

“A preliminary checklist of butterflies and moths of Charaideo district of Assam.”

A Project report submitted to Dibrugarh University for partial fulfillment of the requirement for the Degree of Bachelor of Science in Zoology.



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CERTIFICATE

This is to certify thatSUPRATIM KALITA..... a student of 5th semester of Department of Zoology, Sonari College, has carried out the project entitled "A preliminary checklist of butterflies and moths of Charaideo district of Assam." under my guidance and supervision. The project is a bona fide record submitted for partial fulfillment of the requirement for the Degree of Bachelor of Science in Zoology, Dibrugarh University.

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THANK YOU

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Supratim Kalita

“A preliminary checklist of butterflies and moths of Charaideo district of Assam.”

Abstract:

A study on the diversity of butterflies during day time and moths attracted by lights at night was conducted in Charaideo district of Assam in the year 2023. A total of 48 species of butterflies were recorded during the study period, which belonged to 5 families and 31 genera of the order Lepidoptera. The family Nymphalidae dominated, with 54.16 % of recorded species followed by Hesperidae and Lycaenidae with 14.58 and 12.5% respectively. A total of 95 species of moths were recorded during the study period, which belonged to 13 families. The families Erebidae and Geometridae. dominated, followed by Crambidae and Noctuidae.

Introduction:

The Charaideo district of Assam was carved out from Sivasagar district in 2015. It is located at 27.07° N. 95.03°E and at an elevation of 318 feet. The district is bounded by Dibrugarh in the North East, Sivasagar in the West and the states of Nagaland and Arunachal Pradesh in the south. With an area of 1069.15 sq kms, the district has approximately 14,863.64 hectares of land under 5 forest reserves- Dilli, Abhoypur, Sapekhati, Diroi and Chala. Five rivers, viz. Towkak, Desang, Teok, Suffry, Timon flows through the district (assam.gov.in). The climatic condition of the area is favourable for flora and fauna to flourish as it is also being included under the Indo Burma hotspot.

Insects are the most abundant, diverse and supreme conquerors on Earth, populating about three-fourths of the total known faunal species. The Lepidopterans- butterflies and moths are sensitive bioindicators of environmental pollution (McGeogh, 1998; Rákósy and Schmitt, 2011). They also play important roles as pollinators of food crops (Kunte, 2000; Ostiguy, 2011; Walton et al., 2020), preys to small animals and birds and herbivores of our food crops (Kunte 2000; Irwin 2010). The jewels of nature- the charismatic butterflies are being studied but the study of moths and their diversity is lagging behind. The reasons behind this might be moths being nocturnal in behavior, though few are found during day time and moreover many of them are dull coloured and hence are unable to grab the attention of

people. The moths are attracted to bright light sources and gather around lights especially in summer time, thus making their study easier during that time.

The larvae of both butterflies and moths are active plant feeders and deforestation, degradation of wetlands and weeds, insecticide application have very much threatened their existence (Kehmikar). The survey, identification and proper documentation of butterfly and moth species is thus very much necessary for conservation and management of habitats. There is dearth of literature on the diversity study of butterfly and moths of Charaideo district and thus the present work was aimed to study on the butterfly and moth diversity in Charaideo district, which is the first report on the area.

Materials and Methods:

The study on the diversity of butterflies and moths was conducted in the 8 selected sites during 2023.

Site 1: The residential area of Parbatipur ($27^{\circ}01'30''$ N $95^{\circ}00'40''$ E and altitude 108 m). The area is bordered by the Towkak river to its south. Rice fields and tea gardens are also present in the vicinity.

Site 2: Near Sonari College ($27^{\circ}01'55''$ N $95^{\circ}01'19''$ E and altitude 111 m). The area is bordered by the tea gardens and market area.

Site 3: Pehi Pukhuri ($27^{\circ}04'16''$ N $95^{\circ}07'14''$ E and altitude 112 m). Rice fields and wetlands like the historical Pehi Pukhuri are present.

Site 4: Boroho Gaon ($27^{\circ}04'32''$ N $95^{\circ}08'06''$ E and altitude 116 m). Rice fields, vegetable gardens and a government sericulture farm is present.

Site 5: Garia Chiga Gaon ($27^{\circ}05'09''$ N $95^{\circ}09'19''$ E and altitude 116 m). A pavement cement tiles factory is present.

Site 6: Lukhurakhan ($27^{\circ}02'15''$ N $95^{\circ}07'42''$ E and altitude 105 m). Tea gardens are present. The states of Arunachal Pradesh and Nagaland are in close vicinity.

Site 7: Ouguri Shyam Gaon ($27^{\circ}01'47''$ N $95^{\circ}08'21''$ E and altitude 114 m). Tea gardens are present. The states of Arunachal Pradesh and Nagaland are in close vicinity.

Site 8: Holonga Mora (27°03'59" N 95°13'17"E and altitude 122 m). Tea gardens are present. The state of Arunachal Pradesh is only 2 kms and Nagaland is in close vicinity.

Butterflies were studied after sunrise when they are found to be basking in the sun and at evening time before sunset. They were mostly photographed and a few were collected using sweep nets. Moths attracted to lights were photographed using personal mobiles. Species were recorded with date and time of observance. Butterflies were identified using book guides of Isaac Kehimkar and Peter Smetacek and websites- ifoundbutterflies.org, Web resources like Google Lens. The moths were identified based on available literature of Holloway (1987, 1998) and Kristensen (1999) and other publications. Web resources like Google Lens, Patangasuchaka.in, field guides, and biodiversity portals, dedicated to lepidopteran diversity were also utilized to confirm or to check the species names.

Fig 1: Map showing the state of Assam and the district under study - Charaideo.



Fig 1: Map showing the state of Assam and the district under study- Charaideo.

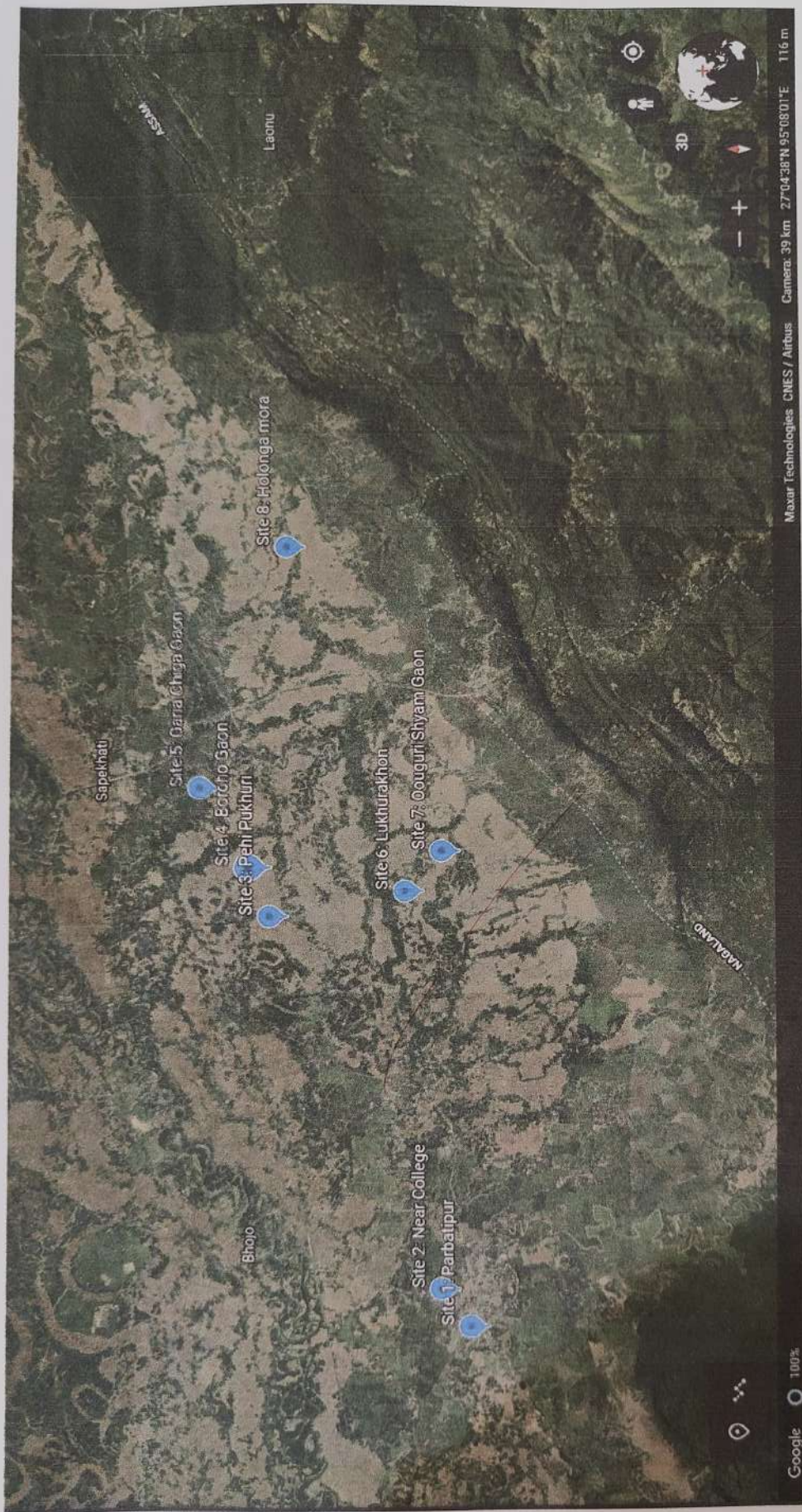


Fig 2: Map showing the 8 study sites.

Results and Discussions:

A total of 48 species of butterflies were recorded under 5 families. The checklist is given in Table 1. Butterflies have always fascinating people because of their charismatic appearance. The highest number of butterflies recorded belonged to the Nymphalidae family (26) followed by hesperiidae, Lycaenidae, Pieridae and Papilionidae (Table 2 and Fig 3). A similar trend was recorded by Bora and Meitei (2014) while studying butterfly fauna in five tea gardens of Sivasagar district and 3 of the gardens now fall under Charaideo district. Nymphalids are the largest family of butterflies, they are polyphagous. It was seen that the most common butterflies- the cabbage whites, yellows, common mormons and the pansies were recorded in large numbers in all the study sites and in Site 2 which is a town area.

A total of 95 moths were recorded under 13 families however we could only identify only 51 numbers of moths. A checklist is given in Table 3. Moths were highly attracted to light source, the plants growing around the study sites- rice fields, tea gardens, weeds, wetlands, vegetable gardens and altitudes. The larvae of the moths recorded are pests of vegetable crops and plants. This preliminary study shows that the highest number of moths belonged Erebiidae and Geometridae families followed by Crambidae and Noctuidea families. *Antherea assamensis*, the muga silk moth belonging to the family Saturniidae is a semi domesticated moth and is reared in sericulture farms or at home.

Table 1: A partial Checklist of butterflies recorded

| SI No | Common name | Name of the species | Family |
|-------|-----------------------------------|------------------------------|--------------|
| 1 | Common Evening Brown (dry season) | <i>Melanitis leda</i> | Nymphalidae |
| 2 | Common Evening Brown (dry season) | <i>Melanitis leda</i> | Nymphalidae |
| 3 | Common Evening Brown (wet season) | <i>Melanitis leda</i> | Nymphalidae |
| 4 | Common palmfly (female) | <i>Elymnias hypermnestra</i> | Nymphalidae |
| 5 | Black Rajah | <i>Charaxes solon</i> | Nymphalidae |
| 6 | Indian Plain Tawny Rajah | <i>Charaxes bernardus</i> | Nymphalidae |
| 7 | Blue Admiral | <i>Kaniska canace</i> | Nymphalidae |
| 8 | Great Eggfly | <i>Hypolimnas bolina</i> | Nymphalidae |
| 9 | Common Palmfly | <i>Elymnias hypermnestra</i> | Nymphalidae |
| 10 | Lime butterfly | <i>Papilio demoleus</i> | Papilionidae |
| 11 | Spangle | <i>Papilio protenor</i> | Papilionidae |
| 12 | Painted Lady | <i>Vanessa cardui</i> | Nymphalidae |
| 13 | Striped blue crow | <i>Euploea mulciber</i> | Nymphalidae |
| 14 | Plain tiger | <i>Danaus chrysippus</i> | Nymphalidae |
| 15 | Common mormon | <i>Papilio polytes</i> | Papilionidae |
| 16 | Grey Pansy | <i>Junonia atlites</i> | Nymphalidae |
| 17 | Peacock pansy | <i>Junonia almana</i> | Nymphalidae |
| 18 | Lemon pansy | <i>Junonia lemonias</i> | Nymphalidae |
| 19 | Common baron | <i>Euthalia aconthea</i> | Nymphalidae |
| 20 | Archduke | <i>Lexias pardalis</i> | Nymphalidae |
| 21 | Grey count | <i>Tanaecia lepidea</i> | Nymphalidae |
| 22 | Common baron | <i>Euthalia aconthea</i> | Nymphalidae |
| 23 | Commander | <i>Moduza procris</i> | Nymphalidae |
| 24 | Common bluebottle | <i>Graphium sarpedon</i> | Papilionidae |
| 25 | Blue King Crow | <i>Euploea klugii</i> | Nymphalidae |
| 26 | Common Fivering | <i>Ypthima baldus</i> | Nymphalidae |
| 27 | Moore's fivering | <i>Ypthima nikaea</i> | Nymphalidae |
| 28 | Common grass Yellow | <i>Eurema hecabe</i> | Pieridae |
| 29 | Mottled Emigrant | <i>Catopsilia pyranthe</i> | Pieridae |
| 30 | Indian Cabbage White | <i>Pieris canidia</i> | Pieridae |
| 31 | Large Cabbage White | <i>Pieris brassicae</i> | Pieridae |
| 32 | Three spot Grass Yellow | <i>Eurema blanda</i> | Pieridae |
| 33 | Common sergeant | <i>Athyma perius</i> | Nymphalidae |
| 34 | Short-banded Sailer | <i>Phaedyma columella</i> | Nymphalidae |
| 35 | The black tip archduke | <i>Lexias dirtea</i> | Nymphalidae |
| 36 | | | Hesperiidae |

| Sl No | Common name | Name of the species | Family |
|-------|----------------------|---------------------------------|-------------|
| 37 | Common Spotted flat | <i>Celaenorrhinus leucocera</i> | Hesperiidae |
| 38 | Conjoined swift | <i>Pelopidas conjuncta</i> | Hesperiidae |
| 39 | Great swift | <i>Pelopidas assamensis</i> | Hesperiidae |
| 40 | Common RedEye | <i>Matapa aria</i> | Hesperiidae |
| 41 | Small Branded swift | <i>Pelopidas mathias</i> | Hesperiidae |
| 42 | Common Dartlet | <i>Oriens goloides</i> | Hesperiidae |
| 43 | Himalayan Common Gem | <i>Poritia hewitsoni</i> | Lycaenidae |
| 44 | Lime Blue butterfly | <i>Chilades lajus</i> | Lycaenidae |
| 45 | Common Apefly | <i>Spalgis epius</i> | Lycaenidae |
| 46 | Forget me not | <i>Catochrysops Strabo</i> | Lycaenidae |
| 47 | Common Pierrot | <i>Castalius rosimon</i> | Lycaenidae |
| 48 | Red Pierrot | <i>Talicauda nyseus</i> | Lycaenidae |

Table 2: Summary of Families of Butterflies:

| Family | Number of Species | % to total |
|--------------|-------------------|------------|
| Nymphalidae | 26 | |
| Papilionidae | 4 | |
| Hesperiidae | 7 | |
| Pieridae | 5 | |
| Lycaenidae | 6 | |
| Total | 48 | |

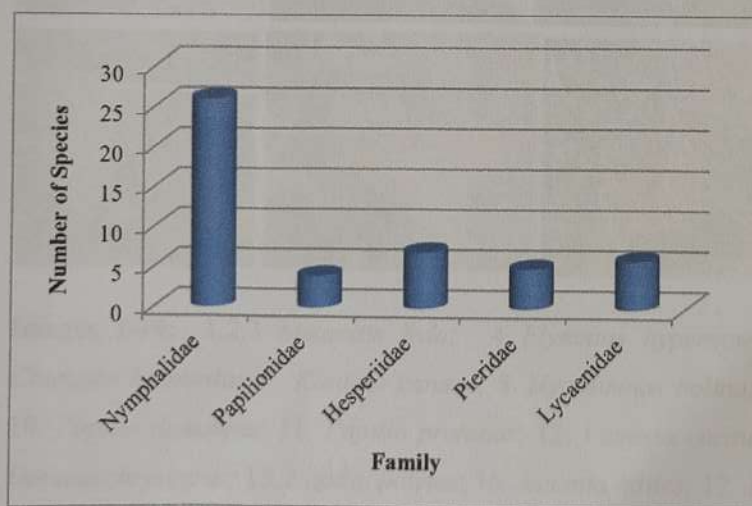
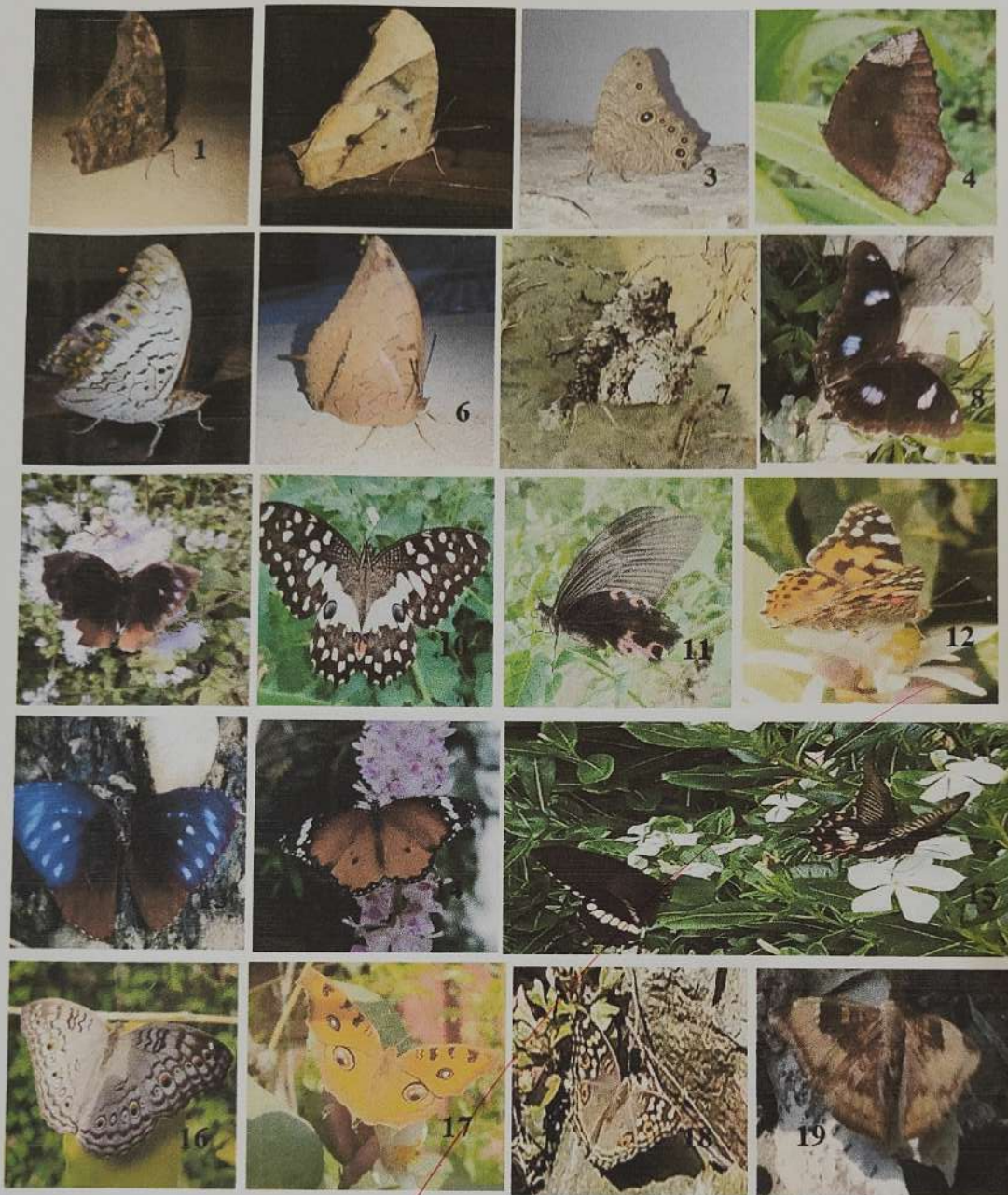


Fig 3 : shows the number of species of butterflies belonging to each Family.



Images 1-19: 1,2,3 *Melanitis jeda*; 4 *Elymnias hypermnestra*; 5. *Charaxes solon*; 6. *Charaxes bernardus*; 7. *Kaniska canace*; 8. *Hypolimnas bolina*; 9. *Elymnias hypermnestra*; 10. *Papilio demoleus*; 11. *Papilio protenor*; 12. *Vanessa cardui*; 13. *Euploea mulciber*; 14. *Danaus chrysippus*; 15. *Papilio polytes*; 16. *Junonia atlites*; 17. *Junonia almana*; 18. *Junonia lemonias*; 19. *Euthalia aconthea*



Images 20-39; 20. *Lexias pardalis*; 21. *Tanaecia lepidea*; 22. *Euthalia aconthea*; 23. *Moduza procris*; 24. *Graphium sarpedon*; 25. *Euploea klugii*; 26. *Ypthima baldus*; 27. *Ypthima nikaia*; 28. *Eurema hecabe*; 29. *Catopsilia pyranthe*; 30. *Pieris canidia*; 31. *Pieris brassicae*; 32. *Eurema blanda*; 33. *Athyma perius*; 34. *Phaedyma columella*; 35. *Lexias dirtea*; 37. *Celaenorrhinus leucocera*; 38. *Pelopidas conjuncta*; 39. *Pelopidas assamensis*;



40



42



43



44



45



46



47



48

Images 40-48; 40. *Matapa aria*; 41. *Pelopidas mathias*; 42. *Oriens goloides* ; 43. *Poritia hewitsoni*; 44. *Chilades lajus*; 45. *Spalgis epius*; 46. *Catochrysops Strabo*; 47. *Castalius rosimon*; 48. *Talicada nyseus*.

Table 3: Checklist of Moths recorded

| SI No | Common name | Name of species | Family |
|-------|--------------------------------|------------------------------------|-------------|
| 1 | | <i>Urapteroides astheniata</i> | Uraniidae |
| 2 | Common looper moth | <i>Autographa precatationis</i> | Noctuidea |
| 3 | Green pergesa hawkmoth | <i>Pergesa acteus</i> | Sphingidae |
| 4 | Tropical Swallowtail moth | <i>Lyssa zampa</i> | Uraniidae |
| 5 | | | |
| 6 | Stinging caterpillar moth | <i>Thosea magna</i> | Limacodidae |
| 7 | Fall armyworm moth | <i>Sodoptera frugiperda</i> | |
| 8 | | | |
| 9 | Cabbage Looper moth | <i>Trichoplusia ni</i> | Noctuidea |
| 10 | | | |
| 11 | | | |
| 12 | Stinging rose caterpillar moth | <i>Parasa sp</i> | Limacodidae |
| 13 | False armyworm | <i>Leucania adjuta</i> | Noctuidae |
| 14 | | | |
| 15 | | <i>Scopula sp</i> | Geometridae |
| 16 | | <i>Ramila sp</i> | Crambidae |
| 17 | Blood vein moth | <i>Timandra sp</i> | Geometridae |
| 18 | | <i>Lyclene conjunctana</i> | Erebidae |
| 19 | | | |
| 20 | | <i>Heterostegane subtessellata</i> | Geometridae |
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | <i>Oeonistis entella</i> | Erebidae |
| 27 | | <i>Cretonotos gangis</i> | Erebidae |
| 28 | Common Emerald moth | <i>Hemithea tritonaria</i> | Geometridae |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | Beet Web Worm moth | <i>Spoladea recurvalis</i> | Crambidae |
| 33 | | <i>Plutella xylostella</i> | Plutellidae |
| 34 | | <i>Orudiza protheclaria</i> | Uraniidae |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | Lichen moth | <i>Cyana bianca</i> | Erebidae |
| 39 | Tropical tiger moth | <i>Asota caricae</i> | Noctuidae |

| | | | |
|----|------------------------|---------------------------------|---------------|
| 40 | Pupillata emerald | <i>Phrudocentra pupillata</i> | Geometridae |
| 41 | | <i>Cretonotos transiens</i> | Erebidae |
| 42 | False tiger moth | <i>Dysphania millitaris</i> | Geometridae |
| 43 | | | |
| 44 | Leopard moth | <i>Zeuzera pyrina</i> | Cossidae |
| 45 | Lappet moth | <i>Gastropacha species</i> | Lasiocampidae |
| 46 | | | |
| 47 | Passenger | <i>Dysgonia algira</i> | Noctuidae |
| 48 | | <i>Eilema costalis</i> | Erebidae |
| 49 | | <i>Rupela sp</i> | Crambidae |
| 50 | | <i>Achyra bifidalis</i> | Crambidae |
| 51 | | <i>Orgyiini Ilema</i> | Erebidae |
| 52 | Lace border moth | <i>Scopula sp</i> | Geometridae |
| 53 | | <i>Celenna festivarua</i> | Geometridae |
| 54 | | | |
| 55 | | | |
| 56 | | | |
| 57 | Brinjal Leaf webber | <i>Psara bipunctalis</i> | Pyralidae |
| 58 | | | |
| 59 | | | |
| 60 | | | |
| 61 | | <i>Heortia vitessoides</i> | Crambidae |
| 62 | Tropical tiger moth | <i>Asota plaginota</i> | Noctuidae |
| 63 | Tropical tiger moth | <i>Asota ficus</i> | Noctuidae |
| 64 | Rice leaf roller | <i>Cnaphalocrocis medinalis</i> | Crambidae |
| 65 | | <i>Notarcha quaternalis</i> | Crambidae |
| 66 | | | |
| 67 | | | |
| 68 | Oleander Hawk Moth | <i>Daphnis nerii</i> | Sphingidae |
| 69 | | | |
| 70 | | <i>Eutelia adulatricoides</i> | Noctuidae |
| 71 | | | |
| 72 | | | |
| 73 | | | |
| 74 | Drury's jewel | <i>Cyclosia papilionaris</i> | Zygaenidae |
| 75 | | | |
| 76 | Brown shaded gray moth | <i>Iridopsis defectaria</i> | Geometridae |
| 77 | Gypsy moth | <i>Lymantria sp</i> | Erebidae |

| | | | |
|----|---------------------------|-----------------------------|-------------|
| 78 | Handmaiden moth | <i>Syntomoides imaon</i> | Erebidae |
| 79 | Tiger moth | <i>Mangina yringe</i> | Erebidae |
| 80 | | | |
| 81 | | | |
| 82 | | | |
| 83 | | | |
| 84 | Red slug caterpillar moth | <i>Eterusia aedea</i> | Zygaenidae |
| 85 | | <i>Heortia vitessoides</i> | Crambidae |
| 86 | | | |
| 87 | | | |
| 88 | | | |
| 89 | | | |
| 90 | | | |
| 91 | | | |
| 92 | | | |
| 93 | | | |
| 94 | | | |
| 95 | Pellucid Hawk-moth | <i>Cephonodes hylas</i> | Sphingidae |
| 96 | Muga Moth | <i>Antheraea assamensis</i> | Saturniidae |

Table 4: Summary of Families of Moths:

| Family | Number of Identified Species |
|--------------------------|------------------------------|
| Erebidae | 10 |
| Geometridae | 10 |
| Crambidae | 8 |
| Noctuidea | 8 |
| Uraniidae | 3 |
| Sphingidae | 3 |
| Zygaenidae | 2 |
| Limacodidae | 2 |
| Plutellidae | 1 |
| Saturniidae | 1 |
| Pyralidae | 1 |
| Cossidae | 1 |
| Lasiocampidae | 1 |
| Total identified species | 51 |



Images 1-20: 1. *Urapteroides astheniata*; 2. *Autographa precatonis*; 3. *Pergesa acteus*; 4. *Lyssa zampa* ; 6. *Thosea magna* ; 7. *Sodoptera frugiperda* ; 9. *Trichoplusia ni*; 12. *Parasa* sp 13. *Leucania adjuta* 15. *Scopula* sp; 16. *Ramila* sp ; 17. *Timandra* sp ; 18. *Lyclene conjunctana* 20. *Heterostegane subtessellata*



Images 21-40: 26. *Oeonistis entella*; 27. *Cretonotos gangis*; 28. *Hemithea tritonaria*; 32. *Spoladea recurvalis*; 33. *Plutella xylostella*; 34. *Orudiza protheclaria*; 38. *Cyana bianca*; 39. *Asota caricae*; 40 *Phrudocentra pupillata*



Images 41-60: 41. *Cretonotos transiens*; 42. *Dysphania militaris* 44. *Zeuzera pyrina*; 45. *Gastropacha species*; 47. *Dysgonia algira*; 48. *Eilema costalis* ; 49. *Rupela sp*; 50. *Achyra bifidalis* ; 51. *Orgyiini Ilema*; 52. *Scopula sp.* 53. *Celenna festivaria*; 57. *Psara bipunctalis*



Images 41-60: 41. *Cretonotos transiens*; 42. *Dysphania militaris* 44. *Zeuzera pyrina*; 45. *Gastropacha species*; 47. *Dysgonia algira*; 48. *Eilema costalis* ; 49. *Rupela sp*; 50. *Achyra bifidalis* ; 51. *Orgyiini Ilemia*; 52. *Scopula sp.* 53. *Celenna festivaria*; 57. *Psara bipunctalis*



Images 61-80: 61. *Heortia vitessoides*; 62. *Asota plaginota*; 63. *Asota ficus*; 64. *Cnaphalocrocis medinalis*; 65. *Notarcha quaternalis*; 68. *Daphnis nerii*; 70. *Eutelia adulatricoides* 74. *Cyclosia papilionaris*; 76. *Iridopsis defectaria*; 77. *Lymantria* sp; 78. *Syntomoides imaon* 79. *Mangina yringe*



Images 81-96: 84. *Eterusia aedea*; 85. *Heortia vitessoides*; 95. *Cephonodes hylas* ; 96. *Antheraea assamensis*.

Conclusion:

These checklists aims to provide an insight into the diversity of butterflies and moths of certain selected sites of Charaideo district. More studies are required to be conducted as the district is rich in hills and plains to get an overall report on the diversity of the Lepidopteron. The records and documentations would further help in preservation of the environment as both moths and butterflies are environmental indicators.

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