



# Butterfly Checklist of Central Academy for State Forest Service Campus, Burnihat, Assam

K. Kirubaharan, Arghya Acharyya<sup>1</sup> and Narayan Chandra Saha<sup>\*</sup>

Central Academy for State Forest Service Burnihat- 793 101, India

<sup>1</sup>Department of Zoology, Ramakrishna Mission Vivekananda Centenary College, Rahara-700 118, India

<sup>\*</sup>E-mail: [narayanchsaha@gmail.com](mailto:narayanchsaha@gmail.com)

**Abstract:** Central Academy for State Forest Service (CASFoS) is located in the border area of two northeastern states, Assam & Meghalaya. One side of this campus is in the Kamrup district of Assam and other side Khasi hill, Riboi district of Meghalaya. Despite the interstates faunal significance of the area, the area remains poorly documented in terms of butterfly community and hence data deficient. The present study was taken therefore with an objective of providing a baseline data of the butterfly community in CASFoS, Assam. This documentation is the first scientific report on the butterfly faunal diversity from this academy campus. A total of 121 species representing 82 genera and six families have been recorded. The family Nymphalidae was dominant with 45 species under 11 subfamilies, followed by Lycaenidae 25 species under 3 subfamilies, Hesperidae 24 species under 3 subfamilies, Peridae 14 species under 2 subfamilies, Papilionidae 12 species under 1 subfamily, and Riodininae 1 species under 1 subfamily.

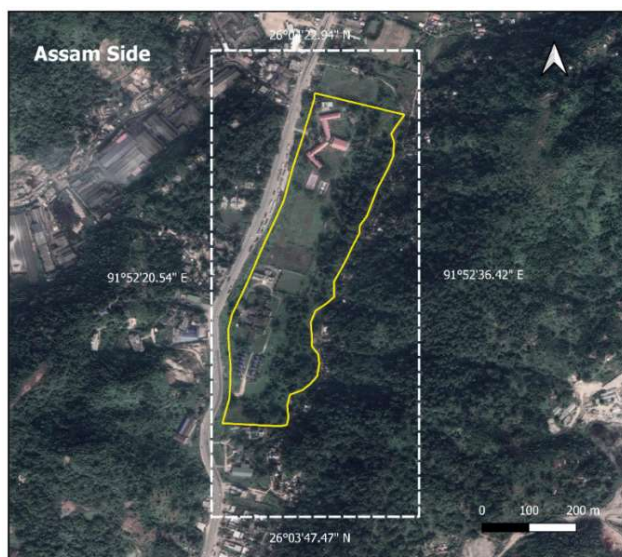
**Keywords:** Butterfly diversity, CASFoS, Burnihat, Urban area

Among the insects, butterflies are suitable for local biodiversity studies, as the taxonomy, geographic distribution and status of many species are relatively well known. Moreover, butterflies occupy a vital position in ecosystems and their occurrence and diversity are considered as good indicators of the health of any given terrestrial biotope (Kunte 2000, Aluri and Rao 2002, Thomas 2005). In addition to this, butterflies are good indicators in terms of anthropogenic disturbance and habitat quality (Kocher and Williams 2000) because they exhibit high host plant specificity (Munguira et al 2009). The study of butterfly community in relation to the human dominated landscape is very important from the ecological point of view as such type of modified habitats often negatively influence the distribution of butterfly species and their dynamics (Gascon et al 1999, Ricketts et al 2001). The developmental activities and resulting habitat fragmentation create threats to the survival of butterflies worldwide (Asher et al 2001, Tiple and Khurad 2009, Theivaprakasham 2020). Hence it requires proper exploration in various ecological pockets of primary and disturbed (human dominated) habitat of butterfly fauna. With this view, this present work was designed to know the butterfly species diversity in human dominated landscape of the CASFoS campus, Burnihat, Assam. This study is also unique because this is the first scientific documentation on the butterfly fauna from this college campus. Increase of urban features, including busy roads, buildings, and anthropogenic activities in Assam & Meghalaya posing threat

to these colourful winged insects. Therefore, this checklist will help the conservationists for better management of the butterfly fauna of this degraded ecosystem.

## MATERIAL AND METHODS

**Study area:** The academy is located in between the state of Assam and Meghalaya about 21 km away from Guwahati town. The academy campus is spread over an area of about 24 hectares which is spread on either side of NH-40. The Assam side land is measuring about 19 hectares, falls in Kamrup district which is located in 26° 04'94"N to 26°03'47.47"N latitude, and 91° 52'20.54" E to 91°52'36.42" E longitude & elevation 68 m, above MSL. The study area is situated at the valley area of Assam side surrounding with mountain range of Kamrup and Khasi hill on the opposite side (Fig. 1). The climate is mostly tropical wet with hot summer and cold in winter. The average rainfall is 20 mm. The soil is clay-loam, alluvial and red-alluvial. The soil is highly porous on hilly areas and moisture retention capacity is less. The vegetation of this campus is mostly tropical. The original vegetation surrounding academy campus has been disturbed due to the development of national highway road construction, encroachment of land and construction of house. The vegetation is characterised with tree species like, *Lagersteromia spaciosa*, *Dalbergia sisso*, *Shorea robusta*, *Terminalia* spp., *Diospyros melanoxylon* and *Tectona grandis*, *Ficus religiosa*, *Pongamia pinnata*, *Aegle marmelos* etc., shrubs like *Clerodendron infractunatum*, *Calotropis*



**Fig. 1.** Map of the main campus area of CASFoS Burnihat Assam

*procera*, *Lantana camara*, *Murraya koenigii*, *Ricinus communis* and *Ixora sp.*, herb like *Vinca rosea*, *Chromalaena dorata*, climbers like, *Mikania micrantha*. Beside this, *Hymenocallis caroliniana* on road side blooming before rainy seasons specially attract the butterflies.

**Collection methodology:** The present study is mainly carried out on a random survey from January 2020 to December 2020 and direct observations were made once in a week. The butterflies observed during these surveys were photographed in details which were subsequently identified after consultation of works of literatures (Evans 1932, Kunte 2000, Bora et al 2014, Kehimkar 2016). The photographs for the identification of species have been taken with the Digital SLR camera (Cannon 90D). Butterfly survey was mostly made on the grassland, bushy area, adjacent to hill stream, mud puddle patches, open college campus, wildflower, and seasonal flower garden.

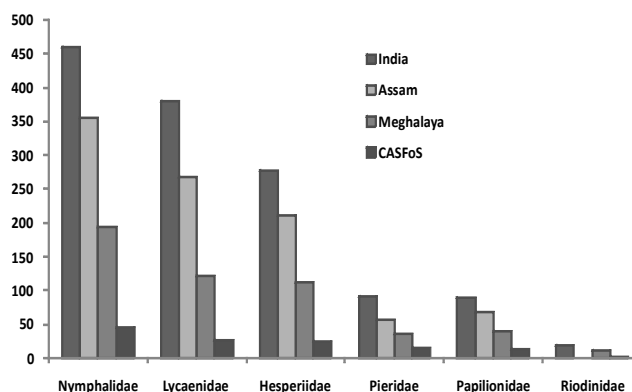
## RESULTS AND DISCUSSION

Present study reports 121 species under 6 families of butterflies from the CASFoS campus (Table 1). Of them, family Nymphalidae shares highest number of species (45) followed by other families as follows. Seven species of butterflies, namely, *Pelopidas sinensis* (Mabille 1877), *Baoris farri* (Moore 1878), *Castalius rosimon* (Fabricius 1775), *Lampides boeticus* (Linnaeus 1767), *Mahathala ameria* (Hewitson 1862), *Papilio clyta* Linnaeus 1758 and *Appias libythea* (Fabricius 1775) from this study area come under Wildlife Protection Act, 1972 (Table 1, Fig. 3-9).

Among the six butterfly families reported from the campus of this academic institution, the members of the family

Hesperiidae are small to medium sized butterflies characterised by the presence of hooked antenna, that is the tip of the antenna is bent or hook-like, giving this family its key feature. Only 24 (20%) species of the total butterfly fauna of CASFoS are hesperiids (Table 2). Of them, the subfamily Hesperinae shares maximum number of species (79%) followed by Pyrginae and Coeliadinae. The members of the family Lycaenidae are also small sized butterflies and characterised by spots or freckles in the underside of their wings. Only 25 (21%) of the total butterfly fauna of CASFoS are Lycaenidae. Of them, the subfamily Polyommatae shares maximum number of species (60%) followed by Theclinae and Lycinae. Members of the family Nymphalidae are usually medium to large sized butterflies, with bright beautifully coloured wings. Only 45 (37%) of the total butterfly fauna of CASFoS are nymphalids. Of them, the subfamily Satyrinae shares maximum number of species (31%) followed by Limenitinae, Danainae and Nymphalinae. The Papilionids are the large colourful butterflies commonly found in tropical areas. Some species possess a tail-like projection in their hind wings. Only 12 (10%) species under single subfamily of the total butterfly fauna of CASFoS are papilionids. Pierids are small to medium sized, white- or yellow-coloured butterflies. The tips of the legs are forked in pierids. Only 14 (11%) of the total butterfly fauna of CASFoS are pierids (Table 2). Of them, the subfamily Pierinae shares maximum number of species (64%) followed by Coliadinae. Butterflies of the family Riodinidae have remarkable metallic spots on their wings which render them their common name 'metalmarks'. All species in this family are small or medium in size. Only 1 (1%) of the total butterfly fauna of CASFoS are riodinids.

Indian butterflies are one of the well-studied insect groups compared to any other insect groups. Van Nieukerken et al (2011) documented about 18,732 species of butterflies are found in the entire world excluding the Hedyliidae family. In



**Fig. 2.** Comparative chart on the butterfly faunal diversity of India Assam Meghalaya and CASFoS

**Table 1.** Butterfly species currently known from the campus of CASFoS

Sr. No.	Scientific name	Common name	WPA (1972)
Family -Hesperiidae			
Sub-family- Coeliadinae			
1	<i>Burara amara</i> (Moore 1865)	Small Green Awlet	
Subfamily-Hesperiinae			
2	<i>Rapala manea</i> (Hewitson 1863 )	Slate Flash	
3	<i>Iambrix salsala</i> (Moore1865)	Chestnut Bob	
4	<i>Potanthus Confucius</i> ( C & R.Felder 1862 )	Chinese Dart	
5	<i>Oriens gola</i> (Moore1877 )	Common Dartlet	
6	<i>O. goloides</i> (Moore 1881)	SmallerDartlet	
7	<i>Udaspes folus</i> (Cramer 1775)	Grass Demon	
8	<i>Notocrypt acurvifascia</i> (C. & R. Felder1862)	Restricted Demon	
9	<i>Ampittia dioscorides</i> (Fabricius1793 )	Bush Hopper	
10	<i>Aeromachu spygmaeus</i> Fabricius1775	Pygmy Scrub Hopper	
11	<i>Halpe zola</i> Evans 1937	Long Banded Ace	
12	<i>Erionota torus</i> Evans 1941	Rounded Palm-red Eye	
13	<i>Matapa aria</i> (Moore 1866)	Common Red Eye	
14	<i>M. cresta</i> Evans 1949	Fringed Branded Red Eye	
15	<i>Pelopidas sinensis</i> (Mabille 1877)	Chinese Banded Swift	Sch- IV
16	<i>Caltoris cahira</i> Moore 1877	Colon Swift	
17	<i>Parnara ganga</i> Evans 1937	Continental Swift	
18	<i>Baoris farri</i> (Moore 1878 )	Complete Paint Brush Swift	Sch-IV
19	<i>Borbo cinnara</i> (Wallace 1866 )	Rice Swift	
20	<i>Pelopidas mathias</i> (Fabricius 1798 )	Small branded Swift	
Subfamily Pyrginae			
21	<i>Sarangesa dasahara</i> (Moore 1866 )	Common Small Flat	
22	<i>Tagiades japetus</i> (Stoll 1781 )	Common Snow Flat	
23	<i>T.e smenaka</i> (Moore 1865)	Spotted Snow Flat	
24	<i>Pseudocoladenia dan</i> (Fabricius1787 )	Fulvous Pied Flat	
Family -Lycaenidae			
Subfamily- Polyommatae			
25	<i>Anthene emolus</i> (Godart 1824 )	Common Ciliate Blue	
26	<i>Prosota snora</i> (C.Felder 1860 )	Common Line Blue	
27	<i>Caleta decidia</i> (Hewitson 1876 )	Angled Pierrot	
28	<i>Castlius rosimon</i> (Fabricius 1775 )	Common Pierrot	Sch-I Part-IV
29	<i>Jamides celeno</i> (Cramer 1775 )	Common Cerulean	
30	<i>J.elpis</i> (Godart 1824 )	Glistening Cerculean	
31	<i>J. alecto</i> (C. Felder 1860)	Metallic Cerulean	
32	<i>Lampides boeticus</i> (Linnaeus1767 )	Pea Blue	Sch-II Part-II
33	<i>Leptotes plinius</i> (Fabricius 1793 )	Zebra Blue	
34	<i>Zizeeria karsandra</i> (Moore 1865 )	Dark Grass Blue	
35	<i>Pseudozizeeria maha</i> (Kollar 1844 )	Pale Grass Blue	
36	<i>Zizula hylax</i> (Fabricius 1775)	Tiny Grass Blue	
37	<i>Megisba malaya</i> (Horsfield1828 )	Malayan	

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Sr. No.	Scientific name	Common name	WPA (1972)
38	<i>Chilades pandava</i> (Horsfield 1829 )	Plains Cupid	
39	<i>C. lajus</i> (Stoll1780 )	Lime Blue	
Subfamily- Lycaeninae			
40	<i>Heliophorus epicles</i> (Godart 1824 )	Purple Sapphire	
Subfamily- Theclinae			
41	<i>Mahathala ameria</i> (Hewitson 1862)	Falcate Oak Blue	Sch-II Part- II
42	<i>Surendra quercetorum</i> (Moore 1858 )	Common Acacia Blue	
43	<i>Charana mandarinus</i> (Hewitson 1863)	Mandarin Blue	
44	<i>Hypolycaena erylus</i> (Godart 1824 )	Common Tit	
45	<i>Zeltus amasa</i> (Hewitson 1865)	Fluffy Tit	
46	<i>Remelana jangala</i> (Horsfield 1829 )	Chocolate Royal	
47	<i>Loxura atymnus</i> (Stoll 1780 )	Yamfly	
48	<i>Cheritra freja</i> (Fabricius 1793 )	Common Imperial	
49	<i>Rapala iarbas</i> (Fabricius 1787 )	Common Red Flash	
Family -Nymphalidae			
Subfamily- Acraeinae			
50	<i>Acraea issoria</i> ( Hubner1819 )	Yellow Coster	
Subfamily -Apaturinae			
51	<i>Herona marathus</i> Doubleday 1848	Pasha	
Subfamily -biblidinae			
52	<i>Ariadne merione</i> (Crame 1777 )	Common Castor	
Subfamily -Charaxinae			
53	<i>Polyur aathamas</i> Drury 1770	Common Nawab	
54	<i>Charaxes eudamippus</i> Doubleday 1843	Great Nawab	
55	<i>C. spsaphon</i> (Butler 1870 )	Plain Tawny Rajah	
Subfamily -Cyrestinae			
56	<i>Chersonesia risa</i> (Doubleday1848)	Common Maplet	
57	<i>C. intermedia</i> (Martin 1895 )	Wavy Maplet	
Subfamily- Danainae			
58	<i>Tirumala limniace</i> (Cramer 1775 )	Blue Tiger	
59	<i>Parantica aglea</i> (Stoll 1782 )	Glassy Tiger	
60	<i>Danau schrysippus</i> (Linnaeus 1758)	Plain Tiger	
61	<i>D. genutia</i> ( Cramer 1779 )	Stripped Tiger/	
62	<i>Eupolea klugii</i> (Moore 1858 )	King Crow	
63	<i>E. core</i> (Cramer 1780 )	Common Crow	
64	<i>E. algea</i> (Godart 1819 )	Long Branded Blue Crow	
Subfamily- Heliconiinae			
65	<i>Cirrochroa tyche</i> C. & R . Felder 1861	Common Yeoman	
Subfamily -Limenitinae			
66	<i>Moduza procris</i> (Cramer 1777)	Commander	
67	<i>Pantoporia sandaka</i> (Eliot 1969)	Extra Lascar	
68	<i>Neptis clinia</i> Moore 1872	SulliedSailer	
69	<i>N. hylas</i> Linnaeus 1758	Common Sailer	

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**Table 1.** Butterfly species currently known from the campus of CASFoS

Sr. No.	Scientific name	Common name	WPA (1972)
70	<i>Euthalia aconthea</i> Cramer 1777	Common Baron	
71	<i>E.monina</i> (Fabricius 1787 )	Powdered Baron	
72	<i>Tanaecia lepidea</i> (Butler 1868 )	Grey Count	
73	<i>T. jahnu</i> (Moore 1858 )	Plain Earl	
Subfamily Morphinae			
74	<i>Discophora sondaica</i> Boisduval 1836	Common Duffer	
Subfamily Nymphalinae			
75	<i>Junonia iphita</i> (Cramer 1779 )	Chocolate Pansy	
76	<i>J.atlites</i> (Linnaeus 1763)	Grey Pansy	
77	<i>J. lemonias</i> (Linnaeus 1758 )	Lemon Pansy	
78	<i>J. almana</i> (Linnaeus 1758 )	Peacock Pansy	
79	<i>J. hierta</i> (Fabricius 1798 )	Yellow Pansy	
80	<i>Hypolimnas bolina</i> (Linnaeus 1758 )	Great Egg Fly	
Subfamily Satyrinae			
81	<i>Elymnias hypermnestra</i> (Linnaeus 1763 )	Common Palmfly	
82	<i>E. malelas</i> (Hewitson 1863 )	Spotted Palmfly	
83	<i>Melanitis leda</i> (Linnaeus 1758 )	Common Evening Brown	
84	<i>M. phedima</i> (Cramer 1780 )	Dark Evening Brown	
85	<i>M.s zitenius</i> (Herbst 1796 )	Great Evening Brown	
86	<i>Lethe rohria</i> (Fabricius1787 )	Common Tree Brown	
87	<i>L. mekara</i> (Moore 1858 )	Common Red Forester	
88	<i>Mycalesis gotama</i> (Moore 1857 )	Chinese Bush Brown	
89	<i>M. mineus</i> (Linnaeus 1758 )	Dark Brand Bush Brown	
90	<i>M. visala</i> Moore 1858	Long Brand Bush Brown	
91	<i>Orsotrioena medus</i> (Fabricius1775 )	Nigger	
92	<i>Loxerebia narasingha</i> (Moore1858 )	Mottled Argus	
93	<i>Ypthima baldus</i> (Fabricius 1775)	Common Five Ring	
94	<i>Y. huebneri</i> Kirby 1871	Common Four Ring	
Family Papilionidae			
Subfamily Papilioninae			
95	<i>Graphium sarpedon</i> (Linnaeus 1758 )	Common Blue Bottle	
96	<i>Graphium doson</i> ( C & R. Felder 1864 )	Common Jay	
97	<i>Graphium agamemnon</i> (Linnaeus1758 )	Tailed Jay	
98	<i>Atrophaneu raadioneus</i> (Doubleday 1845)	Lesser Batwing	
99	<i>Pachliopta aristolochiae</i> (Fabricius 1775 )	Common Rose	
100	<i>Troides aeacus</i> ( C & R. Felder 1860 )	Golden Birdwing	
101	<i>Papilio clyta</i> Linnaeus 1758	Common Mime	Sch-I Part- IV
102	<i>P. polytes</i> Linnaeus 1758	Common Mormon	
103	<i>P. helenus</i> Linnaeus 1758	Red Helen	
104	<i>P. nephelus</i> Boisduval 1836	Yellow Helen	
105	<i>P. memnon</i> Linnaeus 1758	Great Mormon	
106	<i>P. demoleus</i> Linnaeus 1758	Lime Butterfly	

**Table 1.** Butterfly species currently known from the campus of CASFoS

Sr. No.	Scientific name	Common name	WPA (1972)
Family Pieridae			
Subfamily Coliadinae			
107	<i>Eurema andersonii</i> (Moore 1886)	One Spot Grass Yellow	
108	<i>E. blanda</i> (Boisduval 1836)	Three Spot Grass Yellow	
109	<i>E. simulatrix</i> (Staudinger 1891)	Changeable Grass Yellow	
110	<i>Catopsilia pomona</i> (Fabricius 1775)	Common Emigrant	
111	<i>C. pyranthe</i> (Linnaeus 1758)	Mottled Emigrant	
Subfamily Pierinae			
112	<i>Hebomoia glaucippe</i> (Linnaeus 1758)	Great Orange Tip	
113	<i>Appias olferna</i> Swinhoe 1890	Eastern Striped Albatross	
114	<i>A. lycnida</i> (Cramer 1777)	Chocolate Albatross	
115	<i>A. libythea</i> (Fabricius 1775)	Western Striped Albatross	Sch-IVPart-I
116	<i>Pieris canidia</i> (Linnaeus 1768)	Indian Cabbage white	
117	<i>Delias eucharis</i> (Dury 1773)	Indian Jezebel	
118	<i>D. pasithoe</i> (Linnaeus 1767)	Red Base Jezebel	
119	<i>D. descombesi</i> (Boisduval 1836)	Red Spot Jezebel	
120	<i>Leptosia nina</i> (Fabricius 1793)	Psyche	
Family Riodinidae			
Subfamily Riodininae			
121	<i>Zemeros flegyas</i> (Cramer 1780)	Punchinello	

**Table 2.** Family-wise butterfly species currently known from the campus of CASFoS

Family	Subfamily	No. of species	Percent
Hesperiidae		24	20
	Coeliadinae	1	4
	Hesperiinae	19	79
Lycaenidae	Pyrginae	4	17
		25	21
	Polyommatainae	15	60
	Lycaeninae	1	4
Nymphalidae	Theclinae	9	36
		45	37
	Acraeinae	1	2
	Apaturinae	1	2
	Biblidinae	1	2
	Charaxinae	3	7
	Cyrestinae	2	4
	Danainae	7	16
	Heliconiinae	1	2
	Limenitinae	8	18
	Morphinae	1	2
	Nymphalinae	6	14
	Satyrinae	14	31
Papilionidae		12	10
	Papilioninae	12	
Pieridae		14	11
	Coliadinae	5	36
	Pierinae	9	64
Riodinidae		1	1
	Riodininae	1	
Total		121	100

recently published work, Varshney and Smetacek (2015) stated that India hosts 1318 butterfly species (Fig. 2). Mudai et al (2015) documented 962 species of butterfly belonging to five families from Assam region. In another unpublished document, Bora (2016) reported 514 species of butterfly, of which majority are Nymphalidae (193), followed by Lycaenidae, Hesperidae, Papilionidae, Pieridae, and Riodinidae from the state of Meghalaya. A comparative chart on butterfly faunal diversity in India, Assam, Meghalaya and CASFoS is given below (Fig. 2).

The polyphagous nature of nymphalidae, help them for their constant dominance and the abandoned availability of food source and their strong flying habit help them for this dominancy. Nymphalidae is an abundant butterfly family on the CASFoS campus. Near about 37.2% of the total butterfly diversity in CASFoS campus belongs to the Nymphalidae family. Most of the butterflies from five families are found in post monsoon as well as in winter. The reason for huge butterfly diversity in CASFoS campus is green vegetation and a pleasant, restricted environment. Moreover, *Lantana camara* is a dominant shrub in this campus, which mainly helps to attract various butterfly species as nectar plant. As mentioned before, one of sides of CASFoS is surrounded by Meghalaya and nowadays due to excessive deforestation and disturbance from scrap factories nearby, a large number of butterfly species seems to shift their habitat from Meghalaya to this campus because of its favourable environment. The conservation impact of this paper



Fig. 3. *Pelopidas sinensis* (Chinese Banded Swift)



Fig. 4. *Baoris farri* (Complete Painted Brush Swift)



Fig. 5. *Castalius rosimon* (Common Pierrot)



Fig. 6. *Lampides boetieus* (Pea Blue)



Fig. 7. *Mathathala ameri* (Falcata Oak Blue)



Fig. 8. *Papilio clyta* (Common Mime)



Fig. 9. *Appias libythea* (Western Striped Albatross)

highlights that campus of CASFoS had a very low quantity of ill effects of urbanization and if it is maintained, then this campus will be proved as a biodiversity rich area with all developmental activities.

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