V.M.K.S.R.VASTRAD ARTS, SCIENCE, &

V.S. BELLIHAL COMMERCE COLLEGE HUNGUND.

MINI DESERTATION REPORT

College Roll No: 12 Examination seat No: S2041625

-:CERTIFICATE:-

This is to certify that Mr. Jadidhar B Bevoor of B.Sc 5th semester has satisfactorily completed the mini desertation report in Zoology subject as prescribed by the Rani Chennamma University Belagavi.

During year 2022-2023

Examiner:

1)……

2)……

HOD

Head of the Department
ZOOLOGY.
V. M. S. R. Vastrad Arts, Science and
V. M. Commerce College,
HUNGUND Dist: Bagalkot

Local Fauna of Butterfly (Lepidoptera)

Abstract— A study was conducted to record the diversity of butterflies at town ofMysore District over a period of two months from December 2022 to February 2023.Present survey wascarried out in selected natural and man-made (parks) habitats of local town. A total of 1,147individualswererecorded,photographedandidentifiedwhichincluded46generaand60speciesbelongingt ofivefamilies.TherelativeabundanceofbutterfliesofdifferentfamiliessuchastheNymphalidae family was 43.33%, followed by families Lycaenidae, Hesperidae, Pieridae and Papilionidaerepresenting 18.33%, 15%, 13.33% and 10% in the study arearespectively. Results indicated that Euremahecabe was the most dominant species followed by Ypthimahuebneri, Catopsiliaponoma, and Junonialemonias inthe study area.Dominance of these species canbe explainedby the presence of their larvaland hostplantsinthe study area.

Keywords—Butterfly,Man-madeecosystems,Pollardwalkmethod.

I. INTRODUCTION

Thebutterfliesarethemostbeautifulandcolourfulcreaturesont heearthandhavehighecologicalsignificance as they are very good pollinators apart fromhoney bees. They are considered as good bio-indicators astheyaresensitivetoslightestvariationinenvironmentsuch as temperature, wind speed, rainfall, humidity andsolar radiation (Murphy and Weiss, 1998; Sparrow *et al.*,1994; Spitzer *et al.*, 1997; Brereton *et al.*, 2011). Thcirdistributionandabundanccdcpcndsondiffcrcntrcquirc mentsfordifferenthabitattypesformating,breeding, and nectaring (Sprih Harsh, 2014). The presentstudy aims to examine the distribution and abundance ofbutterflies across habitats studied. A checklist of butterflyspeciesisalso provided.

II. MATERIALS AND METHODSStudy area

Present study was carried out in selected Natural and Man-madeecosystems(parks)oftown,atalukheadquartersofBagal kotdistrictinthestateofKarnataka, This implies that the winter and theearly part of the summer are typically dry season.

ObservationandidentificationofButterflies

Fieldobservations wereconductedtwice amonthfromDecemberr2022 toFebruary2023foraperiodoftwomonths. Distribution and abundance ofbutterfly specieswere recorded in the study area by selecting Natural andMan-madeccosystems(parks)(Tablc.1).Obscrvationswcremadct hroughPollardwalkmethod(PWM)bycounting all the butterflies found in 10 meter, beside theobserver and and Direct Visual Count Method (DVCM)(Kunte,1997;Gupta*etal.*,2012;Kunte*etal.*,2012).B utterflieswereobserved,captured,identified,photographedan dreleasedimmediatelytotheirnaturalhabitat carefully. Care was taken not to damage physicalparts of the butterflies. Photography was made by usingNikon D5600 (55-300mm24.1MP) DSLRcamera.

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https://dx.doi.org/10.22161/ijeab.66.15

The key characters used for identification werecolor pattern, wing span and mode of flight. alsoused PhotographyandguidelinesofTheBookofIndianButterflies(I saacKehimkar).

Table. 1StudysiteswithGPSlocation.

Sites	Sitename	GPSlocation
S1	H.B.C.SLayout	12°25'53.2"N76°23'59.4"E
S2	Hale yadathoreCau veryriver	12°28'03.0"N76°23'31.3"E
S3	Mahatma Gandhipar k	12°26'19.4"N76°23'00.8"E
S4	HorticultureDe partmentgarden	12°25'19.1"N76°23'49.5"E

III. RESULT

In the present study a total of 1,147 individualbutterflies were recorded belonging to five families such asNymphalidae,Pieridae,Lycaenidae,PapilionidaeandHesp eridae with 46 genera and 60 species. Out of the fivefamilies recorded the relative abundance of Nymphalidaefamilyishighest,representing43.33%followed byfamiliesLycaenidae,Hesperidae,PieridaeandPapilionidae representing 18.33%, 15%, 13.33% and 10%respectively(Fig.1). A checklist of species belonging tothefivedifferentfamiliesalongwiththeirstatusofoccurrence in thestudy areaisenlistedin Table2.

Fig.2 depicts the relative abundance of butterflyspecieswithrespecttothetotalnumberofspeciesrecor dedduringthestudyperiodineachfamily.Therelative abundance of Nymphalidae family was found to be53.85%insite-4,46.15%insite-1and3whereasinsite-2it was 34.62%. On the contrary, out of the total 8 speciesrecorded in Pieridae family 7 species (87.5%) were foundin site-2 (Natural ecosystem) and 3 species (11.54%) insite-4(Manmadeecosystem)whereasthemembersofHesperidae and Papilionidae families preferred site-3 andsite-4 (manmade ecosystems) as their relative abundancewashighas comparedtosite-1andsite-2.Ofthe11speciesrecorded,therelativeabundanceofLycaenid butterflies in site-3 was found to be 63.64% (7 species)followed by site-1 with 36.36% (4 Species) and site-2 andsite-3 recorded27.27%(3species) each.

Monthlyvariationsinthenumberofbutterflyspecies of different families are shown in Fig.3. The graphclearly indicates that all the families encountered in thestudyareaareavailablethroughoutthestudyperiod.Nymph alidaefamilydominated in all the months with more than 40% of thetotalrecorded.MembersofNymphalidaefamilywereabund antduringDecemberwhencomparedtoothermonths. On the contrary, percent occurrence of Pieridae,Lycaenidae, Papilionidae and Hesperidae was found to behighduringOctober,February,MarchandNovemberrespect ively.

Based on the status of occurrencein the studyarea and availability during the study period, the butterflyspecies were categorized into very common (11 species),Common (17 species) andrare(32 species)(Table.1).

IV. DISCUSSION

Thestudyareamaybefavorableforbetterexistenceof butterflycommunityofNymphalidaefamilyas indicated by the results of the present study whereas theoccurrenceofPapilionidaeinthestudysitesiscomparatively less. The most plausible explanation wouldbe habitat destruction due to urbanization which will be athreat to butterfly diversity. As a matter of fact, absence offood plants and nectar yielding plants in an area drives thebutterfly population away due to the lack of feeding andbreeding grounds. Anthropological interferences have anundeniablystronginfluenceonthebiodiversityofallexisting species(RickettsandImhoff,2003).

Thestudysitesselectedforthepresentstudyshow variation in the abundance of butterfly species due tovariousfactors,suchaslandscape,availabilityofhostplants and most importantly anthropological disturbances.In the present study it may be noted that, Site-3 and site-4werefound to berich in speciesdiversitywhich had 31and 28 species respectively with respect to total number ofspeciesrecordedinthestudyarea.Boththesitesaremanmade parkswithlargenumberoffloweringplants.Itis imperative that the richness in butterfly species diversitymay depend on the type and variety of flowers and numberof plants in a particular area and moreover the abundance,speciesrichnessandoccurrencevaryamongdiffere ntecosystems.Theseresultsalsoindicatethat,conservationofe ndemicspeciesofbutterfliesmaybepossiblebyprovidingsuita bleenvironmenttosupportthebutterflypopulation andtheirsurvival(Myers*etal.*, 2000).

Among the species recorded two species*Pachliopta hector* L. and *Hypolymnasmisippus*L. have aprotectedstatus undertheschedulel partIVof IndianWildlifeProtectionact,1972(Aurora,2003)and*Lampid*

*boeticus*under Schedule IV (Gupta *et. al.*, 2005). In thepresentstudyitcanbeobservedthat*H.misippus*and*L.boeticus*werefoundonlyinsite-3and4(Manmadeecosystem) which implies that conditions are suitable fortheir conservation in these sites, whereas *P. hector* wasrecorded in all the four sites. These observations throwlight on the fact that the study area has favorable habitatand climate which influence distribution and abundance ofbutterflies (Wynter-Blyth, 1957). From the results of thisstudyit may alsobenotedthatthediversityandabundance ofLycaenidaefamilymembersisaffectedduetotheabsenceofgrassfields(HarishaandHosetti, 2013).

Thediversity,distributionandtheabundance of butterflies recorded may vary according toseasonoftheyearwhich obviouslydepend on diversityanddistributionoffloralspeciesandtheirbloomingseason. It may be mentioned that conservation of nativeflora and reduced human interference may have positiveeffect on the butterfly population and their survival (Myers*et al.*,2000).

Table:2ChecklistoftheButterfliesand theiroccurrencein studyarea

Sl. No	Family	CommonName	ScientificName	Site1	Site2	Site3	Site4	Status
1	Nymphalidae	CommonFourring	***Ypthimahuebneri*(Kirby,1871)**	+	+	+	+	VC
2		Lemonpansy	***Junonialemonias*(Linnaeus,1758)**	+	+	+	+	VC
3		Commoncrow	***Euploeacore* (Cramer,1780)**	+	+	+		VC
4		TawnyCastor	***Acraeaterpsicore*(Linnaeus,1758)**	+	+	+		VC
5		Bluetiger	***Tirumalalimniace*(Cramer,1775)**	+				R
6		Yellowpansy	***Junoniahierta*(Fabricius,1798)**	+				R
7		Bluepansy	***Junoniaorithya*(Linnaeus,1764)**	+		+		C
8		Darkbluetiger	***Tirumalaseptentrionis*(Butler,1874)**	+				R
9		Plaintiger	***Danauschrysippus*(Linnaeus,1758)**	+	+	+	+	VC
10		AngledCastor	***Ariadneariadne*(Linnaeus,1763)**	+				R
11		GreyPansy	***Junoniaatlites*(Linnaeus,1763)**			+	+	C
12		PeacockPansy	***Junoniaalmania*(Linnaeus, 1758)**		+			R
13		ChocolatePansy	***Junoniaiphita*(Cramer,1779)**			+	+	C
14		Paintedlady	***Vanessacardui*(Linnaeus,1758)**			+		R
15		GreatEgg fly	***Hypolimnasbolina*(Linnaeus,1758)**			+	+	C
16		Danaid Eggfly	***Hypolimnasmisippus* (Linnaeus,1758)**			+	+	C
17		Dark EveningBrown	***Melanitisphedima*(Cramer,1780)**				+	R
18		CommonCastor	***Ariadnemerione*(Cramer,1777)**		+		+	C
19		CommonBaron	***Euthaliaaconthea*(Cramer,1777)**			+	+	C
20		Common EveningBrown	***Melanitisleda*(Linnaeus,1758)**				+	R
21		StripedTiger	***Danausgenutia*(Cramer,1779)**	+			+	C
22		Common BushBrown	***Mycalesisperseus*(Fabricius,1775)**	+				R
23		Joker	***Bybliailithyia*(Drury,1773)**		+			R

24		MedusBrown	***Orsotriaenamedus*(Moore,1858)**		+			R
25		TailedPalmFly	***Elymniascaudata*(Butler, 1871)**				+	R
26		Common Sailor	***Neptishylas*(Linnaeus,1758)**				+	R
27	**Pieridae**	Commonemigrant	***Catopsiliapomona*(Fabricius,1775)**	+	+	+	+	VC
28		Common grassyellow	***Euremahecabe*(Linnaeus,1758)**	+	+	+	+	VC
29		PlainOrangeTip	***Colotisaurora* (Cramer,1780)**	+				R
30		Mottledemigrant	***Catopsiliapyranthe*(Linnaeus,1758)**	+	+	+		VC
31		Crimsontip	***Colotisdanae*(Linnaeus,1787)**		+			R
32		Commonjezebel	***Deliaseucharis*(Drury, 1773)**		+	+		C
33		SmallGrassYellow	***Euremabrigitta*(Cramer,1780)**		+			R
34		Psyche	***Leptosianina*(Fabricius,1793)**				+	R

35	**Lycaenidae**	Gran blue	*Euchrysopscnejus*(Fabricius,1798)	+				R
36		Common SilverLine	*Cigaritisvulcanus*(Fabricius, 1775)	+				R
37		CommonCerulean	*Jamidesceleno*(Cramer,1779)	+		+		C
38		PeaBlue	*Lampidesboeticus*(Linnaeus,1767)	+	+	+	+	VC
39		PlainsCupid	*Luthrodespandava*(Horsfield,1829)			+		R
40		Dark grassblue	*Zizeeriakarsandra*(Moore,1865)			+		R
41		Palegrassblue	*Pseudozizeeriamaha*(Kollar,1844)				+	R
42		LesserGrassBlue	*Zizinaotis*(Fabricius,1787)		+	+		C
43		Common hedgeblue	*Acytolepispuspa*(Horsfield,1828)		+		+	C
44		CommonLineblue	*Prosotasnora*(R.Felder,1860)			+		R
45		ZebraBlue	*Leptotesplinius*(Fabricius,1793)			+		R
46	**Papilionidae**	CommonMormon	*Papiliopolytes*(Linnaeus,1758)	+	+	+	+	VC
47		CommonRose	*Pachlioptaaristolochiae*(Fabricius,1775)	+	+	+	+	VC
48		LimeButterfly	*Papiliodemoleus*(Linnaeus,1758)		+	+		C
49		CrimsonRose	*Pachlioptahector*(Fabricius,1758)			+	+	C
50		BlueMormon	*Papiliopolymnestor*(Cramer,1775)			+	+	C
51		TailedJay	*Graphium Agamemnon* (Fabricius,1864)				+	R
52	**Hesperiidae**	Dark PalmDart	*Telicotabambusae*(Moore, 1878)	+	+			C
53		Asian GrizzledSkipper	*Spialiagalba*(Fabricius,1793)		+		+	C
54		MarbledSkipper	*Gomaliaelma*(Trimen,1862)		+			R
55		Rounded Palm-Red Eye	*Erionotatorus*(Evans,1941)			+		R

56	Common BandedAwl	*Hasorachromus*(Cramer1780)			+		R
57	GrassDart	*Taractroceramaevius*(Fabricius,1793)			+		R
58	GrassDemon	*Udaspesfolus*(Cramer,1775)				+	R
59	RiceSwift	*Borbocinnara*(Wallace,1866)	+				R
60	ChestnutBob	*Iambrixsalsala*(Moore,1866)				+	R

Status: VC- Very common, C-Common, R- Rare

Fig. 1 Relative abundance of Butterfly families in the study area

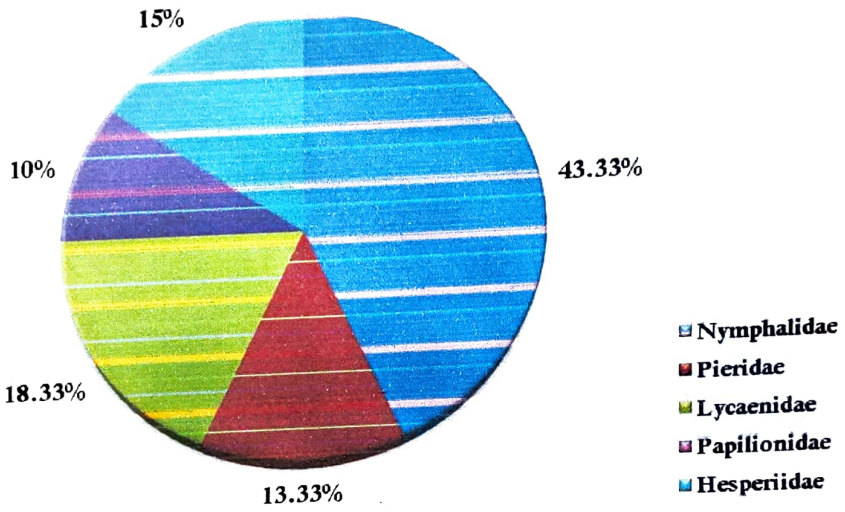


Fig. 2 Percent occurence of butterfly species in different study sites

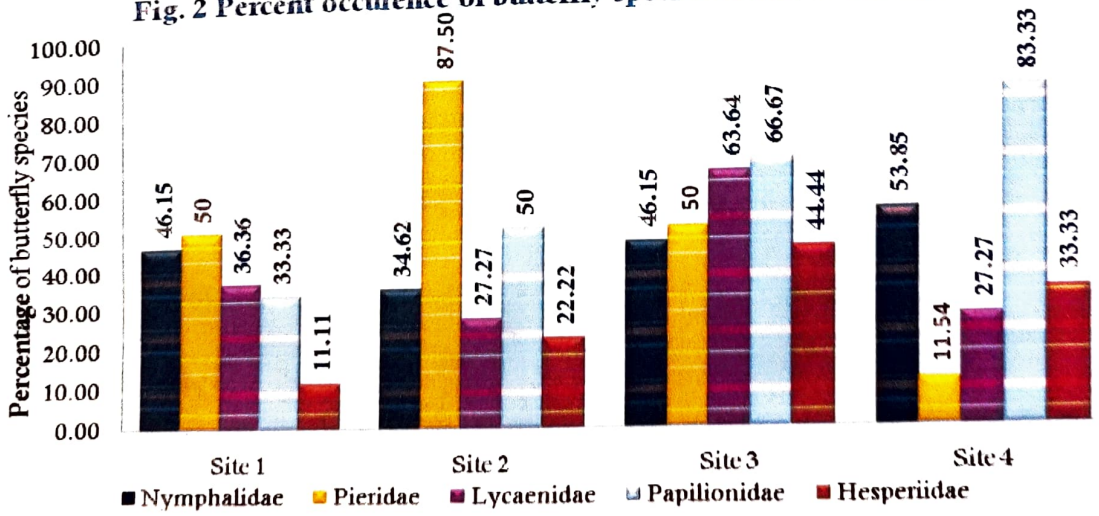


Fig.3 Monthly variation in the percent availabilty of butterfly families in the study area

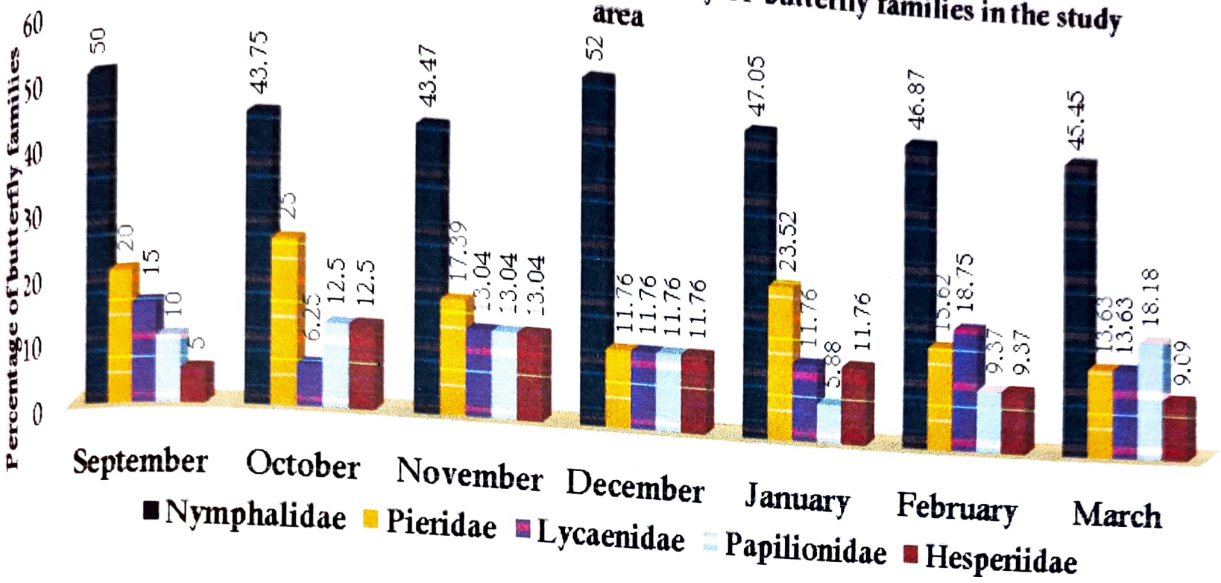


Plate.1 ButterfliesofNymphalidaefamilyrecordedin thestudyarea

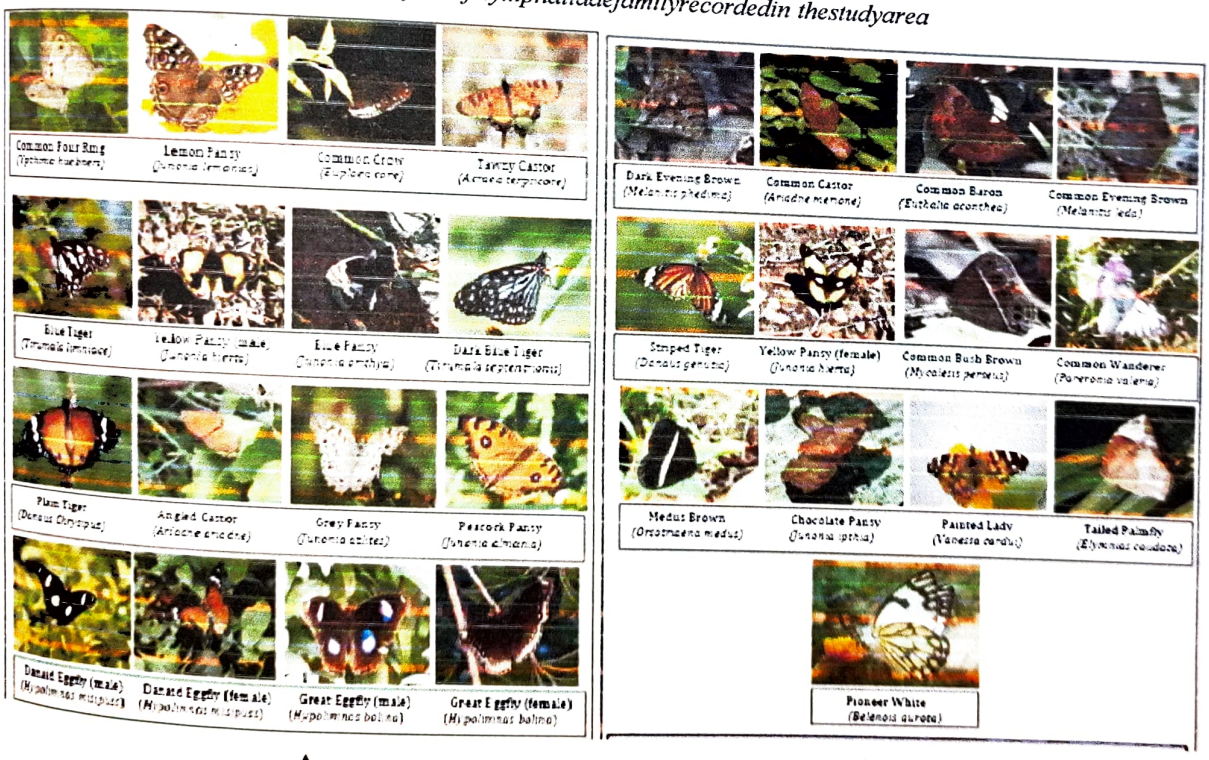
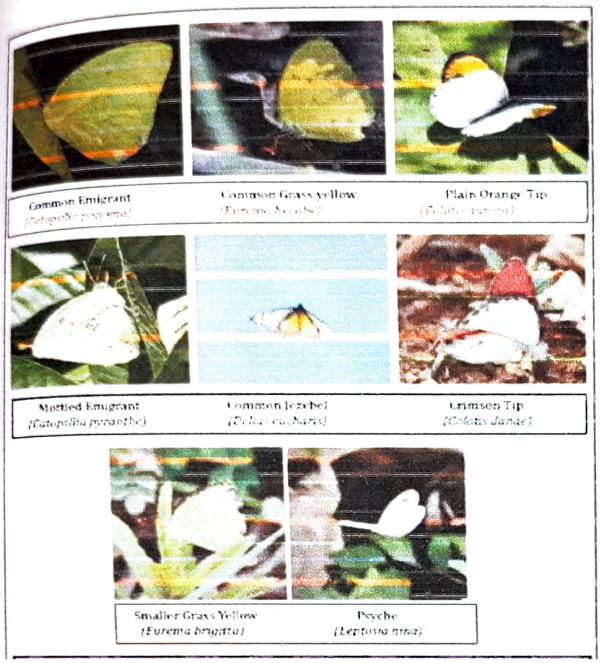
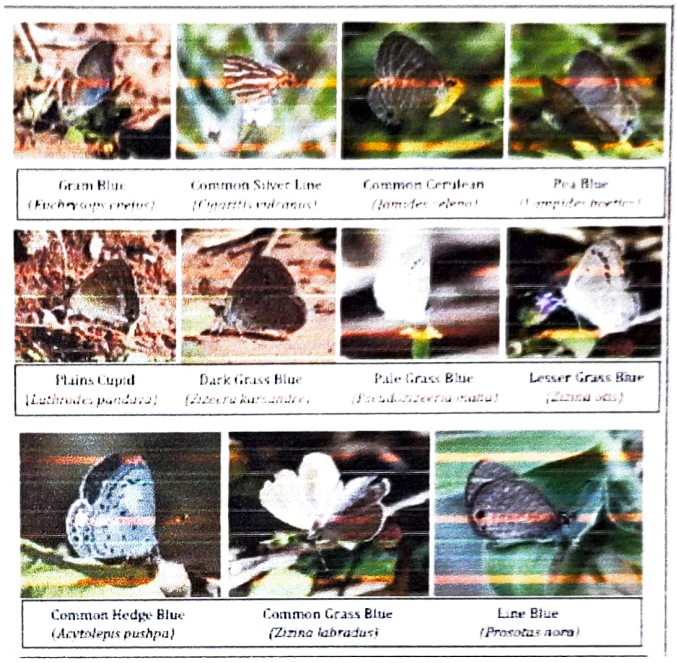


Plate-2ButterfliesofPieridae(C)andLycaenidae(D)familiesrecordedin thestudyarea

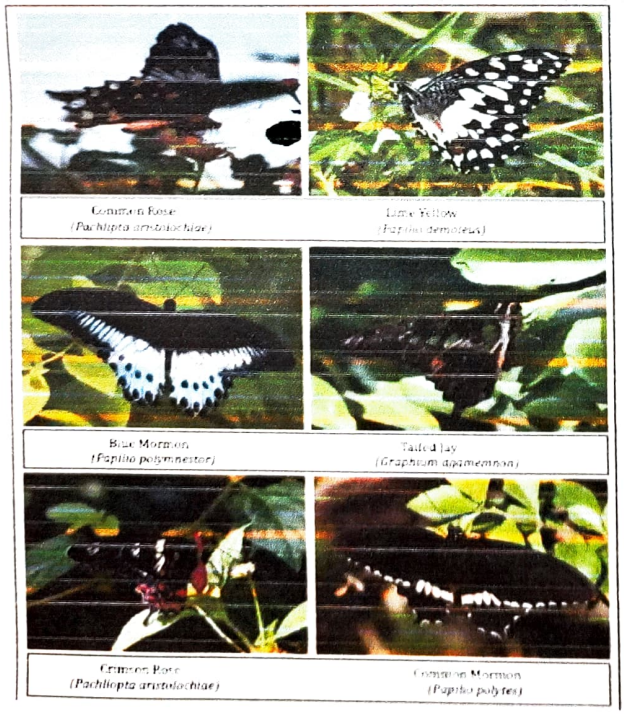


C



D

Plate.3ButterfliesofPapilionidae (E)andHesperiidae(F)familiesrecordedin thestudyarea



E

F

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V.S. BELLIHAL COMMERCE COLLEGE HUNGUND.

MINI DESERTATION REPORT

College Roll No: 48 Examination seat No: S2041617

CERTIFICATE

This is to certify that Mr./Miss: : **Bhagyashree M Nadagoudar** of B.Sc 5th semester has satisfactorily completed the mini desertation report in Zoology subject as prescribed by the Rani Chennamma University Belagavi.

During year 2022-2023

Examiner:

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HOD

Head of the Department,
ZOOLOGY.
V. M. S. R. Vastrad Arts, Science and
V. M. Commerce College,
HUNGUND Dist: Bagalkot

Local Fauna of Butterfly (Lepidoptera)

Abstract— *A study was conducted to record the diversity of butterflies at town of Mysore District over a period of two months from December 2022 to February 2023.Present survey was carried out in selected natural and man-made (parks) habitats of local town. A total of 1,147 individuals were recorded, photographed and identified which included 46 genera and 60 species belonging to five families. The relative abundance of butterflies of different families such as the Nymphalidae family was 43.33%, followed by families Lycaenidae, Hesperidae, Pieridae and Papilionidae representing 18.33%, 15%, 13.33% and 10% in the study area respectively. Results indicated that Eurema hecabe was the most dominant species followed by Ypthima huebneri, Catopsilia ponoma, and Junonia lemonias in the study area. Dominance of these species can be explained by the presence of their larval and host plants in the study area.*

Keywords— ***Butterfly, Man-made ecosystems, Pollard walk method.***

I. INTRODUCTION

The butterflies are the most beautiful and colourful creatures on the earth and have high ecological significance as they are very good pollinators apart from honey bees. They are considered as good bio-indicators as they are sensitive to slightest variation in environment such as temperature, wind speed, rainfall, humidity and solar radiation (Murphy and Weiss, 1998; Sparrow *et al.*, 1994; Spitzer *et al.*, 1997; Brereton *et al.*, 2011). Their distribution and abundance depends on different requirements for different habitat types for mating, breeding, and nectaring (Sprih Harsh, 2014). The present study aims to examine the distribution and abundance of butterflies across habitats studied. A checklist of butterfly species is also provided.

II. MATERIALS AND METHODS

Study area

Present study was carried out in selected Natural and Man-made ecosystems (parks) of town, a taluk headquarters of Bagalkot district in the state of Karnataka, This implies that the winter and the early part of the summer are typically dry season.

Observation and identification of Butterflies

Field observations were conducted twice a month from Decemberr 2022 to February 2023 for a period of two months. Distribution and abundance of butterfly species were recorded in the study area by selecting Natural and Man-made ecosystems (parks) (Table.1). Observations were made through Pollard walk method (PWM) by counting all the butterflies found in 10 meter, beside the observer and and Direct Visual Count Method (DVCM) (Kunte, 1997; Gupta *et al.*, 2012; Kunte *et al.*, 2012). Butterflies were observed, captured, identified, photographed and released immediately to their natural habitat carefully. Care was taken not to damage physical parts of the butterflies. Photography was made by using Nikon D5600 (55-300mm 24.1MP) DSLR camera.

The key characters used for identification were color pattern, wing span and mode of flight. also used Photography and guidelines of The Book of Indian Butterflies (Isaac Kehimkar).

Table.1 Study sites with GPS location.

Sites	Site name	GPS location
S1	H.B.C.S Layout	12°25'53.2"N 76°23'59.4"E
S2	Hale yadathore Cauvery river	12°28'03.0"N 76°23'31.3"E
S3	Mahatma Gandhi park	12°26'19.4"N 76°23'00.8"E
S4	Horticulture Department garden	12°25'19.1"N 76°23'49.5"E

III. RESULT

In the present study a total of 1,147 individual butterflies were recorded belonging to five families such as Nymphalidae, Pieridae, Lycaenidae, Papilionidae and Hesperidae with 46 genera and 60 species. Out of the five families recorded the relative abundance of Nymphalidae family is highest, representing 43.33% followed by families Lycaenidae, Hesperidae, Pieridae and Papilionidae representing 18.33%, 15%, 13.33% and 10% respectively (Fig.1). A checklist of species belonging to the five different families along with their status of occurrence in the study area is enlisted in Table 2.

Fig.2 depicts the relative abundance of butterfly species with respect to the total number of species recorded during the study period in each family. The relative abundance of Nymphalidae family was found to be 53.85% in site-4, 46.15% in site-1 and 3 whereas in site-2 it was 34.62%. On the contrary, out of the total 8 species recorded in Pieridae family 7 species (87.5%) were found in site-2 (Natural ecosystem) and 3 species (11.54%) in site-4 (Manmade ecosystem) whereas the members of Hesperidae and Papilionidae families preferred site-3 and site-4 (manmade ecosystems) as their relative abundance was high as compared to site-1 and site-2. Of the 11 species recorded, the relative abundance of Lycaenid butterflies in site-3 was found to be 63.64% (7 species) followed by site-1 with 36.36% (4 Species) and site-2 and site-3 recorded 27.27% (3 species) each.

Monthly variations in the number of butterfly species of different families are shown in Fig.3. The graph clearly indicates that all the families encountered in the study area are available throughout the study period . Nymphalidae family dominated in all the months with more than 40% of the total recorded. Members of Nymphalidae family were abundant during December when compared to other months. On the contrary, percent occurrence of Pieridae, Lycaenidae, Papilionidae and Hesperidae was found to be high during October, February, March and November respectively.

Based on the status of occurrence in the study area and availability during the study period, the butterfly species were categorized into very common (11 species), Common (17 species) and rare (32 species) (Table.1).

IV. DISCUSSION

The study area may be favorable for better existence of butterfly community of Nymphalidae family as indicated by the results of the present study whereas the occurrence of Papilionidae in the study sites is comparatively less. The most plausible explanation would be habitat destruction due to urbanization which will be a threat to butterfly diversity. As a matter of fact, absence of food plants and nectar yielding plants in an area drives the butterfly population away due to the lack of feeding and breeding grounds. Anthropological interferences have an undeniably strong influence on the biodiversity of all existing species (Ricketts and Imhoff, 2003).

The study sites selected for the present study show variation in the abundance of butterfly species due to various factors, such as landscape, availability of host plants and most importantly anthropological disturbances. In the present study it may be noted that, Site-3 and site-4 were found to be rich in species diversity which had 31 and 28 species respectively with respect to total number of species recorded in the study area. Both the sites are manmade parks with large number of flowering plants. It is imperative that the richness in butterfly species diversity may depend on the type and variety of flowers and number of plants in a particular area and moreover the abundance, species richness and occurrence vary among different ecosystems. These results also indicate that, conservation of endemic species of butterflies may be possible by providing suitable environment to support the butterfly population and their survival (Myers *et al.*, 2000).

Among the species recorded two species *Pachliopta hector* L and *Hypolymnas misippus* L have a protected status under the schedule I part IV of Indian Wildlife Protection act, 1972 (Aurora, 2003) and *Lampides*

boeticus under Schedule IV (Gupta *et. al.*, 2005). In the present study it can be observed that *H.misippus* and *L.boeticus* were found only in site-3 and 4 (Manmade ecosystem) which implies that conditions are suitable for their conservation in these sites, whereas *P. hector* was recorded in all the four sites. These observations throw light on the fact that the study area has favorable habitat and climate which influence distribution and abundance of butterflies (Wynter-Blyth, 1957). From the results of this study it may also be noted that the diversity and abundance of Lycaenidae family members is affected due to the absence of grass fields (Harisha and Hosetti, 2013).

The diversity, distribution and the abundance of butterflies recorded may vary according to season of the year which obviously depend on diversity and distribution of floral species and their blooming season. It may be mentioned that conservation of native flora and reduced human interference may have positive effect on the butterfly population and their survival (Myers *et al.*, 2000).

Table:2 Checklist of the Butterflies and their occurrence in study area

Sl. No	Family	Common Name	Scientific Name	Site 1	Site 2	Site 3	Site 4	Status
1	Nymphalidae	Common Four ring	***Ypthima huebneri* (Kirby,1871)**	+	+	+	+	VC
2		Lemon pansy	***Junonia lemonias* (Linnaeus, 1758)**	+	+	+	+	VC
3		Common crow	***Euploea core* (Cramer, 1780)**	+	+	+		VC
4		Tawny Castor	***Acraea terpsicore* (Linnaeus, 1758)**	+	+	+		VC
5		Blue tiger	***Tirumala limniace* (Cramer, 1775)**	+				R
6		Yellow pansy	***Junonia hierta* (Fabricius, 1798)**	+				R
7		Blue pansy	***Junonia orithya* (Linnaeus, 1764)**	+		+		C
8		Dark blue tiger	***Tirumala septentrionis* (Butler,1874)**	+				R
9		Plain tiger	***Danaus chrysippus* (Linnaeus, 1758)**	+	+	+	+	VC
10		Angled Castor	***Ariadne ariadne* (Linnaeus, 1763)**	+				R
11		Grey Pansy	***Junonia atlites* (Linnaeus, 1763)**			+	+	C
12		Peacock Pansy	***Junonia almania* (Linnaeus, 1758)**		+			R
13		Chocolate Pansy	***Junonia iphita* (Cramer, 1779)**			+	+	C
14		Painted lady	***Vanessa cardui* (Linnaeus, 1758)**			+		R
15		Great Egg fly	***Hypolimnas bolina* (Linnaeus, 1758)**			+	+	C
16		Danaid Egg fly	***Hypolimnas misippus* (Linnaeus,1758)**			+	+	C
17		Dark Evening Brown	***Melanitis phedima* (Cramer, 1780)**				+	R
18		Common Castor	***Ariadne merione* (Cramer, 1777)**		+		+	C
19		Common Baron	***Euthalia aconthea* (Cramer, 1777)**			+	+	C
20		Common Evening Brown	***Melanitis leda* (Linnaeus, 1758)**				+	R
21		Striped Tiger	***Danaus genutia* (Cramer, 1779)**	+			+	C
22		Common Bush Brown	***Mycalesis perseus* (Fabricius, 1775)**	+				R
23		Joker	***Byblia ilithyia* (Drury, 1773)**		+			R

24		Medus Brown	***Orsotriaena medus* (Moore, 1858)**		+			R
25		Tailed Palm Fly	***Elymnias caudata* (Butler, 1871)**				+	R
26		Common Sailor	***Neptis hylas* (Linnaeus, 1758)**				+	R
27	**Pieridae**	Common emigrant	***Catopsilia pomona* (Fabricius, 1775)**	+	+	+	+	VC
28		Common grass yellow	***Eurema hecabe* (Linnaeus, 1758)**	+	+	+	+	VC
29		Plain Orange Tip	***Colotis aurora* (Cramer, 1780)**	+				R
30		Mottled emigrant	***Catopsilia pyranthe* (Linnaeus, 1758)**	+	+	+		VC
31		Crimson tip	***Colotis danae* (Linnaeus, 1787)**		+			R
32		Common jezebel	***Delias eucharis* (Drury, 1773)**		+	+		C
33		Small Grass Yellow	***Eurema brigitta* (Cramer, 1780)**		+			R
34		Psyche	***Leptosia nina* (Fabricius, 1793)**				+	R
35	**Lycaenidae**	Gran blue	*Euchrysops cnejus* **(Fabricius, 1798)**	+				R
36		Common Silver Line	*Cigaritis vulcanus* **(Fabricius, 1775)**	+				R
37		Common Cerulean	*Jamides celeno* **(Cramer, 1779)**	+		+		C
38		Pea Blue	*Lampides boeticus* **(Linnaeus, 1767)**	+	+	+	+	VC
39		Plains Cupid	*Luthrodes pandava* **(Horsfield, 1829)**			+		R
40		Dark grass blue	*Zizeeria karsandra* **(Moore, 1865)**			+		R
41		Pale grass blue	*Pseudozizeeria maha* **(Kollar, 1844)**				+	R
42		Lesser Grass Blue	*Zizina otis* **(Fabricius, 1787)**		+	+		C
43		Common hedge blue	*Acytolepis puspa* **(Horsfield, 1828)**		+		+	C
44		Common Line blue	*Prosotas nora* **(R. Felder,1860)**			+		R
45		Zebra Blue	*Leptotes plinius* **(Fabricius, 1793)**			+		R
46	**Papilionidae**	Common Mormon	*Papilio polytes* **(Linnaeus, 1758)**	+	+	+	+	VC
47		Common Rose	*Pachliopta aristolochiae* **(Fabricius, 1775)**	+	+	+	+	VC
48		Lime Butterfly	*Papilio demoleus* **(Linnaeus, 1758)**		+	+		C
49		Crimson Rose	*Pachliopta hector* **(Fabricius, 1758)**			+	+	C
50		Blue Mormon	*Papilio polymnestor* **(Cramer, 1775)**			+	+	C
51		Tailed Jay	*Graphium Agamemnon* **(Fabricius, 1864)**				+	R
52	**Hesperidae**	Dark Palm Dart	*Telicota bambusae* **(Moore, 1878)**	+	+			C
53		Asian Grizzled Skipper	*Spialia galba* **(Fabricius, 1793)**		+		+	C
54		Marbled Skipper	*Gomalia elma* **(Trimen, 1862)**		+			R
55		Rounded Palm-Red Eye	*Erionota torus* **(Evans, 1941)**			+		R

56		Common Banded Awl	*Hasora chromus* **(Cramer 1780)**			+		R
57		Grass Dart	*Taractrocera maevius* **(Fabricius, 1793)**			+		R
58		Grass Demon	*Udaspes folus* **(Cramer, 1775)**				+	R
59		Rice Swift	*Borbo cinnara* **(Wallace, 1866)**	+				R
60		Chestnut Bob	*Iambrix salsala* **(Moore, 1866)**				+	R

Status: VC- Very common, C- Common, R- Rare

Fig. 1 Relative abundance of Butterfly families in the study area

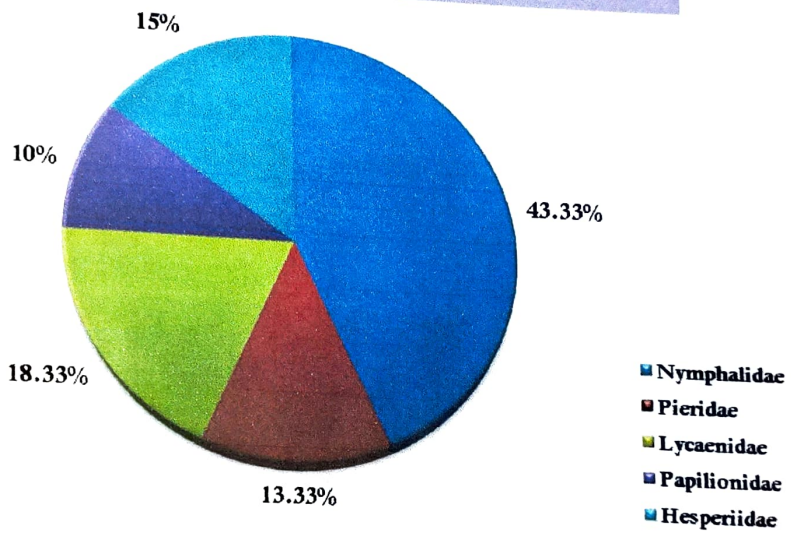


Fig. 2 Percent occurence of butterfly species in different study sites

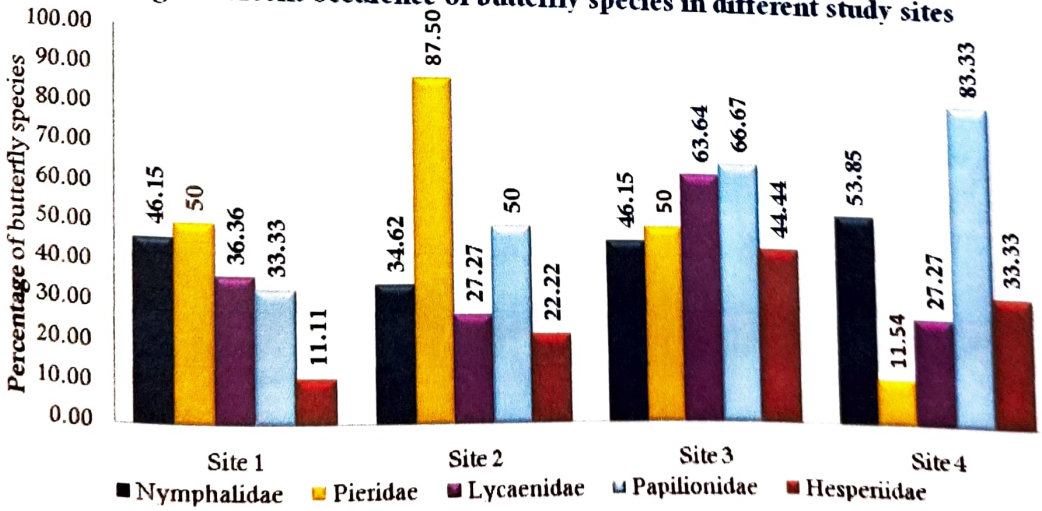


Fig.3 Monthly variation in the percent availabilty of butterfly families in the study area

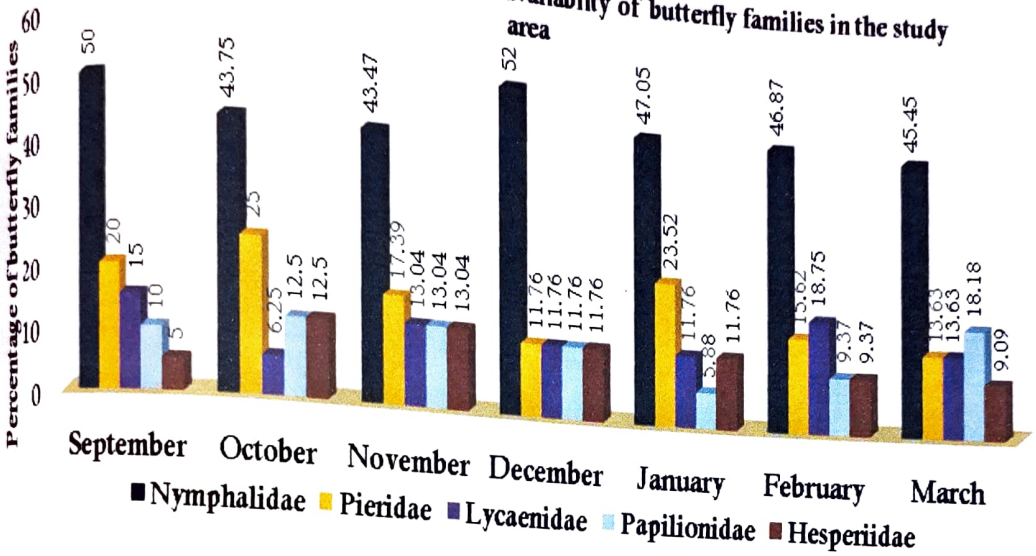
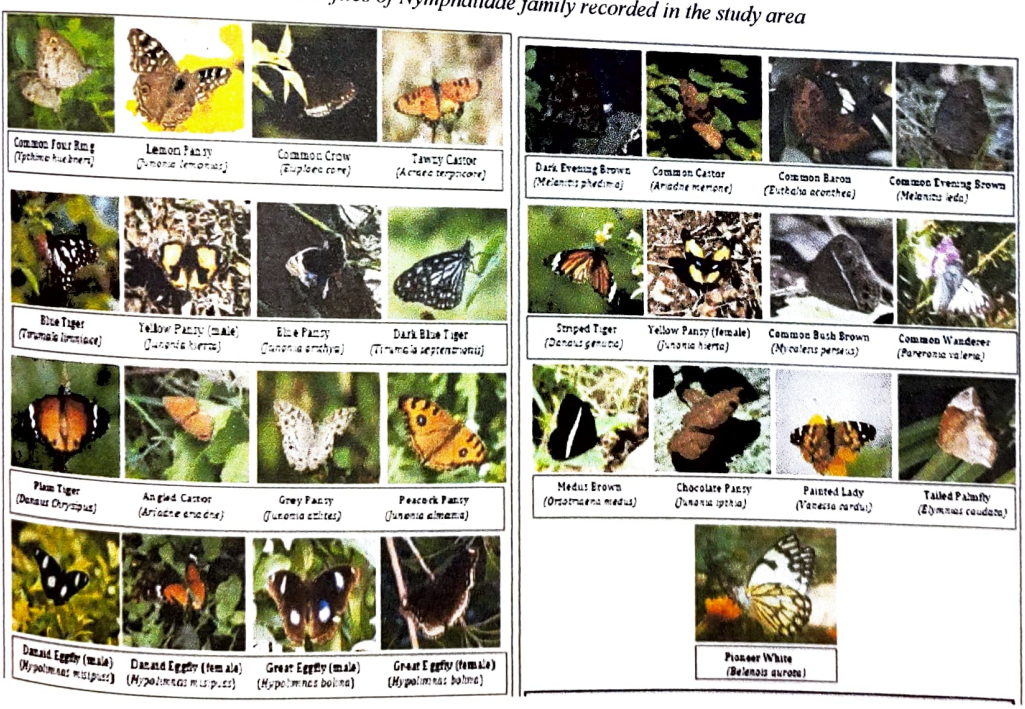
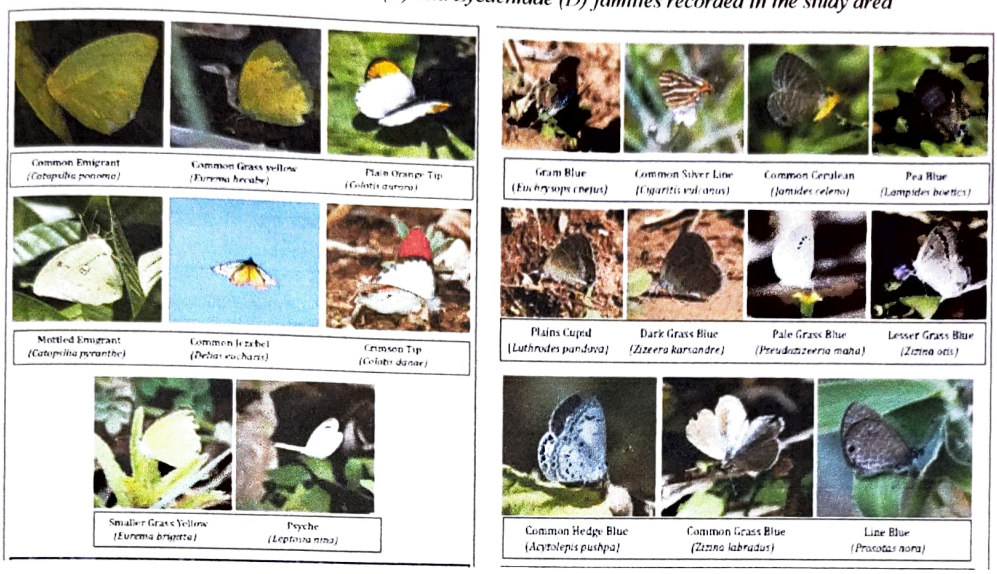


Plate.1 Butterflies of Nymphalidae family recorded in the study area



A B

Plate-2 Butterflies of Pieridae (C) and Lycaenidae (D) families recorded in the study area



C D

Plate.3 Butterflies of Papilionidae (E) and Hesperiidae (F) families recorded in the study area

E F

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V.M.K.S.R.VASTRAD ARTS, SCIENCE, &

V.S. BELLIHAL COMMERCE COLLEGE HUNGUND.

MINI DESERTATION REPORT

College Roll No: 20 Examination seat No: 5204651

CERTIFICATE

This is to certify that Mr./Miss: Pooja M. Ilkal of B.Sc 5th semester has satisfactorily completed the mini desertation report in Zoology subject as prescribed by the Rani Chennamma University Belagavi.

During year 2022-2023

Examiner:

1)..... 25/02/23

2)..... 25/02/23

Valued

HOD
Head of the Department,
ZOOLOGY.
V. M. S. R. Vastrad Arts, Science &
V. M. Commerce College,
HUNGUND. Dist: Bagalkot

Local Fauna of Butterfly (Lepidoptera)

Abstract— *A study was conducted to record the diversity of butterflies at town of Mysore District over a period of two months from December 2022 to February 2023.Present survey was carried out in selected natural and man-made (parks) habitats of local town. A total of 1,147 individuals were recorded, photographed and identified which included 46 genera and 60 species belonging to five families. The relative abundance of butterflies of different families such as the Nymphalidae family was 43.33%, followed by families Lycaenidae, Hesperidae, Pieridae and Papilionidae representing 18.33%, 15%, 13.33% and 10% in the study area respectively. Results indicated that Eurema hecabe was the most dominant species followed by Ypthima huebneri, Catopsilia ponoma, and Junonia lemonias in the study area. Dominance of these species can be explained by the presence of their larval and host plants in the study area.*

Keywords— ***Butterfly, Man-made ecosystems, Pollard walk method.***

I. INTRODUCTION

The butterflies are the most beautiful and colourful creatures on the earth and have high ecological significance as they are very good pollinators apart from honey bees. They are considered as good bio-indicators as they are sensitive to slightest variation in environment such as temperature, wind speed, rainfall, humidity and solar radiation (Murphy and Weiss, 1998; Sparrow *et al.*, 1994; Spitzer *et al.*, 1997; Brereton *et al.*, 2011). Their distribution and abundance depends on different requirements for different habitat types for mating, breeding, and nectaring (Sprih Harsh, 2014). The present study aims to examine the distribution and abundance of butterflies across habitats studied. A checklist of butterfly species is also provided.

II. MATERIALS AND METHODS

Study area

Present study was carried out in selected Natural and Man-made ecosystems (parks) of town, a taluk headquarters of Bagalkot district in the state of Karnataka, This implies that the winter and the early part of the summer are typically dry season.

Observation and identification of Butterflies

Field observations were conducted twice a month from Decemberr 2022 to February 2023 for a period of two months. Distribution and abundance of butterfly species were recorded in the study area by selecting Natural and Man-made ecosystems (parks) (Table.1). Observations were made through Pollard walk method (PWM) by counting all the butterflies found in 10 meter, beside the observer and and Direct Visual Count Method (DVCM) (Kunte, 1997; Gupta *et al.*, 2012; Kunte *et al.*, 2012). Butterflies were observed, captured, identified, photographed and released immediately to their natural habitat carefully. Care was taken not to damage physical parts of the butterflies. Photography was made by using Nikon D5600 (55-300mm 24.1MP) DSLR camera.

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The key characters used for identification were color pattern, wing span and mode of flight. also used Photography and guidelines of The Book of Indian Butterflies (Isaac Kehimkar).

Table.1 Study sites with GPS location.

Sites	Site name	GPS location
S1	H.B.C.S Layout	12°25'53.2"N 76°23'59.4"E
S2	Hale yadathore Cauvery river	12°28'03.0"N 76°23'31.3"E
S3	Mahatma Gandhi park	12°26'19.4"N 76°23'00.8"E
S4	Horticulture Department garden	12°25'19.1"N 76°23'49.5"E

III. RESULT

In the present study a total of 1,147 individual butterflies were recorded belonging to five families such as Nymphalidae, Pieridae, Lycaenidae, Papilionidae and Hesperidae with 46 genera and 60 species. Out of the five families recorded the relative abundance of Nymphalidae family is highest, representing 43.33% followed by families Lycaenidae, Hesperidae, Pieridae and Papilionidae representing 18.33%, 15%, 13.33% and 10% respectively (Fig.1). A checklist of species belonging to the five different families along with their status of occurrence in the study area is enlisted in Table 2.

Fig.2 depicts the relative abundance of butterfly species with respect to the total number of species recorded during the study period in each family. The relative abundance of Nymphalidae family was found to be 53.85% in site-4, 46.15% in site-1 and 3 whereas in site-2 it was 34.62%. On the contrary, out of the total 8 species recorded in Pieridae family 7 species (87.5%) were found in site-2 (Natural ecosystem) and 3 species (11.54%) in site-4 (Manmade ecosystem) whereas the members of Hesperidae and Papilionidae families preferred site-3 and site-4 (manmade ecosystems) as their relative abundance was high as compared to site-1 and site-2. Of the 11 species recorded, the relative abundance of Lycaenid butterflies in site-3 was found to be 63.64% (7 species) followed by site-1 with 36.36% (4 Species) and site-2 and site-3 recorded 27.27% (3 species) each.

Monthly variations in the number of butterfly species of different families are shown in Fig.3. The graph clearly indicates that all the families encountered in the study area are available throughout the study period . Nymphalidae family dominated in all the months with more than 40% of the total recorded. Members of Nymphalidae family were abundant during December when compared to other months. On the contrary, percent occurrence of Pieridae, Lycaenidae, Papilionidae and Hesperidae was found to be high during October, February, March and November respectively.

Based on the status of occurrence in the study area and availability during the study period, the butterfly species were categorized into very common (11 species), Common (17 species) and rare (32 species) (Table.1).

IV. DISCUSSION

The study area may be favorable for better existence of butterfly community of Nymphalidae family as indicated by the results of the present study whereas the occurrence of Papilionidae in the study sites is comparatively less. The most plausible explanation would be habitat destruction due to urbanization which will be a threat to butterfly diversity. As a matter of fact, absence of food plants and nectar yielding plants in an area drives the butterfly population away due to the lack of feeding and breeding grounds. Anthropological interferences have an undeniably strong influence on the biodiversity of all existing species (Ricketts and Imhoff, 2003).

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8		Dark blue tiger	***Tirumala septentrionis* (Butler,1874)**	+				R
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21		Striped Tiger	***Danaus genutia* (Cramer, 1779)**	+			+	C
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42		Lesser Grass Blue	*Zizina otis* **(Fabricius, 1787)**		+	+		C
43		Common hedge blue	*Acytolepis puspa* **(Horsfield, 1828)**		+		+	C
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49		Crimson Rose	*Pachliopta hector* **(Fabricius, 1758)**			+	+	C
50		Blue Mormon	*Papilio polymnestor* **(Cramer, 1775)**			+	+	C
51		Tailed Jay	*Graphium Agamemnon* **(Fabricius, 1864)**				+	R
52	**Hesperidae**	Dark Palm Dart	*Telicota bambusae* **(Moore, 1878)**	+	+			C
53		Asian Grizzled Skipper	*Spialia galba* **(Fabricius, 1793)**		+		+	C
54		Marbled Skipper	*Gomalia elma* **(Trimen, 1862)**		+			R
55		Rounded Palm-Red Eye	*Erionota torus* **(Evans, 1941)**			+		R

56		Common Banded Awl	*Hasora chromus* **(Cramer 1780)**			+		R
57		Grass Dart	*Taractrocera maevius* **(Fabricius, 1793)**			+		R
58		Grass Demon	*Udaspes folus* **(Cramer, 1775)**				+	R
59		Rice Swift	*Borbo cinnara* **(Wallace, 1866)**	+				R
60		Chestnut Bob	*Iambrix salsala* **(Moore, 1866)**				+	R

Status: VC- Very common, C- Common, R- Rare

Fig. 1 Relative abundance of Butterfly families in the study area

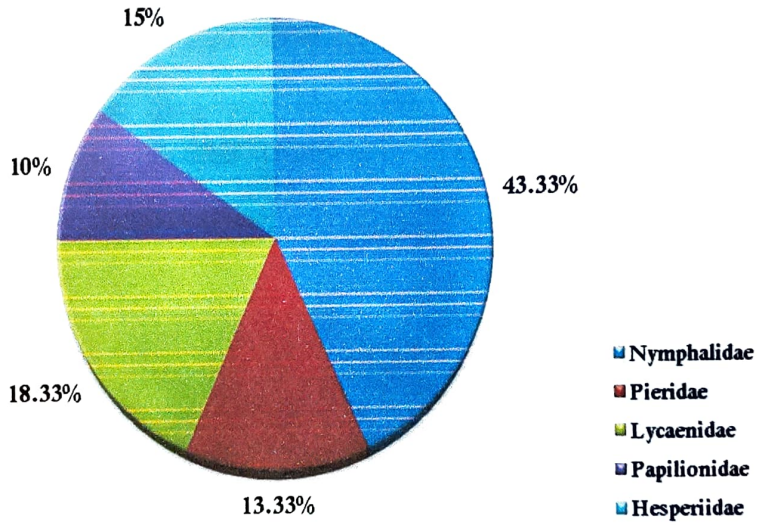


Fig. 2 Percent occurence of butterfly species in different study sites

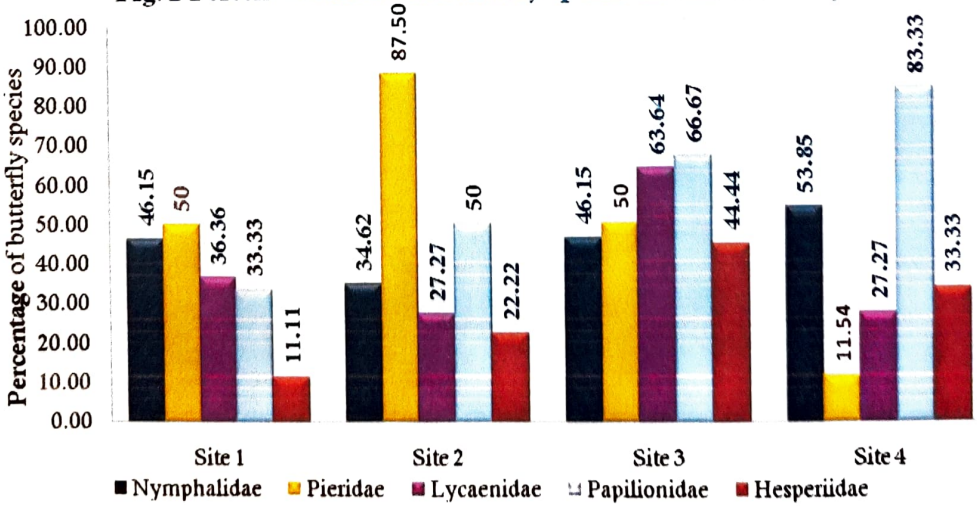


Fig.3 Monthly variation in the percent availabilty of butterfly families in the study area

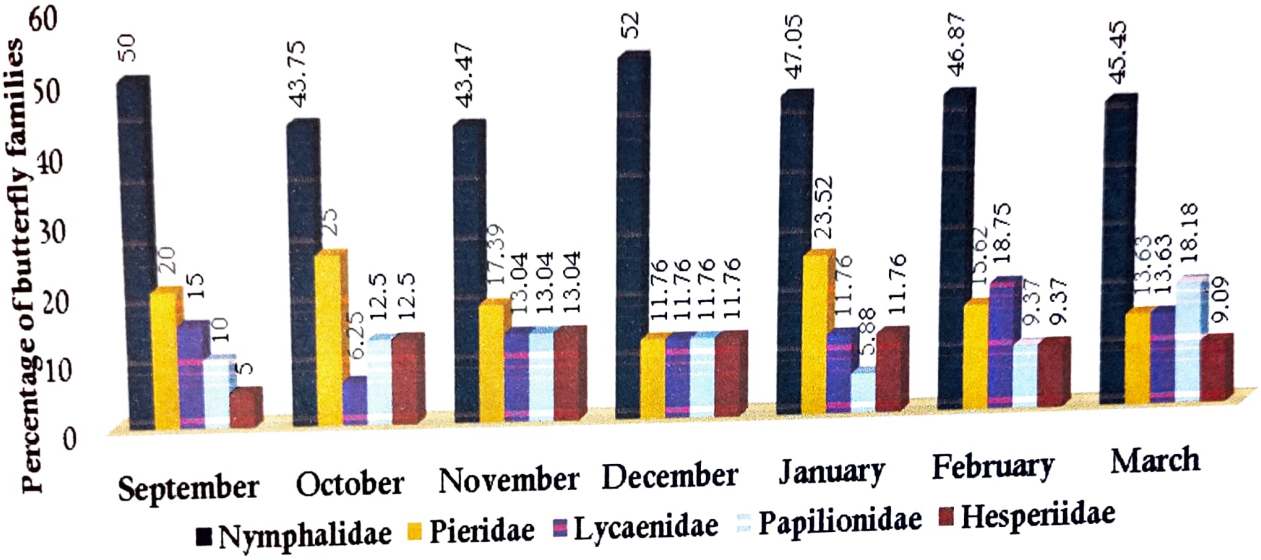


Plate.1 Butterflies of Nymphalidae family recorded in the study area

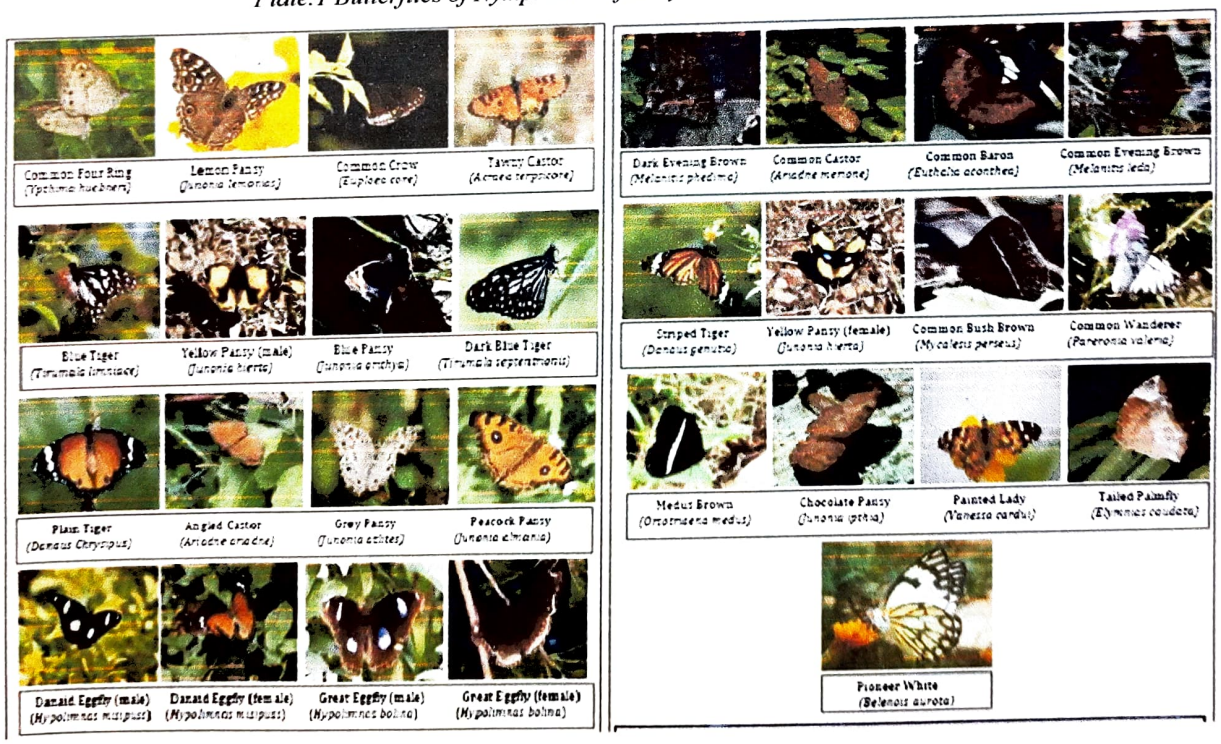


Plate-2 Butterflies of Pieridae (C) and Lycaenidae (D) families recorded in the study area

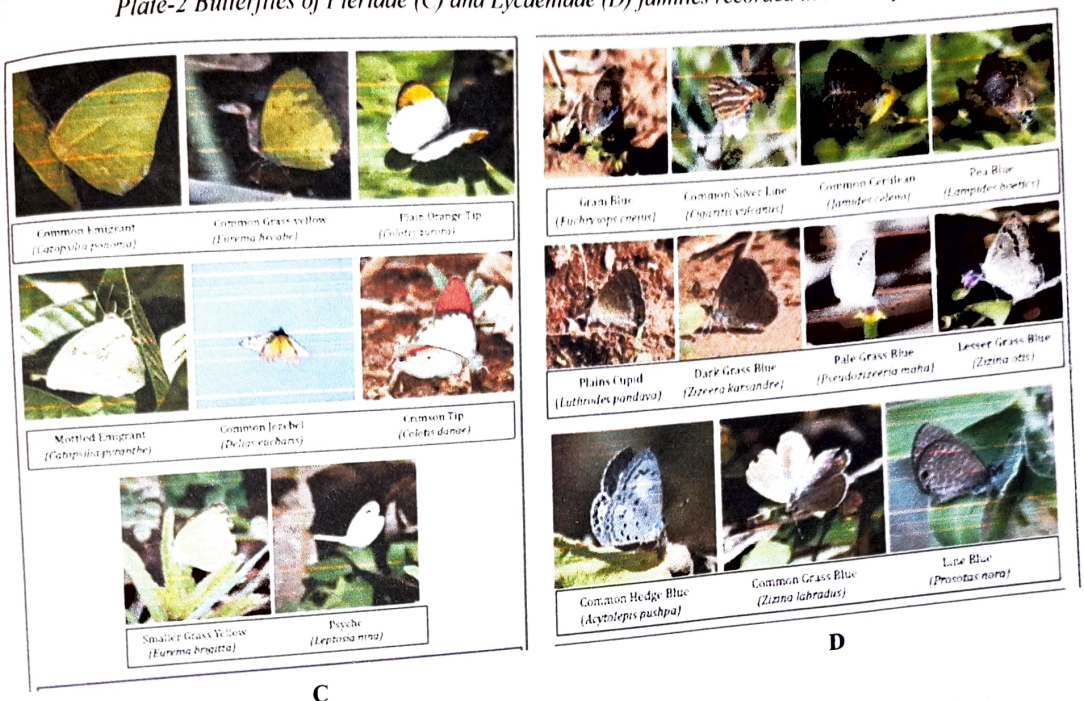
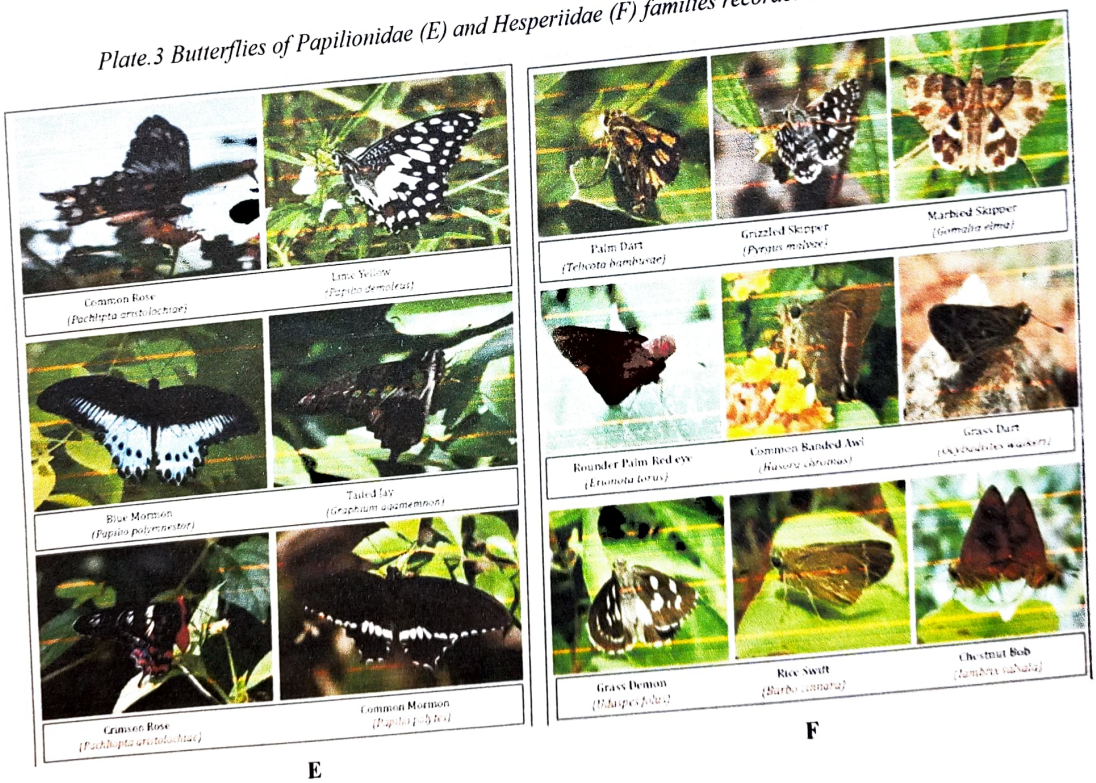


Plate.3 Butterflies of Papilionidae (E) and Hesperiidae (F) families recorded in the study area



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