

A monarch butterfly with vibrant orange wings and black veins is perched on a yellow flower. The background is a soft, out-of-focus brown. The text "FLYING JEWELS OF CITY FOREST" and "RAMNAGAR, UTTARAKHAND" is overlaid in blue with a white outline.

FLYING JEWELS OF CITY FOREST RAMNAGAR, UTTARAKHAND

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FLYING JEWELS OF CITY FOREST – RAMNAGAR, UTTARAKHAND



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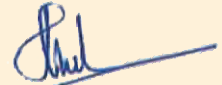
2024

FOREWORD

In the realm of nature, there exists a delicate dance between beauty and mystery, and few creatures embody this harmony as gracefully as butterflies. These ephemeral wonders of the insect world have captivated humans for centuries with their intricate patterns, vibrant colours, and seemingly weightless flight. Yet, despite their ubiquity in gardens and meadows worldwide, much about these enchanting creatures remains shrouded in mystery.

It is with great pleasure that I introduce "Flying jewels of City Forest – Ramnagar", a comprehensive guide to the diverse array of butterflies found in the enchanting region of Ramnagar. The area boasts a rich tapestry of habitats, from lush forests to sprawling meadows, providing an ideal haven for a plethora of butterfly species.

I commend the author for her dedication to documenting the butterflies of newly inaugurated City Forest in Ramnagar and for her commitment to raising awareness about the conservation challenges facing these delicate creatures. May this book inspire readers to cherish the natural wonders of Uttarakhand and to become stewards of its precious biodiversity.



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PREFACE

In the heart of Himalayas lies a region of unparalleled natural beauty and ecological richness - Uttarakhand. Blessed with diverse ecosystems ranging from lush forests to alpine meadows, Uttarakhand state is a haven for an astonishing variety of flora and fauna. Among its myriad inhabitants, butterflies stand out as some of the most captivating and charismatic creatures.

In a rapidly changing world, where habitats are under threat and biodiversity loss is a pressing concern, it is imperative that we recognize the importance of preserving these delicate ecosystems and the myriad species that depend on them.

Ramnagar, a picturesque town nestled on the banks of the Kosi River in the Terai region of Uttarakhand, holds within its embrace a hidden treasure trove of biodiversity. Amidst its verdant forests, lush meadows and tranquil waterways, a diverse array of flora and fauna thrives, each species contributing to the rich tapestry of life in this enchanting landscape.

This book is a tribute to the butterfly fauna of Ramnagar - a compilation born out of a deep-seated passion for nature and a desire to shed light on the remarkable diversity that exists within this lesser-known corner of Uttarakhand. Through meticulous research and field observations, I have endeavored to document the butterfly species of City Forest, Ramnagar, providing a comprehensive overview of their natural history, behavior and ecological significance.

But this book is more than just a compilation of species - it is a testament to the importance of local biodiversity conservation. As human activities continue to encroach upon natural habitats, threatening the delicate balance of ecosystems, it is imperative that we recognize the value of preserving the natural heritage of places like Ramnagar for future generations.

I extend my deepest gratitude to the individuals and organizations who have contributed to this endeavor. Their support and collaboration have been invaluable in bringing this project to fruition.

As you delve into the pages of this book and explore the enchanting world of butterflies in Ramnagar, may you be inspired by the beauty and wonder of these winged creatures, and may you join in the commitment to protecting and conserving the natural splendor of this unique region.

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ACKNOWLEDGEMENT

The completion of this booklet on the butterflies of Ramnagar, Uttarakhand, has been a labor of love and a journey filled with discovery and collaboration. I extend my heartfelt gratitude to the individuals whose contributions have been essential in bringing this project to fruition.

I would like to express my sincere gratitude to Principal, CASFOS, Shri. V Thirunavukarasu and Course Director, Shri Anisha Kalkoor for encouraging and motivating to come up with something substantial related to my area of interest. I would like to thank CASFOS faculty for shaping us in such a way so that I could develop an inclination for a specific field.

I would like to express my sincere appreciation to the DFO, Ramnagar for providing the opportunity to identify, survey and document the butterflies of newly inaugurated City Forest in Ramnagar. Additionally, I extend heartfelt thanks to the dedicated supporting staff whose unwavering cooperation played a pivotal role in the book's creation and collection of pictures.

My gratitude extends to our friends and family members for their unwavering support and encouragement which has been a constant source of motivation and inspiration.

Last but not the least, I extend my heartfelt thanks to the butterflies of Ramnagar themselves. Their beauty, resilience, and ecological significance serve as a reminder of the importance of preserving the natural heritage of this unique region for future generations to enjoy.

ABSTRACT

Regardless of where we stand on our fondness of insects, it is fair to say that butterflies are widely loved and adored. There are approximately 18,000 species of butterflies that are found worldwide, with the exception of Antarctica. Butterflies come in incredible colors and patterns, and some even mimic other animals as a line of defense against predators.

Therefore, to attract more visitors in the newly opened City Forest, it is necessary to put up a display of biodiversity it possesses. An attempt in this direction was made by identifying the butterflies of the area. There has never been a comprehensive study in an ecotourism site in Ramnagar focusing on the small creatures like butterflies.

The present study deals with diversity of butterflies found with in the study area are a concent rating the following objectives:

1. To prepare a preliminary check list of the butterflies
2. To find out the dominant taxa of the study area
3. To add a preliminary note on their conservation strategies.

INTRODUCTION

WHY DO WE STUDY BUTTERFLIES

1. **Well studied group** - Butterflies are suitable for biodiversity studies, as the taxonomy, geographic distribution and status of many species are relatively well known.
2. **Good biological indicators** - Serve as good indicators of habitat quality as well as general environmental health, as many species are strictly seasonal and prefer only particular set of habitats. Butterflies may react to disturbance and change in habitat and act as an ecological indicator. They may get severely affected by the environmental variations and changes in the forest structure, as they are closely dependent on plants. Thus, minor changes in their habitat may lead to either migration or local extinction.
3. **Reflect plant diversity** - Because of their dependence on the plants, butterfly diversity may reflect overall plant diversity in the given area.

Therefore, butterflies can also be used as umbrella species (the species whose protection serves to protect many co-occurring species) for conservation planning and management.

NEED OF CONSERVATION / IMPORTANCE OF BUTTERFLIES

Butterflies are sensitive to climate change, such as pollination and habitat loss, and cause them to be more responsive. Therefore, an abundance of butterflies usually indicates a healthier ecosystem.

1. **Co-Evolution of Butterflies and Plants**

2. **Pollination** - Nectar produced from flower contains nutritious vitamins, lipids, sugar, amino acid etc. which is important food source for pollinators. Butterflies are also pollinators and visit the flower to eat nectar; tiny scales on the butterfly bodies brush against anthers and pollen adhere to scales. Now the butterfly visits another flower, the pollen which attach to its scales brush in to the flower's stigma.

Nectar of many flowers, at which adult Lepidoptera feed, contains significant concentrations of a wide range of amino acids, which must contribute to its nutritional value. Amino acids ingested are of major significance in adult maintenance and reproductive capacity.

3. **Genetic Variation** - Butterflies collect nectar from plant species, which induce genetic variation in the plants. Some butterfly species migrate over long distance and share pollens across plants which are faraway from one another. This helps plant store cover against disease and gives them a better chance at survival.
4. **Reduce Pollution** - Some species of butterfly help to reduce the air pollution. These species decrease the carbon dioxide in the air. The host plants of monarch butterflies and caterpillars absorb carbon dioxide and reduce the amount of air pollution. The caterpillars eat host plant and grow back bigger and better so, it can absorb more carbon dioxide.
5. **Ecological Indicators of healthier ecosystem** - Lepidoptera are accepted as the ecological indicators of the ecosystem health. Butterflies have clear taxonomy their biology and life history are well defined. Physiological tolerances; habitat, temperature, light requirements have been quantified and correlations

with changes in ecosystem condition have been determined. Butterflies have high reproductive rates and are at low trophic level due to this, they response quickly to environmental stress. Many butterflies specialize on a specific plant species for position or feeding. Butterflies tend to be easy to find and measure. In a particular habitat if butterfly is endangered then the plants, insects and vertebrates live in that habitat are also at risk. Therefore, endangered butterflies serve as barometer of natural conditions in that habitat. They may get severely affected by the environmental variations and changes in the forest structure, as they are closely dependent on plants

6. Butterflies react quickly to minor changes in the environment, providing an alarming signal for other reductions in wildlife and making them good indicator of biodiversity. So, they are best monitored group of insects in the world. Some butterfly species are very sensitive to even light disturbance of natural forest. These species of butterflies are good indicators for natural forest
7. **Provide Food for Other Organisms** - Butterflies provide food for number of animals such as birds, reptiles, amphibians etc. and caterpillars provide an occasional meal for scorpions and ants. Eggs of some flies and wasps live as parasites inside caterpillar's body and feed on it. If populations of butterfly diminish, then population of birds, mice and other animals that rely on them as food source will also reduce. This loss will collapse the entire ecosystem. Birds plan their whole breeding season around when caterpillars will be most abundant. If butterflies and caterpillar are depleted then there will be less food for developing chicks.
8. **Predators**-Some butterfly larvae feed on harmful insect for example Hover fly larvae are Predators of aphids so, caterpillars are also used as biological pest control.

9. **Facing threats of extinction** -A report by the Food and Agriculture Organisation of the United Nations says that close to 35 percent of invertebrate pollinators, particularly bees and butterflies, and about 17 percent of vertebrate pollinators, such as bats, face extinction globally.

Climate change (Higher temperatures, droughts, floods, other extreme climate events and changes of flowering time) - hinder pollination largely by desynchronizing the demand (flowers in bloom) with the supply of service providers (abundant and diverse populations of pollinators).

10. **Trade** - The Zoological Survey of India published a 'Red Data Book on butterflies of India' in the year 2005. The authors of the book I.J. Gupta and D.K.Mondal estimated that the world's illegal butterfly trade is worth US\$ 100 million (Rs. 7.3 billion).

“Butterfly trading based in India and Indo - China is now quite extensive and occurs at all levels, from personal collectors to substantial business. About no less than 50,000 specimens of butterflies are smuggled out of India every month. Also, the butterfly - collecting for illegal trade is prevalent in Western Himalaya (Himachal Pradesh, Ladakh and Uttarakhand), the Eastern Himalaya (Sikkim and in the north of West Bengal) and the Western Ghats.

METHODOLOGY (MATERIALS AND METHODS)

Field notes, photographs (camera: Canon EOS with macrolens (250mm) and observations of butterflies were taken during October to December during the day light hours. Species were noted along with the date, location of capture and any plant association. The host specific plants were recorded and identified.

1. Taxonomic Study

An effort has been made to use the latest nomenclature and common names as far as possible as per Evan (1932), D'Abrera (1982-1986), Varshney (1990) and Kehimkar (2008).

Butterflies are classified into two superfamilies of which Hesperioidea has all the Skippers, while the rest of the "true" butterflies are under Papilionoidea, which has five families, Papilionidae (Swallowtails), Pieridae (Whites and Yellows), Lycaenidae (Blues), Riodinidae (Judies and Punches), and Nymphalidae (Brush-footed butterflies). This classification is used in the study

2. Study to enhance the biodiversity of butterflies and other insects

The whole area was surveyed many times before it was opened for general public, and a proposal is made to make the area more visually appealing as well as improving the habitat for the fauna. Attempt is made to include the flora which is present in the adjoining forests. Use of SW maps to demarcate the area which is to be further undertaken for development.

3. Fieldvisits

a. Pollinator Park, Haldwani - India's first 'Pollinator Park'

1. Maintenance - The park is not maintained properly

- a. Branches of shelter trees are not lopped, therefore light does not fall on the ground properly till 12 – 1 p.m.



- b. Flowering shrubs - Hibiscus, Hamelia patens, Kalanchoe are not properly maintained
- c. Mud puddling space - It is made deep like pond. Therefore, deposit of algae was observed
- 2. Species choice - In talk with the ranger, I found that he is concerned only with the planting of marigold to beautify the garden
- 3. Labour - 5 - 6 labours are present but they are least concerned with work as they are not being supervised.
- 4. No use of insecticides or fertilizers

Dhela Butterfly Park - This park is not yet open for the visitors

- 1. Maintenance – The Deputy ranger is engaged in the maintenance since 8:30 a.m. to 6 p.m.
 - a. The park has well thought design and balanced mixture of species.
 - b. Branches are lopped and there is adequate shelter as well as sunlight.
 - c. Space for mud puddling on level ground is being created.
- 2. Species choice - The locally available herbs, shrubs, climbers and trees are planted.
- 3. Labour – Only 3 labourers were present which were doing their work efficiently and the park was a treat to the eyes.

RESULTS

During the systematics survey, a total of 68 species of butterflies belonging to four families and one superfamily Hesperidae were found. 30 species were from the Family Nymphalidae followed by Lycaenidae, Pieridae, Hesperidae and Papilionidae. The list of host plants associated with the butterflies is also supplemented in the following table.

FAMILY LYCAENIDAE

S.No.	Common Name	Scientific Name	Host Plants
1	Common Cerulean	<i>Jamides celeno</i>	<i>Xylia xylocarpa</i> , <i>Saraca asoca</i>
2	Dark Cerulean	<i>Jamides bochus</i>	<i>Butea monosperma</i> , <i>Saraca asoca</i> , <i>Flemingia strobilifera</i>
3	Common gem	<i>Poritia waltoni</i>	
4	Common Pierrot	<i>Castalius rosomon</i>	<i>Zizyphus</i> spp.
5	Red pierrot	<i>Talica naryseus</i>	<i>Kalanchoe</i> , <i>Bryophyllum</i>
6	Striped pierrot	<i>Tarucus nara</i>	<i>Zizyphus</i> spp.
7	Common Quaker	<i>Neopithecops zalmora</i>	<i>Glycosmis pentaphylla</i>
8	Malayan	<i>Megisba malaya</i>	<i>Mallotus philippensis</i> , <i>Schleichera oleosa</i>
9	Pale Grass Blue	<i>Pseudozizeeria maha</i>	<i>Oxalis corniculata</i> , <i>Tephrosia purpurea</i>

S.No.	Common Name	ScientificName	Host Plants
10	Dark Grass Blue	<i>Zizeeria karsandra</i>	<i>Amaranthus spinosus</i> , <i>Polygonum spp.</i> ,
11	Lesser Grass Blue	<i>Zizina otis</i>	<i>Vicia spp.</i> , <i>Tephrosia purpurea</i>
12	TinyGrass Blue	<i>Zizula hylax</i>	<i>Lantana sp.</i>
13	Common hedge blue	<i>Acytolepis puspa</i>	<i>Bridelia retusa</i>
14	Forget Me Not	<i>Catochrysops Strabo</i>	<i>Acacia sp.</i> , <i>Butea monosperma</i> , <i>Flemingias trobilifera</i> , <i>Tephrosia purpurea</i>
15	Gram Blue	<i>Euchrysops cnejus</i>	<i>Acacia spp.</i> , <i>Pisum sativum</i>
16	Common Line blue	<i>Prosotas nora</i>	<i>Acacia sp.</i> , <i>Mimosa spp.</i>
17	Dingy line blue	<i>Petrelaeadana</i>	
18	Pea Blue/ Long tailed blue	<i>Lampides boeticus</i>	<i>Crotalaria sp.</i> , <i>Butea monosperma</i>
19	Zebra Blue	<i>Leptotes Plinius</i>	<i>Mimosaspp.</i> , <i>Plumbago zeylanica</i>
20	Slate Flash	<i>Rapala manea</i>	<i>Saracaasoca</i> , <i>Clerodwndron infortunatum</i> , <i>Tremaorientalis</i>
21	Smallgrass jewel	<i>Freyeria putli</i>	<i>Indigofera spp:</i>

FAMILY - NYMPHALIDAE

S.No.	Common Name	ScientificName	Host Plants
1	Baronet	<i>Symphaedra nais</i>	<i>Ricinus communis</i>
2	Blue Tiger	<i>Tirumala limniace</i>	<i>Ageratum conyzoides</i> , <i>Vallaris spp</i>
3	Dark bluetiger	<i>Tirumala septentrionis</i>	<i>Ageratum conyzoides</i>
4	Plain Tiger	<i>Danaus chrysippus</i>	<i>Frerea spp.</i> , <i>Calotropi ssp.</i> (Giant milkweed)
5	Striped tiger	<i>Danaus genutia</i>	
6	Glassy Tiger	<i>Parantica aglea</i>	<i>Calotropi ssp.</i>
7	Blue Pansy	<i>Junonia orithya</i>	<i>Mimosa pudica</i>
8	Chocolate Pansy	<i>Junonia iphita</i>	
9	Lemon Pansy	<i>Junonia lemonias</i>	<i>Sida rhombifolia</i>
10	GreyPansy	<i>Junonia atlites</i>	
11	Peacock Pansy	<i>Junonia almana</i>	<i>Barleria sp.</i>
12	Yellow Pansy	<i>Junonia hierta</i>	<i>Mimosa pudica</i>
13	Great Eggfly	<i>Hypolimnas bolina</i>	<i>Hibiscu ssp.</i> , <i>Sida rhombifolia</i>
14	Indian Red Admiral	<i>Vanessa indica</i>	
15	Rustic	<i>Cupha erymanthis</i>	

S.No.	Common Name	ScientificName	Host Plants
16	Common Sailor	<i>Neptis hylas</i>	<i>Bombax ceiba</i> , <i>Flemingia spp</i>
17	Commander	<i>Moduza Procris</i>	<i>Mussaenda frondosa</i>
18	Common Castor	<i>Ariadne merione</i>	<i>Ricinus communis</i>
19	Common Leopard	<i>Phalanta phalantha</i>	<i>Flacourtia indica</i>
20	Brown king crow	<i>Euploea klugii</i>	
21	Common Crow	<i>Euploe acore</i>	<i>Ficus sp.</i> , <i>Nerium sp.</i> , <i>Holarrhena pubescens</i>
22	Striped Blue Crow	<i>Euploea mulciber</i>	<i>Ficus benjamina</i> ,
23	Common Bush brown	<i>Mycalesis perseus</i>	Grasses
24	Long Branded Bush brown	<i>Mycalesis mineus</i>	Grasses
25	Common Four-Ring	<i>Ypthima huebneri</i>	Grasses
26	Common Five-Ring	<i>Ypthima baldus</i>	Grasses
27	Common Sergeant	<i>Athyma perius</i>	<i>Glochidion sp.</i>
28	Common Lascar	<i>Pantoporia hordonia</i>	<i>Acacia spp.</i>
29	Northern Common jester	<i>Symbrenthia lilaea</i>	
30	Vagrant	<i>Vagrans egista</i>	



FAMILY PAPILIONIDAE

S.No.	Common Name	ScientificName	Host Plants
1	Common Mormon	<i>Papilio polytes</i>	<i>Citrus spp</i> , <i>Aegle marmelos</i> , <i>Murraya koenigii</i>
2	Lime Swallowtail	<i>Papilio demoleus</i>	<i>Aegle marmelos</i> , <i>Murraya spp.</i> , <i>Citrus spp.</i>

FAMILY PIERIDAE

S.No.	Common Name	ScientificName	Host Plants
1	Onespotgrass yellow	<i>Eurema andersonii</i>	<i>Acacia spp.</i> , <i>Cassia spp.</i>
2	Commongrass yellow	<i>Eurema hecabe</i>	<i>Acacia spp.</i> , <i>Cassia spp.</i>
3	ThreeSpotGrass Yellow	<i>Eurema blanda</i>	<i>Cassia spp</i>
4	Scarcegrass yellow	<i>Eurema lacteola</i>	<i>Acacia spp.</i> , <i>Cassia spp.</i>
5	Smallgrass yellow	<i>Eurema brigitta</i>	<i>Acacia spp.</i> , <i>Cassia spp.</i>
6	Darkclouded yellow	<i>Colias fieldii</i>	<i>Acacia spp.</i> , <i>Cassia spp.</i>
7	Lemon / Common Emigrant	<i>Catopsilia Pomona</i>	<i>Cassia fistula</i> , <i>Bauhinia racemose</i> , <i>Butea monosperma</i>

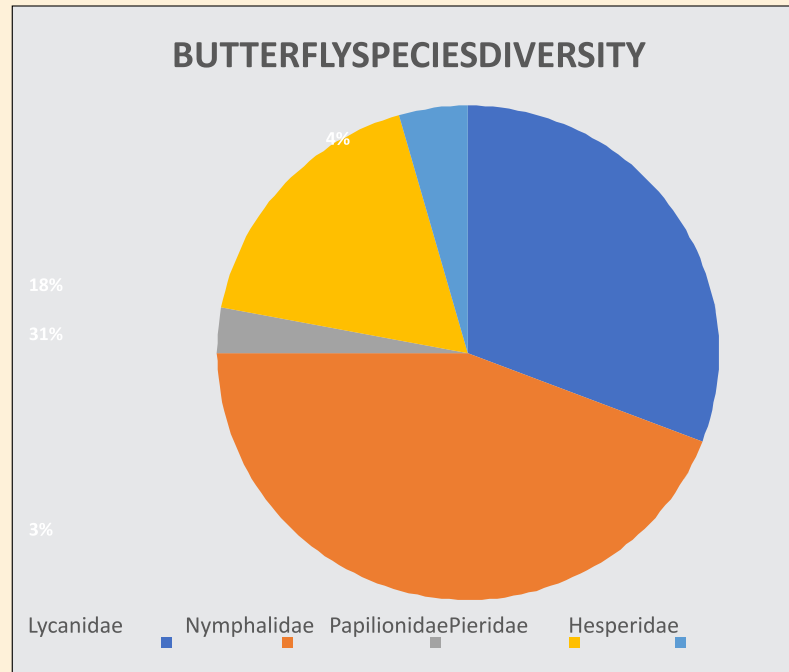


S.No.	Common Name	ScientificName	Host Plants
8	Mottled Emigrant	<i>Catopsilia pyranthe</i>	<i>Cassia fistula</i>
9	Indian Cabbage White	<i>Pieris canidia</i>	
10	Indian Jezebel	<i>Delias eucharis</i>	<i>Butea monosperma</i>
11	Common wanderer	<i>Pareronia hippie</i>	
12	Psyche	<i>Leptosia nina</i>	<i>Capparis spp.</i>

SUPER FAMILY HESPERIDAE

S.No.	Common Name	ScientificName	Host Plants
1	SmallerDartlet/ Indian dartlet -	<i>Oriens goloides</i>	Grasses - <i>Cymbopogon nardus</i> , <i>Imperata cylindrica</i> , <i>Axonopus compressus</i>
2	Commonsmall flat	<i>Sarangesa dasahara</i>	
3	Largebrandedswift	<i>Pelopidas subochracea</i>	Bamboo, <i>Brachiaria</i> , <i>Saccharum sp.</i>





OBSERVATIONS

HOSTPLANTS

1. *Glycosmis pentaphylla* – Gin berry - Lime Blue, Common Quaker, Lime Swallowtail, Common Mormon
2. *Senna siamea* - Lemon emigrant
3. *Citrus sp.*, *Murraya koenigii*, *Aegle marmelos*, *Zizyphus mauritiana* – Lime swallowtail and Common Mormon
4. *Elaeocarpus* sp – Commonsailer

NECTARPLANTS

1. *Ageratum* – Crows and tigers
2. *Tecomastans* – Common wanderer, Sailor, Commander etc.
3. Marigold – Plain tiger and striped tiger
4. *Lantana camara* – Almost all butterflies
5. *Dicliptera brachiata* – cabbage white
6. *Cuphea hyssopifolia* – all butterflies near fountain park – Great eggfly



7. *Tridax procumbens*–Tridax daisy– Grass yellow, red pierrot
8. *Sida* sp.–Grass yellow, Common pierrot, Peabloom, Plain cupid, Zebra blue
9. *Alternanthera sissilis*–Common four - ring, Common - five ring
10. *Jatropha integerrima*–Peregrina / spicy jatropha–Common cerulean
11. *Ouretsanguinolata*–Line blue
12. *Crotolaria* (Rattleport)–Striped blue tiger
13. *Cuphea hyssopifolia* –Almost all butter flies in City forest

DISCUSSION

Results suggested that the family Nymphalidae with 30 species was the most dominant in the study area and Papilionidae with 2 species was least found.

Presence of 68 species of butterflies along with 6 species of dragon flies, 4 species of moth and 2 species of wasp in a small area depicts the high biodiversity of area. The geographical location of any area, its climatic condition and vegetative composition are essential requisites for supporting a rich diversity of butterflies.

REASON OF HIGH DIVERSITY

1. Sunny area
2. Mostly in natural state—contains trees, weed sand shrubs present in the adjoining forest
3. Relatively undisturbed unlike urban areas
4. Ample host and nectar plants –They are present together or nearby

SUGGESTIONS

The park is not yet developed to its potential as it is inaugurated recently (1stDecember 2023). There can be many ways to beautify as well as enhance the biodiversity of the area. At able of suggestions for improvement in the park aesthetics, species composition and thus biodiversity is given below.

The area has good number of host plants and nectar plants but there is need to increase the density along with maintenance.

After visit to Pollinator Park, Haldwani and Dhela Butterfly Park, forests of Ramnagar and thorough reading of flora of Ramnagar from Working Plan, alist of host plants, nectar plants, shrubs and medicinal plants is being made.

The species suggested are local and found in adjoining forests also. Mixing shrubs and trees of different heights and different flowers is necessary.



HOST PLANTS

1. *Aegle marmelos*
2. *Cassia fistula*
3. *Saraca asoca*
4. *Calotropis gigantea*
5. *Citrus sp*
6. *Ricinus communis*
7. *Murraya koenigii*
8. *Broussonetia papyrifera*
9. *Murraya paniculate*
10. *Bauhinia variegata*

NECTAR PLANTS

1. *Calliandra hematocephala*
2. *Catharanthus roseus*
3. *Hibiscus rosa-sinensis*



4. *Jasminum auriculatum*
5. *Tecoma stans*
6. *Jatropha integerrima*
7. *Lantana camara*
8. *Ixora coccinea*
9. *Crotalaria retusa*
10. *Plumeria obtuse*
11. *Asclepias*
12. *Tridax procumbens*
13. *Tagetes erecta*
14. *Ageratum* sp

SHRUBS

1. *Hamelia patens*
2. *Ficus benjamina* (around dry trees)



MEDICINAL PLANTS

1. *Aegle marmelos*
2. *Aloe barbadensis*
3. *Kalanchoe pinnata* (*Patharchatta* - host plant of Red pierrot)
4. *Emblica officinalis*
5. *Syzygium cumini*
6. *Rauvolfia serpentina*
7. *Azadirachta indica*

CONCLUSION

Butterflies can exist in even smallest of the place provided that it is sunny, has good mixture of host plants and nectar plants, free from pesticides and insecticides, good drainage and has space for mud puddling. There fore, small but directed efforts can enhance the biodiversity of an area. In a particular habitat if butterfly is endangered, then the plants, insect sand vertebrates living in that habitat are also at risk.

Pollinators are essential to the production of many of the micro nutrient rich fruits, vegetables, nuts, seeds and oils we eat. In fact, close to 75 percent of the world's crops producing fruits and seeds for human consumption

depend, at least in part, on pollinators for sustained production, yield and quality. The diversity of food available is largely owed to animal pollinators.

Therefore, conservation of these tiny miracle workers is necessary.

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FAMILY NYMPHALIDAE



Baronet



Blue tiger



Dark blue tiger



Glassy tiger



Blue pansy



Chocolate pansy



Plain tiger



Striped tiger



Common leopard



Lemon pansy



Grey pansy



Long branded bush brown



Common Sailor



Commander



Common castor



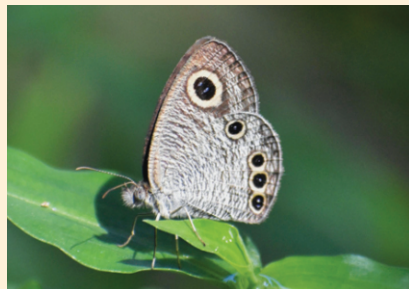
Common crow



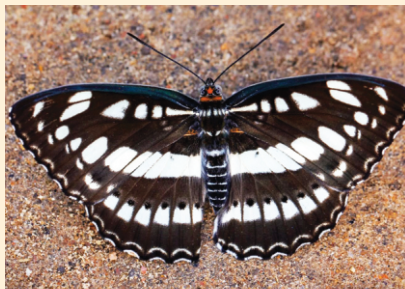
Striped blue crow



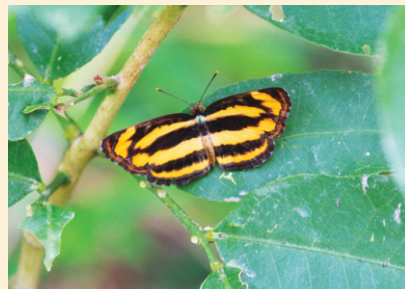
Common bush brown



Common four - ring



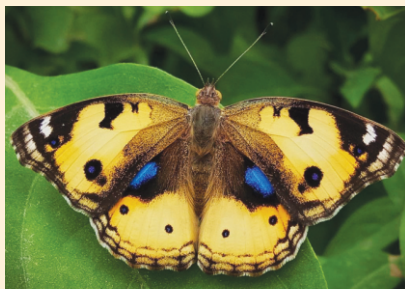
Common sergeant



Common lascar



Peacock pansy



Lemon pansy



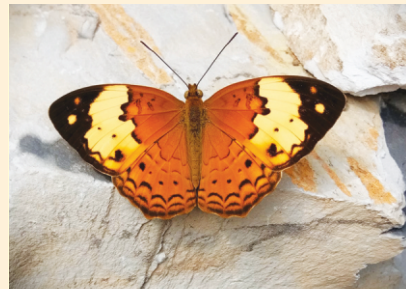
Great eggfly - male



Norther Peninsular Jester



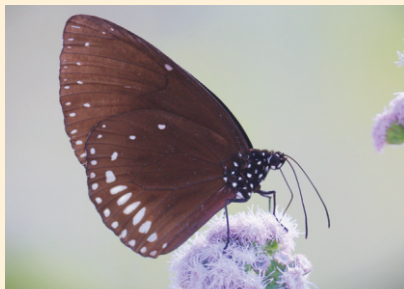
Vagrant



Rustic



Indian red admiral



Brown King Crow



Common five-ring

FAMILYLY CANIDAE



Common cerulean



Common gem - male



Dark cerulean



Striped Pierrot



Common Quaker



Malayan

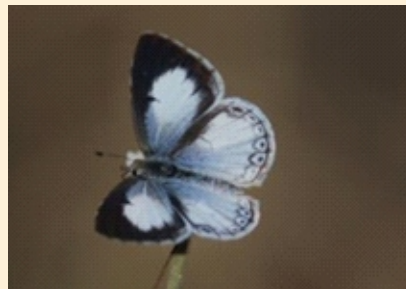




Lesser grass blue



Tiny grass blue



Hedgeblue - female



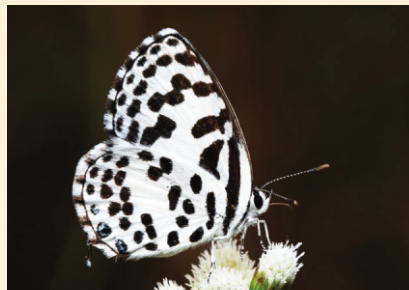
Common lineblue



Dingy lineblue



Pea blue - male



Common pierrot



Red pierrot



Slate flash - male



Pale grass blue - male



Dark grass blue - female



Zebra blue

FAMILY PIERIDAE



One spot grass yelloe



Common grass yellow



Three spot grass yellow



Dart clouded yellow



Lemon emigrant - female



Mottled emigrant





Scarce grass yellow



Small grass yellow



Common wanderer



Indian cabbage white



Indian jezebel



Psyche

FAMILY PAPILIONIDAE



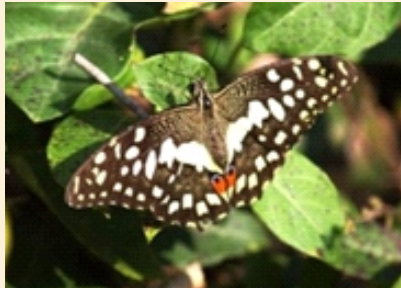
Common Mormon - Male



Common Mormon female -
Form romulus



Common Mormon female -
Form stichius



Lime swallowtail

SUPER FAMILY – HESPERIDAE



Smaller darlet



Common small flat



Large branded swift



