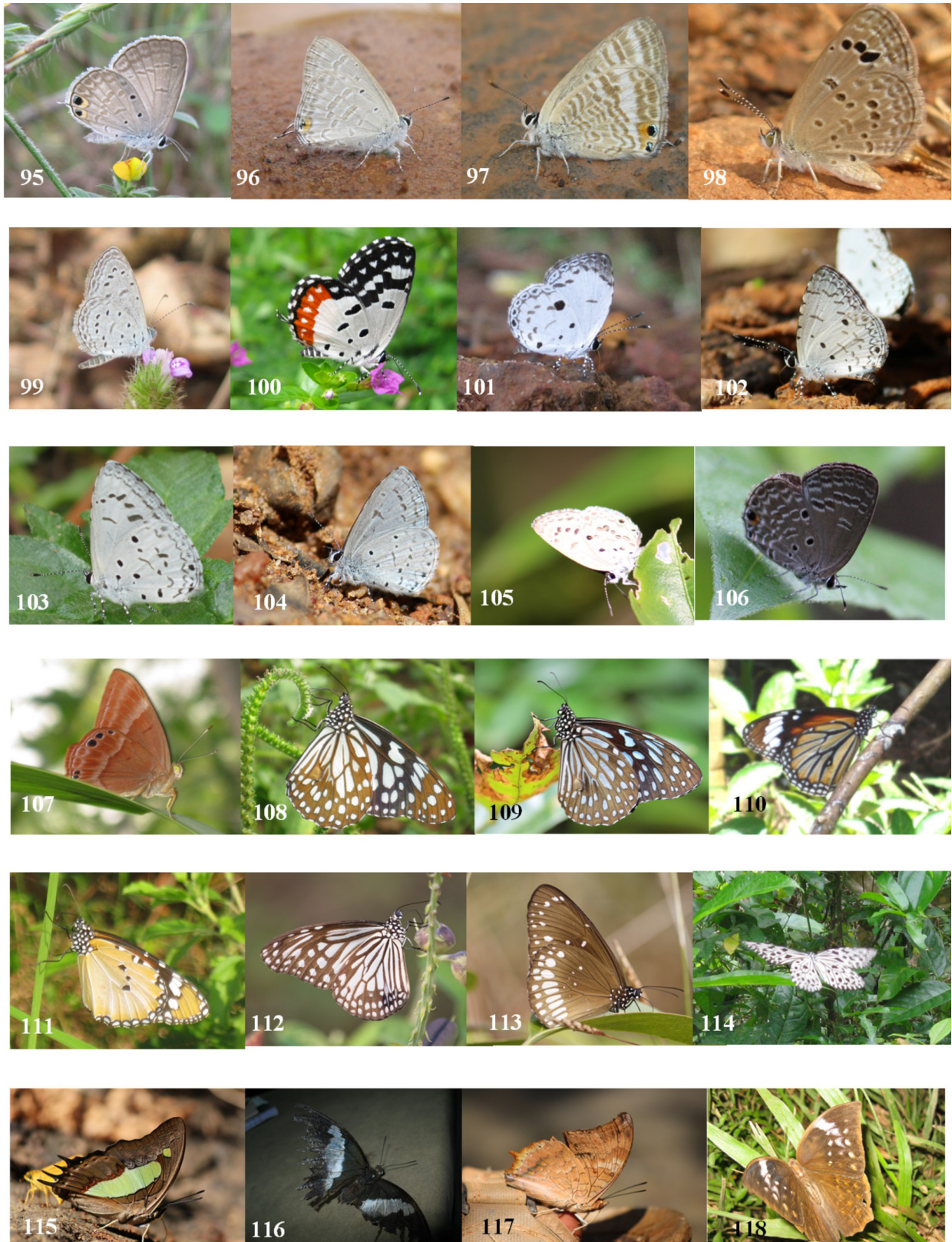
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