Study of Butterfly Diversity and its Conservation in Tsirang District, Bhutan

Final Report

Agreement Reference no: 17023-1
Initiation Date: 30.03.2015
Completion Date: 30.3.2016

Submitted to:

The Rufford Small Grant Foundation, UK

2015-2016

Submitted by:

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Acknowledgements

We owe to the great number of people who have helped us on the work which forms this report. First of all, we would like to thank the **Rufford Small Grants Foundation (RSGF)** for the financial assistance for undertaking the research work. We would also like to thank **Mr. Namgay Wangchuk, Director General, the Scientific and Technical Committee of CoRRB, MoAF** for providing us the necessary permission (Technical Clearance) to conduct the research work in the study area. Without the help of the Department we would not been able to do the work at the area in the first place.

Special thanks goes to **Mr. Peter Smetacek**, Researcher, The Butterfly Research Centre, Bhimtal, (India), **Mr. Isaac Kehimkar**, Deputy Director, The Bombay Natural History Society, Mumbai (India), **Mr. Motoki Saito**, Secretary, The Butterfly Society of Japan, Tokyo (Japan), **Dr. Zdenek Faltynek Fric**, Institute of Entomology, Biology Centre (Czech Republic) and **Mr. Piet van der Poel,** Naturalist & Conservationist (Bhutan) for rendering expertise help on identifying the butterfly specimens, providing critical feedback and suggestions during the research work.

We extend our deep sense of gratitude to **Mr. Dorji Wangchuk**, TEO, Thimphu and **Mr. Chaxing Norbu**, Principal, Mendrelgang Central School, Tsirang for their constant advice and support throughout our research work. We would also like to thank **Mr. Yam Bahadur Bista, Mr. Bik Ram Gajmer** and **Mr. Kailash Kafley,** students of the Mendrelgang Central School for assisting us with the field work and laboratory assembly of the specimens during the project. We extend our gratitude to **Mr. Sonam Dorji**, Producer, Bhutan Reality Pictures, Thimphu (Bhutan) for providing us the photographs for the studies. We also like to thank **Mr. Ran Bahadur Tamang** for their active support and providing logistics support during the field work. We also thanks **Ms. Sangay Dema**, DyCBO, National Biodiversity Centre, MoAF, Thimphu for recommending our work and allowing to deposit our specimens at "Invertebrate Referral Collection Centre" NBC, Thimphu.

Finally but not the least, we are indebted to our families for their constant support and blessings which gave us the courage to conduct the research work.

Jatishwor Singh Irungbam & Meenakshi Singh Chib

11 April, 2016

Ceske Budejovice, Czech Republic

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1. Introduction:

Bhutan as part of Eastern Himalayan region along with central Nepal, North Bengal, Sikkim and Arunachal Pradesh has rich and diverse biodiversity. It is the transition zone between Indian, Indo-Malayan and Indo-Chinese biogeographic regions. The area is considered as most humid part of the Himalaya because it receives south west monsoon winds from the Bay of Bengal. The average annual rainfall ranges from 1000 mm in the temperate central region to 7800 mm in the tropical humid southern part of country (Kehimkar 2008). Major vegetation includes orchids, woody climbers, wild banana, tree ferns, screw pines (Pandanus sp.), rhododendrons, laurels and conifers which gives opportunity to varied diversity of butterfly fauna (Kehimkar 2008).

Butterflies, around 18,000 species are estimated to be there in the world and India alone has recorded 1,501 species (Kehimkar 2008) of which 835 species are present in NE India (Wynter-Blyth 1957). Likewise, Nepal has recorded 640 species (Smith 1996; 2006), but still, very little is known about butterflies of Bhutan. It is expected to have about 800-900 species of butterflies (vander Poel and Wangchuk 2007) but recent review by Singh & Chib (2015) gives the presence of 670 butterfly species in Bhutan. In contrast, Sbordoni et al (2015) collected data of 533 butterfly species from all the parts of Bhutan which he collected data through Citizen Science project initiated by National Biodiversity Centre through Bhutan Biodiversity Portal (www.biodiversity.bt).

In Tsirang and surrounding districts, few studies on butterflies has been conducted in the past. Singh (2012) reported 213 species of butterflies from Kerabari, lowland forest of Sankosh river in Dagana district. The survey was the part of the environment impact assessment studies undertaken on biodiversity of the influence (downstream) and impact zone (upstream) for a proposed dam Kerabari (Bhutan), under the Sankosh Hydro-electric Power Project. Nidup et al (2014) and Nidup (2015) reported presence of a total 181 species of butterflies from Royal Manas National Park (RMNP), Sarpang district. Dorji (2014) reported 80 species of butterflies from Phobjikha valley, Wangduephodrang district. Some recent publications on butterfly of Tsirang district are Singh & Chib (2014) which reported from 125 species and Singh (2014) which reported 116 species of butterfly from Mendrelgang division and Dzamling Norzoed Community Forest (DNCF) at Barsong division of Tsirang respectively.

The present study aims to collect a baseline data on butterfly fauna of Tsirang district and disseminate information and values on the importance and role played by butterfly in maintaining healthy ecosystems, through awareness campaigns to the school, students, teachers, forest officials and local peoples in and around the study area.

2. Objectives:

i. To access the abundance & diversity of butterflies fauna in Tsirang district, Bhutan.

ii. To identify and scrutinized the species of butterfly which are of conservation importance.

iii. To make aware the local communities, students and other relevant organisations in and around the project area about the importance and the need for conservation of butterfly and butterfly habitat through awareness campaigns.

3. Methodology:

3.1. Study Area:

Tsirang district situated at southern foothills of the Bhutan Himalaya. Tsirang covers an area of 638.3 km2 and altitude ranges from 400 m to 2000 m towards north. 58% of the area is covered by broadleaf and chir-pine forest. It is the only district in Bhutan without a protected area. The district is surrounded by Wangduephodrang at north; Sarpang at south and east; and Dagana at west. Tsirang shows subtropical vegetation at lower altitudes and temperate forest towards the north. Vegetation mainly includes broadleaf forest species and chirpine species.

3.2. Sampling:

Specimens of the butterflies were caught and photographed by using butterfly nets and camera (Canon EOS 70D with Canon-EF 100mm f/2.8L Macro IS USM Lens and Nikon Coolpix P900) during regular monitoring of the total butterfly fauna throughout Tsirang district from April 2015 to February 2015. During this period 241 species of butterflies were identified from 16 collecting sites during 36 sampling surveys [April to May (spring), June (pre-monsoon), August (Monsoon), September to November (Post-monsoon) and December (winter)]. Samplings were carried out every Sundays (36 days) throughout the day from 09:00 hr. until 17.00-18:00 hr. but the sampling hours varied from 4-9 hr. per day being less during monsoon and winter seasons (August, 3-4 hr./day; April-May-June, 7-8 hr./day; September-December, 5-6 hr./day). Thus, a total of ca. 188 hrs. of sampling was carried out during the entire study period.

3.3. List of sampling sites:

18 sampling sites were selected in different habitat areas during the study (Appendix I). GPS coordinates with their altitudes are recorded using GPS device (Garmin E-trex 20x) or using

Google maps (http://maps.google.com/). Maps of the study area was prepared using DIVA-GIS 7.5.0 software.

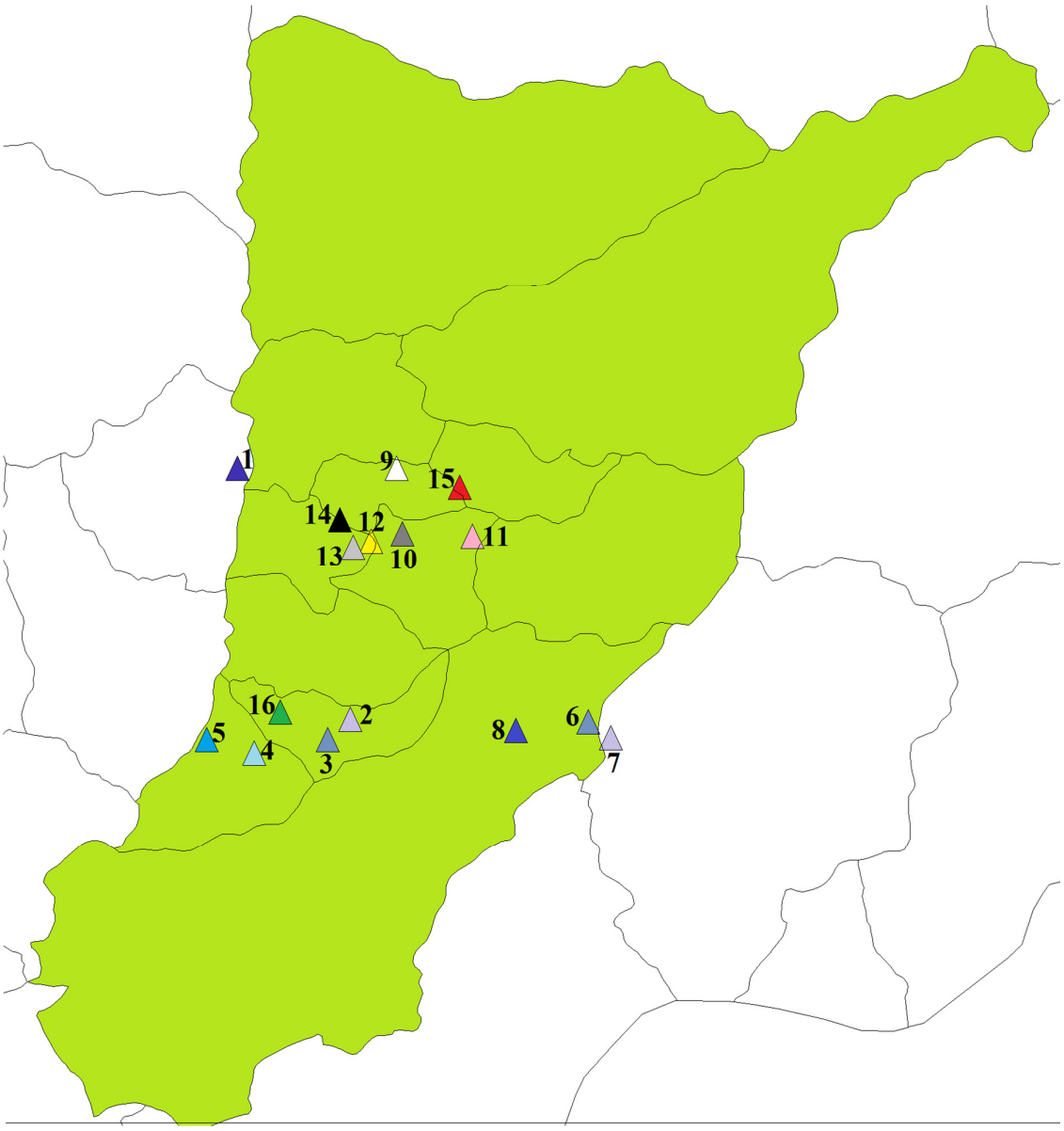

Figure 1. Map showing the collection sites at Tsirang district Bhutan (Appendix I). (GIS mapping using DIVA-GIS 7.5.0) [Burichu (#S1); Tashipang (#S2); Manidara (#S3); Barsong (#S4); Sankosh (#S5); Thangray (#S6); Darachu (#S7); Beteni (#S8); Tsirangtoe (#S9); Salami (#S10); Upper Salami (#S11); Damphu (#S12); Kikhorthang (#S13); Tsholingkhar (#S14); Semjong (#S15); DNCF (#S16)]

3.4. Butterfly Identification:

Butterflies were identified based on photographs and voucher specimens collected. Nomenclature and identifications were based on literatures available on butterflies (Evans 1932; Wynter-Blyth 1957; Kehimkar 2008). Expert's help were also sought for the identification of taxonomically difficult taxon; Lycaenidae and Hesperiidae. The species which are doubtful for their identity are marked as (?) in the checklist (Appendix A). The nomenclature and classification follows Kehimkar (2008).

3.5. Data analysis:

The occurrence status was decided on number of encounters of the species in the study sites: Very Rare (VR) – 1 to 2 sightings; Rare (R) – 3 to 4 sightings; Uncommon (UC) – 5 to 10 sightings; Common (C) – 11 to 16 sightings in study sites (Fig 2). This status does not correlate to the entire geographical distribution status of the corresponding species.

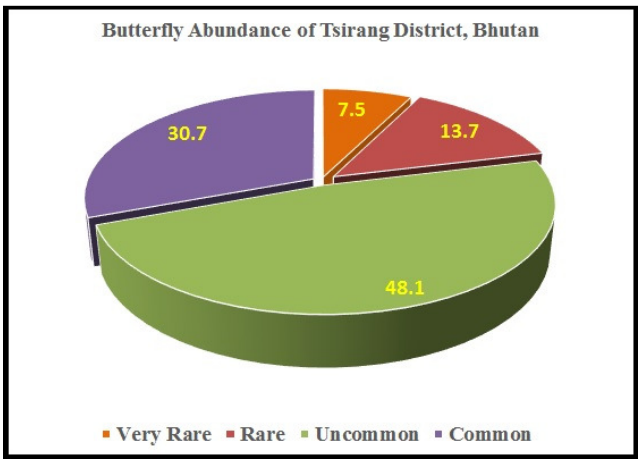

Figure 2. Abundance of butterflies recorded from Tsirang district, Bhutan during the study.

4. Results and Discussion:

The field study resulted in the recording of 241 butterfly species belonging to 131 genera from various habitat types in Tsirang District of Bhutan. A complete checklist of species is available in ***Appendix II***. Amongst these, only 165 species are shared with Singh & Chib (2014) and Singh (2014) which have reported from Tsirang earlier. The present checklist provides additional records of 76 species to the known checklist of Tsirang's butterfly (Singh & Chib 2014; Singh 2014).

Table A: Family composition of the butterflies recorded from Tsirang

Sr. No.	Family	Sub family	No. Sp.	%	Status				IWPA 2002		
					VR	R	UC	C	I	II	IV
1	Nymphalidae	11	106	44.0	10	14	48	34	3	13	2
2	Papilionidae	1	19	7.9	0	0	11	8	0	0	0
3	Pieridae	2	31	12.9	2	2	14	13	0	3	1
4	Lycaenidae	6	49	20.3	3	11	23	12	3	5	0
5	Hesperiidae	3	36	14.9	3	6	20	7	0	1	1
	Total	**23**	**241**	**100**	**18**	**33**	**116**	**74**	**6**	**22**	**4**

Out of the five families Nymphalidae was the most common (44 %, n=106), followed by Lycaenidae (20.3%, n= 49), Hesperiidae (Skippers) (14.9%, n=36), Pieridae (12.9%, n= 31) and lowest Papilionidae (7.9 %, n=19) in the study area (Fig 3). This could be due to Nymphalidae being largest family and Papilionidae being the lowest in species richness. Similar studies in Bhutan and other countries found that Nymphalidae ranked the highest in species richness followed by Lycaenidae (Nidup et al 2014; Kasangaki et al 2012; Majumder et al 2012; Sarma et al 2012; Singh 2012; Tiple 2012; Sundufu & Dumbuya 2008). While, the least common family varied in different studies, for instance Pieridae was the least common family (Majumder et al 2012), Papilionidae (Kasangaki et al 2012; Tiple 2012) and Hesperiidae (Nidup et al 2014; Sarma et al 2012; Singh 2012; Ramesh et al 2010).

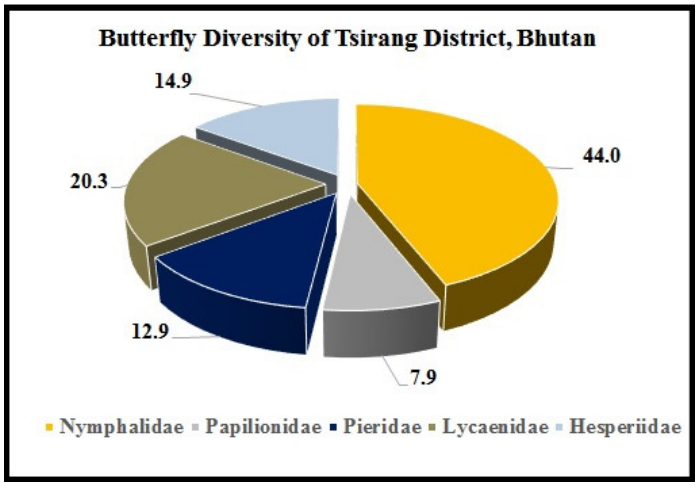

Figure 3. Diversity of Butterflies recorded from Tsirang district, Bhutan during the study.

Significant species which are rare and important butterfly species were recorded during the survey in Tsirang. Nymphalidae (18 sp.), Lycaenidae (8 sp.), Pieridae (4 sp.) and Hesperiidae (2 sp.) which are protected in India under protected species category of Indian (Wildlife) Protection Act, 2002 were reported during the survey (Appendix A: † = Schedule I, IWPA 2002; ¥ = Schedule II, IWPA 2002; ‡ = Schedule IV, IWPA 2002). The status of these butterfly species are so far not evaluated in Bhutan and none of these species are listed in the protected list of Forest and Nature Conservation Act, 1995 or Forest and Nature Conservation Rules of Bhutan, 2006.

Sap feeding butterflies:

All the butterflies possess proboscis which restricts them to feed on liquid diet usually nectars unlike their caterpillars. Butterflies mainly prefers a diet of nectar which contains 15-30% of simple sugars economical to feed upon, due to the greater energy exhausted on sucking sticky solutions through narrow proboscis (Kingsolver, 1985). Apart from butterflies feeding on nectars, they are also found feeding on pollen, over-ripe fruits, decaying animal carcasses, refuse and manures (de Niceville 1886; Peile 1937; Wynter-Blyth 1957; Ezzeddine & Matter, 2008). Thus, many lepidopterist used many food sources of butterfly as baits to capture them (de Niceville 1886; Peile 1937; Woodhouse 1950). Norris (1935) also mentions that sap exudates from injured tree bark attracts several species of Nymphalid butterflies, and by feeding on those liquids become completely intoxicated and unable to fly.

During the present study, several species of Nymphalidae butterflies were found feeding on the sap exudes of Orange tree (*Citrus* sp. Rutaceae). *Abrota ganga, Kallima inachus, Chitoria sordida, Polyura athamas, Vanessa indica, Vanessa cardui, Mycalesis francisca sanatana, Mycalesis perseus, Stibochiona nicea, Herona marathus, Rohana parisatis, Bassonara durga*, and *Euthalia phemius* were seen sipping on the sap exudes individually or in company of other species on sunny days. In Australia, Satyrine (Nymphalidae) butterflies are found feeding on sap of *Eucalyptus grandis* (Myrtaceae) (Hawkeswood and Dunn 2009). Similarly in Columbia, Nymphalidae butterfly were seen feeding on sap exudate by various species of plants like *Persea americana* (Lauraceae), *Eucalyptus globulus* (Myrtaceae), *Salix humboldtiana* (Salicaceae), *Sapindus saponaria* (Sapindaceae), *Alchornea bogotensis* (Euphorbiaceae), *Persea gratissima* (Lauraceae), *Quercus* sp. (Fagaceae) and *Citrus* sp. (Rutaceae) (Salazar-E 2013). And in Indian Himalaya, studies found that sap feeding Nymphalidae butterfly; *Sephisa dichroa* and *Charaxes solon* found feeding on flowers of *Prunus cerasoides* (Rosaceae) and *Lantana camara* (Verbenaceae) which is a shift from sap feeding to flower nectar (Bhuyan et al 2014). Thus, it will be interesting to investigate the butterflies which are feeding on the sap exudes of plants other than *Citrus* sp. in Bhutan.

5. Conservation Awareness Programmes

5.1. Field Training program:

As part of involving the local communities and students in the conservation campaign, field training programme of students and local people were conducted during the study period. A local volunteer and three students (volunteer) were trained during the project on field activities; Butterfly observation and data collection in the field, collection of voucher specimens and curing in the laboratory including spreading techniques of lepidoptera specimens for storage and future used. The youths were also taught how to use a binocular, GPS, Range finders and compass etc. The training program proof successful, they help us in conducting field surveys and also help us arranging meetings with village chiefs and people in their communities during the campaigns.

5.2. Awareness Workshop:

A Community Awareness Workshop and Student's Awareness Workshop on the theme "Butterflies in Tsirang district, Bhutan and the need for conservation" was organized at different villages and schools in the study area. The PI presented PowerPoint on butterfly and its importance, threats to butterflies and conservation strategies during the campaigns.

5.3. Awareness campaign materials:

A Poster on "Butterflies of Tsirang district, Bhutan" and a pamphlet about the "Butterflies and its conservation" in English language with logos of funding agencies were also distributed among local people and school children to spread awareness among them.

5.4. Participation in symposium and workshops:

PI have attended one national level and one international level symposium presenting the work on the butterflies in Tsirang district, Bhutan and efforts on its conservation of habitats in study area.

i. "Butterflies (Rhophalocera) of Tsirang district, Bhutan". 3rd Annual BES Symposium and Environment Fair, Bhutan Ecological Society. [Poster Presentation] on 27-29 August, 2015 at Thimphu, Bhutan.

ii. "Butterflies and Moths of Bhutan: Current state of knowledge". 4th International Symposium on Future for Butterflies in Europe, Dutch Butterfly Conservation. [Poster Presentation] on 31st March to 2nd April, 2016 at Wageningen, the Netherlands.

6. Publications:

PI along with the co-investigator have published one paper on the review of butterflies' fauna of Bhutan during the study period. Two more articles have been submitted to international peer reviewed journals for publication and are at review process. A website based on the results of the present work also designed and launched for the benefit of children's, amateur lepidopterist and researchers (http://www.bhutanbutterflies.org/).

i. **Singh, I.J. & M.S. Chib (eds) (2015-2016)**. *Butterflies of Tsirang*. http://www.bhutanbutterflies.org/
ii. **Singh, I. J. & M.S. Chib (2015).** Checklist of Butterflies of Bhutan. *Journal of the Bhutan Ecological Society*. Vol. 1. Issue. 2. pp. 22-58.
iii. **Singh, I. J., M.S. Chib & Z.F. Fric (2016).** Notes on the occurrence of *Chitoria sordida sordida* (Moore, [1866]) [Nymphalidae: Apaturinae] in Tsirang District, Bhutan [Submitted to Journal of Threatened Taxa, ***In Review***]
iv. **Singh, I. J. & M.S. Chib (2016).** The Butterflies (Lepidoptera: Rhophalocera) recorded from Tsirang district, Bhutan: A checklist. [Submitted to Journal of Asia Pacific Biodiversity, ***In Review***]

7. Conclusion:

The present study reveals the diversity and abundance of butterfly fauna at a data deficient Tsirang district of Bhutan. Out of the total species of butterflies (241) encountered so far during the study period, 32 species turns out to be protected in India under Indian (Wildlife) Protection Act 2002, 18 species in very rare and 33 species in rare category in the study area. Thus, the present study provides rich butterfly diversity in the area. The area is still have healthy forest and less disturbance occur in the potential butterfly areas. The result of this study can also be used to make steps on the conservation of natural habitat for lepidopteran diversity. Hence, thorough surveys with long term monitoring programmes will help to categorize the status of the species with the help of IUCN categories for the conservation and management of biodiversity.

Therefore, long term studies are required along with conservation awareness programs to educate the people and organize them into small groups that can protect and monitor their forests themselves in the long run.

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viii. **Kasangaki P, Akol MA, Basuta IG. 2012**. Butterfly Species Richness in Selected West Albertine Rift Forests. International Journal of Zoology (578706):7-10.

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xix. **Singh AP. 2012.** Lowland forest butterflies of the Sankosh River catchment, Bhutan. Journal of Threatened Taxa 4(12): 3085–3102.

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Appendix I: Sampling sights with their descriptions in the study area.

Sites no.	GPS	Description
Burichu (#S1)	27° 1' 56.291" N & 90° 4' 30.712" E, altitude 341 m asl	Close to river bed.
Tashipang (#S2):	26° 57' 0.504" N & 90° 6' 50.795" E, altitude 1233m asl	Inside the orange orchard surrounded by bamboo and wild banana
Manidara (#S3)	26° 56' 36.658" N & 90° 6' 23.007" E, altitude 1304 m asl	Roadside trail both the sides surrounded by forest
Barsong (#S4)	26° 56' 21.03" N & 90° 4' 51.909" E, altitude 788 m asl	Agricultural field close to forest
Sankosh (#S5)	26° 56' 37.18" N & 90° 3' 52.678" E, altitude 506 m asl	Riverbed covered with wet sand and nearby thick forest
Thangray (#S6)	26° 56' 58.135" N & 90° 11' 46.107" E, altitude 1922m asl	Roadside vegetation on Tsirang-Sarpang Highway
Darachu (#S7)	26° 56' 39.455" N & 90° 12' 14.014" E, altitude 1980 m asl	A trail inside the broad leaved tropical forest, area is covered with fog most of the time
Beteni (#S8)	26° 56' 47.944" N & 90° 10' 16.172" E, altitude 1670 m a.s.l	Close to agriculture field which practice traditional methods of agriculture
Tsirangtoe (#S9)	27° 1' 56.377" N & 90° 7' 48.298" E, altitude 1099 m asl	Agricultural field
Salami (#S10)	27° 0' 39.035" N & 90° 7' 55.261" E, altitude 1377 m asl	Close to agricultural field and stream
Upper Salami (#S11)	27° 0' 36.162" N & 90° 9' 22.683" E, altitude 1342 m asl	Agricultural field
Damphu (#S12)	27° 0' 30.672" N & 90° 7' 16.654" E, altitude 1549 m asl	Close to human settlement, chirpine forest nearby
Kikhorthang (#S13)	27° 0' 23.706" N & 90° 6' 54.619" E, altitude 1627 m asl	Close to human settlement, open ground
Tsholingkhar (#S14)	27° 0' 55.544" N & 90° 6' 37.933" E, altitude 1239 m asl	Below 20 m of the Tsirang-Wangdue Highway open field
Semjong (#S15)	27° 1' 33.859" N & 90° 9' 6.375" E, altitude 861 m asl	Close to forest stream
DNCF (#S16)	26° 57' 9.371" N & 90° 5' 24.082" E, altitude 1024 m asl	Trail inside the broad leaved tropical forest

Appendix II: Checklist of the butterflies recorded from Tsirang district.

[Abbreviations used: IWPA = Indian (Wildlife) Protection Act, 2002; (†) = Schedule I, IWPA 2002; (¥) = Schedule II, IWPA 2002; (‡) = Schedule IV, IWPA 2002; C = Common; UC = Uncommon; R = Rare; VR = Very Rare; (+) = Recorded]

Sr. No.	Species	Survey localities in the study area																IWPA 2002	Status
		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16		
A	Family: Nymphalidae																		
I	Subfamily: Apaturinae																		
1	*Chitoria sordida sordida* Moore 1865		+		+													¥	VR
2	*Euripus nyctelius nyctelius* Doubleday 1845			+			+										+		R
3	*Herona marathus marathus* Doubleday 1848		+	+		+	+			+		+	+		+	+	+		UC
4	*Hestina nama nama* Doubleday 1844		+	+	+	+	+	+	+		+	+		+	+	+			C
5	*Hestina persimilis* Westwood 1850			+			+											¥	VR
6	*Mimathyma ambica namouna* Doubleday 1845		+	+	+	+	+		+			+							UC
7	*Mimathyma chevana* Moore 1865			+			+											¥	VR
8	*Rohana parisatis parisatis* Westwood 1850			+	+	+	+		+			+					+		UC
II	Subfamily: Biblidinae																		
9	*Ariadne ariadne pallidor* Fruhstorfer 1899			+	+	+	+		+		+	+							UC
10	*Ariadne merione* Cramer 1777		+					+					+	+		+			UC
III	Subfamily: Charaxinae																		
11	*Charaxes bernardus* Fabricius 1793		+		+	+			+					+					UC
12	*Polyura athamas athamas* Drury 1770	+	+	+	+	+	+	+	+	+	+	+	+			+	+		C
IV	Subfamily: Cyrestinae																		
13	*Cyrestis thyodamas thyodamas* Doyere 1840	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+		C
14	*Dichorrhagia nesimachus nesimachus* Doyere 1840		+														+		VR
15	*Pseudergolis wedah wedah* Kollar 1844	+	+	+	+	+	+					+		+		+	+		UC

16	*Stibochiona nicea nicea* Gray 1846	+	+		+	+		+	+	+	+	+	+			+	+		C
V	Subfamily: Danaidae																		
17	*Danaus chrysippus chrysippus* Linnaeus 1758	+	+	+	+	+	+		+	+	+	+	+		+	+	+		C
18	*Danaus genutia* Cramer 1779		+	+	+	+		+	+		+	+	+	+	+	+	+		C
19	*Euploea algea deione* Westwood 1848		+		+	+		+	+		+	+	+		+				UC
20	*Euploea core core* Cramer 1780				+	+			+		+	+				+			UC
21	*Euploea mulciber mulciber* Cramer 1777	+	+		+	+		+	+	+	+	+	+	+			+	‡	C
22	*Parantica aglea melanoides* Moore 1883	+	+		+	+		+	+	+	+	+	+	+	+	+	+		C
23	*Parantica melaneus plataniston* Fruhstorfer 1910	+	+	+	+	+	+		+		+	+		+	+		+		UC
24	*Parantica sita* Kollar 1844		+		+	+		+	+		+	+	+	+	+	+	+		C
25	*Tirumala limniace* Moore 1880		+	+	+	+	+	+	+		+	+	+						UC
26	*Tirumala septentrionis* Butler 1874		+			+								+					R
VI	Subfamily: Heliconiinae																		
27	*Acraea issoria issoria* Hubner 1819	+	+	+	+		+	+	+	+	+	+	+	+	+		+		C
28	*Argyreus hyperbius hyperbius* Linnaeus 1763	+	+	+	+	+	+	+		+	+		+	+	+	+	+		C
29	*Cethosia biblis tisamena* Fruhstorfer 1912		+	+			+		+	+	+		+		+	+	+		UC
30	*Cethosia cyane cyane* Drury 1770	+	+	+	+	+	+	+	+	+		+	+	+		+	+		C
31	*Childrena childreni childreni* Gray 1831		+					+					+				+		R
32	*Cirrochroa aoris aoris* Doubleday1847		+	+	+	+	+					+	+	+		+	+		UC
33	*Phalanta phalantha phalantha* Drury1773		+		+	+		+	+		+	+	+						UC
34	*Vindula erota erota* Fabricius 1793		+	+			+	+				+	+				+		UC
VII	Subfamily: Libytheiinae																		
35	*Libythea lepita lepita* Moore 1857		+	+	+	+	+	+	+		+	+				+		¥	UC
36	*Libythea myrrha sanguinalis* Fruhstorfer 1898	+	+	+		+	+			+			+	+	+		+		UC
VIII	Subfamily: Limenitinae																		
37	*Abrota ganga ganga* Moore 1857		+														+		VR
38	*Athyma selenophora selenophora* Kollar 1844		+	+	+	+	+	+	+	+	+	+	+				+		C
39	*Athyma cama cama* Moore 1858		+	+	+	+	+		+		+	+				+	+		UC

40	*Athyma opalina opalina* Kollar 1844		+	+	+		+	+		+			+	+	+	+			UC
41	*Athyma perius perius* Linnaeus 1758			+	+	+	+		+			+					+		UC
42	*Athyma ranga ranga* Moore 1857		+		+	+		+	+			+	+			+	+	¥	UC
43	*Euthalia aconthea* Cramer 1777				+	+			+		+	+		+					UC
44	*Euthalia durga durga* Moore 1857		+	+			+									+	+	¥	UC
45	*Euthalia lubentina* Cramer 1777		+			+		+			+		+			+	+	‡	UC
46	*Euthalia nara nara* Moore 1859		+														+	¥	VR
47	*Euthalia phemius* Doubleday 1848		+		+	+		+	+		+	+	+			+	+		UC
48	*Euthalia sahadeva* Moore 1859		+					+					+				+		R
49	*Euthalia telchinia* Menetries 1857		+	+			+	+		+			+			+		†	UC
50	*Moduza procis procis* Cramer 1777	+		+	+	+	+		+	+		+		+			+		UC
51	*Neptis ananta* Moore 1858		+	+	+				+										R
52	*Neptis clinia susruta* Moore 1872	+	+	+	+		+			+	+		+			+	+		UC
53	*Neptis hylas* Linnaeus 1758	+	+	+	+	+	+		+		+	+		+	+	+	+		C
54	*Neptis miah* Moore 1857			+	+	+	+		+										UC
55	*Neptis pseudovikasi* Moore 1899	+	+	+	+	+		+	+		+	+	+		+		+		C
56	*Neptis sankara* Kollar 1844	+		+					+	+								†	R
57	*Neptis sappho astola* Moore 1872		+	+	+		+	+			+	+		+		+	+		UC
58	*Neptis soma soma* Moore 1858	+		+	+	+	+		+	+	+	+			+	+		¥	C
59	*Pantoporia hordonia hordonia* Stoll 1790	+	+	+	+	+	+	+		+			+	+		+	+		C
60	*Pantoporia sandaka davidsoni* Eliot 1969		+		+			+	+		+	+	+						UC
61	*Parasarpa zayla zayla* Doubleday 1848			+			+										+		R
62	*Sumalia daraxa* Doubleday 1848				+				+		+	+							R
63	*Sumalia zulema* Doubleday 1848		+	+			+	+					+					†	UC
64	*Tanaecia julii appiades* Menetries 1857				+	+			+		+	+					+		UC
IX	Subfamily: Morphinae																		
65	*Aemona amathusia amathusia*		+					+									+		R
X	Subfamily: Nymphalinae																		

66	*Aglais cashmirensis aesis* Fruhstorfer 1912	+	+	+	+		+	+	+	+	+	+	+		+	+	+		C
67	*Doleschallia bisaltide indica* Moore 1899	+	+	+	+	+	+	+	+		+	+	+		+	+	+		C
68	*Hypolimnas bolina* Linnaeus 1758		+					+			+		+		+		+		UC
69	*Hypolimnas missipius* Linnaeus 1764				+	+			+		+	+				+		¥	UC
70	*Junonia almana almanac* Linnaeus 1758	+	+	+	+	+	+	+	+	+	+	+	+		+	+			C
71	*Junonia atlites atlites* Linnaeus 1763	+	+	+	+	+	+	+		+		+	+	+	+		+		C
72	*Junonia hierta hierta* Fabricius 1798	+	+	+	+	+		+	+	+	+	+		+	+		+		C
73	*Junonia iphita iphita* Cramer 1779	+	+	+	+	+	+	+	+	+	+	+	+			+	+		C
74	*Junonia lemonias lemonias* Linnaeus 1758	+	+	+	+	+		+	+		+	+	+	+	+	+			C
75	*Junonia orithya ocyale* Hubner 1819	+	+	+	+	+	+	+	+	+	+	+	+		+		+		C
76	*Kallima inachus inachus* Boisduval 1836		+	+	+	+	+	+	+		+	+	+	+		+	+		C
77	*Symbrenthia hypselis cotanda* Moore 1874	+	+		+	+	+		+	+	+	+	+	+	+		+		C
78	*Symbrenthia lilaea khasiana* Moore 1875		+	+	+	+	+	+	+		+	+	+	+	+	+	+		C
79	*Vanessa cardui* Linnaeus 1758	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+		C
80	*Vanessa indica indica* Herbst 1794		+	+	+	+	+	+	+		+	+	+	+	+	+	+		C
XI	Subfamily: Satyrinae																		
81	*Aulocera swaha swaha* Kollar, 1844									+	+								VR
82	*Callerebia scanda opima* Moore 1882												+	+	+			¥	R
83	*Elymnias hypermnestra undularis* Drury 1773			+	+	+	+		+		+	+							UC
84	*Elymnias malelas* Hewitson 1863		+									+							VR
85	*Lethe chandica* Moore 1857			+			+					+							R
86	*Lethe confusa confusa* Aurivillius 1898		+		+	+		+	+			+	+	+			+		UC
87	?*Lethe distans* Butler	+								+						+			R
88	*Lethe kansa* Moore 1857			+			+												VR
89	*Lethe mekara mekara* Moore 1857		+		+	+		+	+				+			+	+		UC
90	*Lethe rhoria rhoria* Fabricius 1787		+	+	+	+	+	+	+		+	+	+	+	+	+	+		C
91	*Lethe sinorix sinorix* Hewitson 1863		+	+			+	+								+	+	¥	UC
92	*Lethe verma sintica* Fruhstorfer 1911	+	+	+	+	+	+	+	+	+	+	+	+						C

93	*Melanitis leda ismene* Cramer 1775		+		+	+			+		+	+		+	+	+			UC
94	*Melanitis phedima bela* Moore 1857		+		+	+		+	+		+	+	+	+					UC
95	*Melanitis zitenius zitenius* Herbst 1796				+	+											+	¥	R
96	*Mycalesis francisca sanatana* Moore 1857		+	+	+	+	+	+					+	+		+	+		UC
97	?*Mycalesis heri* Moore 1857		+					+					+					¥	R
98	*Mycalesis perseus blasius* Fabricius 1798		+		+	+			+		+	+			+	+	+		UC
99	*Mycalesis visala visala* Moore 1857	+	+	+	+		+	+	+	+	+		+	+	+	+	+		C
100	*Orinoma damaris* Gray 1846		+									+							VR
101	*Orsotrioena medus medus* Fabricius 1775			+	+	+	+		+			+		+					UC
102	*Ypthima asterope* Klug, 1832		+		+	+			+		+	+		+	+	+	+		UC
103	*Ypthima baldus baldus* Fabricius 1775	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+		C
104	*Ypthima nareda* Kollar, 1844	+		+	+		+		+	+	+		+			+	+		UC
105	*Ypthima newara* Elwes & Edwards 1893	+			+				+	+	+	+				+			UC
106	*Ypthima sakra sakra* Moore 1858		+		+			+	+		+	+	+		+				UC
B	Family: Papilionidae																		
XII	Subfamily: Papilioninae																		
107	*Byasa polyeuctes polyeuctes* Doubleday 1842		+	+	+		+			+	+	+		+		+	+		UC
108	*Graphium agamemnon agamemnon* Linnaeus 1758	+			+	+			+	+	+	+		+			+		UC
109	*Graphium antiphates pompilius* Fabricius 1787	+		+	+	+	+		+	+	+	+	+		+	+	+		C
110	*Graphium cloanthus cloanthus* Westwood 1841	+		+			+			+				+			+		UC
111	*Graphium doson axionides* Page & Treadaway 2014			+	+	+	+		+		+	+							UC
112	*Graphium sarpedon sirkari* Page & Treadaway 2013	+	+		+	+		+	+	+	+	+	+	+					C
113	*Pachliopta aristolochiae aristolochiae* Fabricius 1775		+	+	+	+	+	+	+		+	+	+			+			C
114	*Papilio acturus acturus* Westwood 1842		+		+			+	+		+	+	+						UC
115	*Papilio alcmenor alcmenor* C & R Felder 1865	+	+	+		+	+	+	+					+	+	+			UC
116	*Papilio bianor polyctor* Boisduval 1836		+	+	+	+	+	+	+		+		+				+		UC

117	*Papilio castor polias* Jordan 1909		+		+	+		+	+				+	+					UC
118	*Papilio demoleus demoleus* Linnaeus 1758	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			C
119	*Papilio helenus helenus* Linnaeus 1758		+	+	+	+	+		+	+	+			+			+		UC
120	*Papilio memnon agenor* Linnaeus 1758		+	+	+	+	+	+	+		+	+	+	+		+	+		C
121	*Papilio nephelus chaon* Westwood 1844	+	+	+	+	+	+	+	+			+	+	+		+	+		C
122	*Papilio paris paris* Linnaeus 1758	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+		C
123	*Papilio polytes* Linnaeus 1758		+	+	+	+	+	+	+		+	+	+	+		+	+		C
124	*Papilio protenor euprotenor* Fruhstorfer 1908		+		+	+		+	+		+	+	+						UC
125	*Troides helena cerberus* C & R Felder 1865	+	+	+	+		+			+			+	+	+		+		UC
C	Family: Pieridae																		
XIII	Subfamily: Coliadinae																		
126	*Colias fieldii* Doubleday 1842			+	+		+		+		+	+			+	+			UC
127	*Dercas lycorias* Doubleday 1842			+			+											¥	VR
128	*Dercas verhueli doubledayi* Moore 1905	+	+	+	+	+	+							+	+	+	+		UC
129	*Eurema blanda silhetana* Wallace 1867	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+		C
130	*Eurema brigitta rubella* Wallace 1867		+					+			+		+	+	+				UC
131	*Eurema hecabe hecabe* Linnaeus 1758	+	+	+	+	+		+	+	+	+	+	+	+		+	+		C
132	*Eurema laeta sikkima* Moore 1906	+	+	+	+		+	+		+	+	+	+	+	+	+			C
133	*Catopsila pomona pomona* Fabricius 1775	+	+		+	+		+	+	+	+		+	+	+	+			C
134	*Catopsila pyranthe pyranthe* Linnaeus 1758	+			+	+			+	+	+	+		+	+				UC
135	*Colotis erutae* Esper 1805	+		+			+			+									R
136	*Gandaca harina assamica* Moore 1906			+	+	+	+		+			+		+					UC
XIV	Subfamily: Pierinae																		
137	*Appias albina darada* C & R Felder 1865	+		+	+	+	+		+	+	+	+						¥	UC
138	*Appias lalage lalage* Doubleday 1842		+		+	+		+	+		+	+	+			+			UC
139	*Appias libythea* Fabricius 1775	+	+					+		+			+		+			‡	UC
140	*Appias lyncida eleonora* Boisduval 1836				+	+			+		+	+		+				¥	UC
141	*Cepora nadina nadina* Lucas 1852	+	+	+	+	+	+	+	+	+	+		+				+		C

142	*Cepora nerissa phryne* Fabricius 1775	+	+		+	+		+	+	+	+	+	+	+	+	+			C
143	*Delias acalis pyramus* Wallace 1867	+	+	+		+	+	+		+		+	+	+		+	+		C
144	*Delias agostina agostina* Hewitson 1852		+	+	+	+		+	+	+		+	+						UC
145	*Delias belladonna* Fabricius 1793	+		+	+		+		+	+	+	+			+	+			UC
146	*Delias descombesi leucaeantha* Fruhstorfer 1910		+	+	+	+		+	+	+	+	+	+	+	+	+	+		C
147	*Delias eucharis* Drury 1773		+											+		+			R
148	*Hebomoia glaucippe glaucippe* Linnaeus 1758		+	+	+	+	+	+	+		+	+	+	+	+	+	+		C
149	*Ixias pyrene pirenassa* Wallace 1867	+	+	+	+	+	+	+		+	+		+		+	+	+		C
150	*Leptosia nina nina* Fabricius 1793		+		+	+		+	+		+	+	+	+	+		+		C
151	*Pieris brassicae nepalensis* Doubleday 1846	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+		C
152	*Pieris canidia indica* Evans 1926	+	+		+	+		+	+	+	+	+	+	+		+	+		C
153	*Pieris erutae montana* Verity 1908			+			+												VR
154	*Pontia daplidice moorei* Röber 1907		+	+	+	+		+			+		+		+	+	+		UC
155	*Prioneris thestylis thestylis* Doubleday 1842	+	+		+	+	+	+		+							+		UC
156	*Pareronia valeria hippa* Fabricius 1787			+	+	+	+		+		+	+							UC
D	Family: Lycaenidae																		
XV	Subfamily: Curetinae																		
157	*Curetis bulis bulis* Westwood 1851			+	+	+	+										+		UC
XVI	Subfamily: Lycaeninae																		
158	?*Heliophorus brahma brahma* Moore 1857			+			+									+			R
159	*Heliophorus epicles indicus* Fruhstorfer 1908	+	+	+	+	+	+	+	+			+	+	+	+	+	+		C
XVII	Subfamily: Miletinae																		
160	*Allotinus drumila drumila* Moore 1865		+					+					+				+	†	R
161	*Miletus chinensis assamensis* Doherty 1891		+					+		+			+				+		UC
XVIII	Subfamily: Polyommatinae																		
162	*Acytolepis puspa gigas* Fruhstorfer 1910		+	+	+	+	+	+	+		+	+	+			+	+		C

163	*Caleta elna noliteia* Fruhstorfer 1916	+			+	+			+	+		+					+		UC
164	*Castalius rosimon rosimon* Fabricius 1775		+	+	+	+	+	+	+		+	+	+	+	+	+	+	†	C
165	*Catochrysops panormus* C & R Felder 1860			+	+	+	+		+	+	+	+							UC
166	*Catochrysops strabo* Fabricius 1793			+			+									+			VR
167	*Celastrina argiolus jynteana* de Niceville 1883		+	+	+	+	+	+	+			+							UC
168	?*Celastrina huegelii oreoides* Evans 1925			+			+	+											R
169	*Celastrina lavendularis limbata* Moore 1879			+	+	+	+		+		+	+							UC
170	*Celatoxia marginata* de Nicevelle 1884		+	+			+	+		+			+	+					UC
171	*Jamides alecto* C & R Felder 1860		+		+	+		+	+		+	+	+	+			+		UC
172	*Jamides bochus bochus* Stoll 1782	+	+		+	+		+	+	+	+	+	+			+	+		C
173	*Lampides boeticus* Linnaeus 1767		+	+	+	+	+	+	+		+	+	+	+	+	+	+		C
174	*Leptotes plinius* Fabricus 1793		+	+	+	+	+	+	+		+	+	+		+	+	+		C
175	*Megisba malaya sikkima* Moore 1884			+	+	+	+		+			+		+					UC
176	*Orthomiella pontis* Elwes 1887				+				+		+	+					+	¥	UC
177	*Petrelaea dana* de Niceville 1883	+		+			+	+		+	+		+				+		UC
178	*Prosotas dubiosa indica* Evans 1925			+	+	+	+		+		+	+							UC
179	*Prosotas nora ardates* Moore 1874		+										+	+		+	+		UC
180	*Pseudozizeeria maha maha* Kollar 1884	+	+	+	+	+	+	+		+		+	+	+	+	+	+		C
181	*Taraka hamada* Druce 1875				+				+		+	+							R
182	*Udara dilecta* Moore 1879		+					+					+						R
183	*Zizeeria karsandra* Moore 1865	+	+		+	+			+	+	+	+							UC
XIX	Subfamily: Theclinae																		
184	*Arhopala bazalus* Hewitson 1862	+		+			+			+						+			UC
185	*Arhopala eumolphus eumolphus* Cramer 1780			+			+							+		+			R
186	*Arhopala rama rama* Kollar 1842				+	+			+		+	+							UC
187	*Bidaspa nissa ratna* Swinhoe1897	+	+	+	+			+	+	+	+		+	+		+	+		C
188	*Catapacilma major major* Druce 1895		+		+	+		+	+	+			+						R
189	*Chilades lajus lajus* Stoll, 1780		+		+	+		+	+		+	+	+		+	+			UC

190	*Chilades parrhasius* Fabricus 1793				+				+		+	+		+	+	+			UC
191	*Chliaria kina kina* Hewitson 1869	+			+				+	+	+	+						¥	UC
192	*Deudorix epijarbas amatius* Fruhstorfer 1912			+	+	+	+		+		+	+				+		†	UC
193	*Horoga onyx onyx* Moore 1857		+															¥	VR
194	*Iraota timoleon* Stoll 1790					+	+			+									R
195	*Mota massyla* Hewitson 1869		+																VR
196	*Rapala varuna orseis* Hewitson 1863								+		+	+						¥	R
197	*Remelana jangala ravata* Moore 1865		+	+	+	+	+	+	+	+		+	+	+	+		+		C
198	*Spindasis lohita himalayanus* Moore 1884		+		+	+		+	+		+	+	+				+	¥	UC
199	*Ticherra acte* Moore 1857		+	+			+	+					+						UC
200	*Zeltus amasa amasa* Hewitson 1865			+	+	+	+		+		+	+		+	+	+	+		C
XX	Subfamily: Riodininae																		
201	*Abisara chela chela* de Niceville 1886		+		+	+			+		+	+	+				+		UC
202	*Abisara fylla* Westwood 1851	+	+	+	+	+	+			+	+		+	+	+	+	+		C
203	*Abisara neophron neophron* Hewitson 1861			+	+	+	+												R
204	*Stiboges nymphidia* Butler 1876		+					+					+				+		R
205	*Zemeros flegyas indicus* Cramer 1780	+	+	+	+	+	+	+	+	+	+	+	+		+		+		C
E	Family: Hesperiidae																		
XXI	Subfamily: Pyrginae																		
206	*Chamunda chamunda* Moore 1865		+	+															VR
207	*Coladenia indrani indrani* Moore 1865			+	+	+	+		+		+	+					+		UC
208	*Pseudocoladenia dan faith* Evans, 1949	+	+		+	+		+	+	+		+	+	+		+	+		C
209	*Spialia galba* Fabricius, 1793			+			+												
210	*Tagaides parra gala* Evans 1949	+		+	+		+		+	+	+	+							UC
211	*Tagiades litigiosa litigiosa* Moschler 1878		+	+			+	+					+	+		+	+		UC
212	*Tagiades menaka* Moore, 1865		+		+	+		+	+		+	+	+						UC
XXII	Subfamily: Heteropterinae																		

213	*Aeromachus stigmatus* Moore, 1878			+	+	+	+	+	+	+	+	+	+				+		C
214	*Borbo bevani* Moore, 1878	+		+		+	+			+							+		UC
215	*Borbo cinnara* Wallace, 1866			+			+				+				+		+		UC
216	?*Halpe arcuata* Evans 1937				+	+			+	+	+	+							UC
217	*Halpe homolea filda* Evans 1948			+			+								+		+	¥	R
218	*Matapa sasivarna* Moore, 1865		+			+		+					+			+			UC
219	*Notocrypta curvifascia* C & R Felder 1862		+	+	+	+	+	+	+		+	+	+	+	+	+	+		C
220	*Notocrypta feisthamelii* Boisduval, 1832			+			+												VR
221	*Notocrypta paralysos asawa* Fruhstorfer 1911		+		+	+		+	+		+	+	+						UC
222	*Udaspes folus* Cramer 1775	+	+	+	+	+	+		+	+	+	+	+		+	+	+		C
XXII	Subfamily: Hesperiinae																		
223	*Iambrix salsala salsala* Moore	+	+	+	+	+	+		+	+	+	+	+		+	+	+		C
224	*Ampittia dioscorides* Fabricius			+			+			+				+					R
225	*Astictopterus jama olivascens* Moore 1878				+	+		+	+		+	+	+	+	+				UC
226	*Caltoris cahira* Moore 1877				+	+			+		+	+		+					UC
227	*Hyarotis adrastus parba* Moore, 1865			+	+	+	+		+		+	+							UC
228	*Oriens gola pseudolus* Mabille 1881	+	+	+	+		+	+				+	+	+		+			UC
229	*Oriens goloides* Moore, 1881	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+		C
230	*Pelopidas assamensis* de Nicéville, 1882		+	+													+	‡	R
231	*Pelopidas conjuncta* Herrich-Schaffer 1869			+			+				+			+					R
232	*Pelopidas mathias* Fabricius, 1798	+	+	+		+		+	+		+		+	+			+		UC
233	*Pelopidas sinensis* Mabile, 1877			+			+			+							+		R
234	*Pelopidas subochraceus subochraceus* Moore, 1878				+	+		+	+		+	+	+			+			UC
235	*Polytremis discreta* Elwes & Edwards, 1897			+			+	+					+						R
236	*Potanthus dara* Kollar, 1842		+		+	+		+	+		+	+	+	+	+		+		C
237	*Potanthus nesta nesta* Evans, 1934		+	+	+	+		+	+		+		+			+	+		UC
238	*Potanthus pseudomaesa cleo* Evans 1932	+	+	+		+		+	+	+			+			+	+		UC

239	*Potanthus trachala* Mabille 1878			+			+				+			+			+		UC
240	*Telicota bambusae bambusa* Moore, 1878		+	+			+	+					+				+		UC
241	*Telicota colon colon* Fabricius, 1775	+		+	+		+	+		+		+		+	+	+			UC

Appendix III: Butterfly survey format used during the survey in the study area.

BUTTERFLY SURVEY FORMAT

Rufford

Project Ref. No.: 17023-1 | Date: ....../....../2015
Transect ID No:....................................... | Name of Observer:.......................................
Location Name:....................................... | Start Time:........... | End Time:.............
Transect Start (GPS) | N:........................... | E:.......................... | Altitude:................
Transect End (GPS) | N:........................... | E:.......................... | Altitude:................
Transect Length: 1000 m

Sr. No.	Photo ID No.	Species Name	No. of species

Habitat type (Please Tick):

1. Closed Canopy ☐
2. Shrub Land ☐
3. River or stream bed ☐
4. Crop Field ☐
5. Roadside ☐

Weather Condition (Please Tick)

1. Sunny ☐
2. Scanty Cloud cover ☐
3. Few glimpses of Sun ☐
4. Fully cover by cloud ☐

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Photo Plate 1

Photo 1 Poster Presentation during 3rd Annual BES Symposium, August 2015, Thimphu, Bhutan with co-investigator Ms. Meenakshi Singh Chib

Photo 2 Poster Presentation during 4th International Symposium: Future 4 butterflies in Europe, April 2016, Wageningen, the Netherlands

Photo Plate 2

Photo 3 Field activities, data collection in the study area, Tsirang district, Bhutan

Photo Plate 3

Photo 4 Butterfly Posters used during the Campaigns and displayed at schools

Photo Plate 4

Photo 5. Protected butterflies under IWPA 2002, reported from Tsirang district Bhutan. ***Chitoria sordida sordida; Hestina persimilis; Mimathyma chevana; Euploea mulciber mulciber; Libythea lepita; Athyma ranga ranga; Bassonara durga; Euthalia lubentina; Euthalia nara nara; Euthalia telchinia; Neptis soma; Sumalia zulema; Hypolimnas missipius; Callerebia scanda opima; Lethe sinorix.***

Photo Plate 5

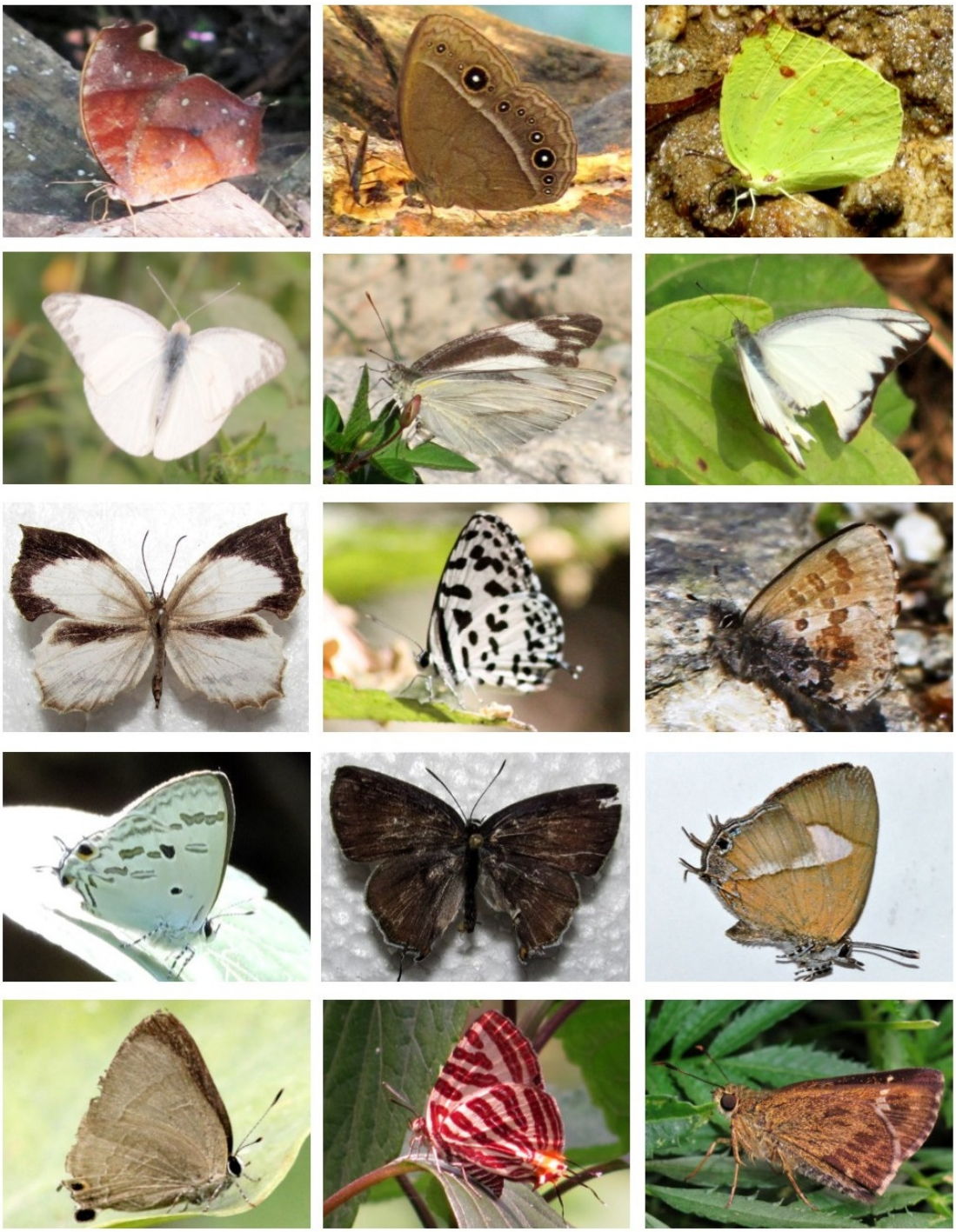


Photo 6 Protected butterflies under IWPA 2002, reported from Tsirang district Bhutan. ***Melanitis zitenius zitenius; ?Mycalesis heri; Dercus lycorius; Appias albina darada; Appias libythea; Appias lyncida eleonora; Allotinus drumila drumila; Castalius rosimon; Orthomiella pontis pontis; Chliaria kina; Deudorix epijarbus; Horoga onyx onyx; Rapala varuna; Spindasis lohita himalayanus; Halpe homolea.***

Photo Plate 6

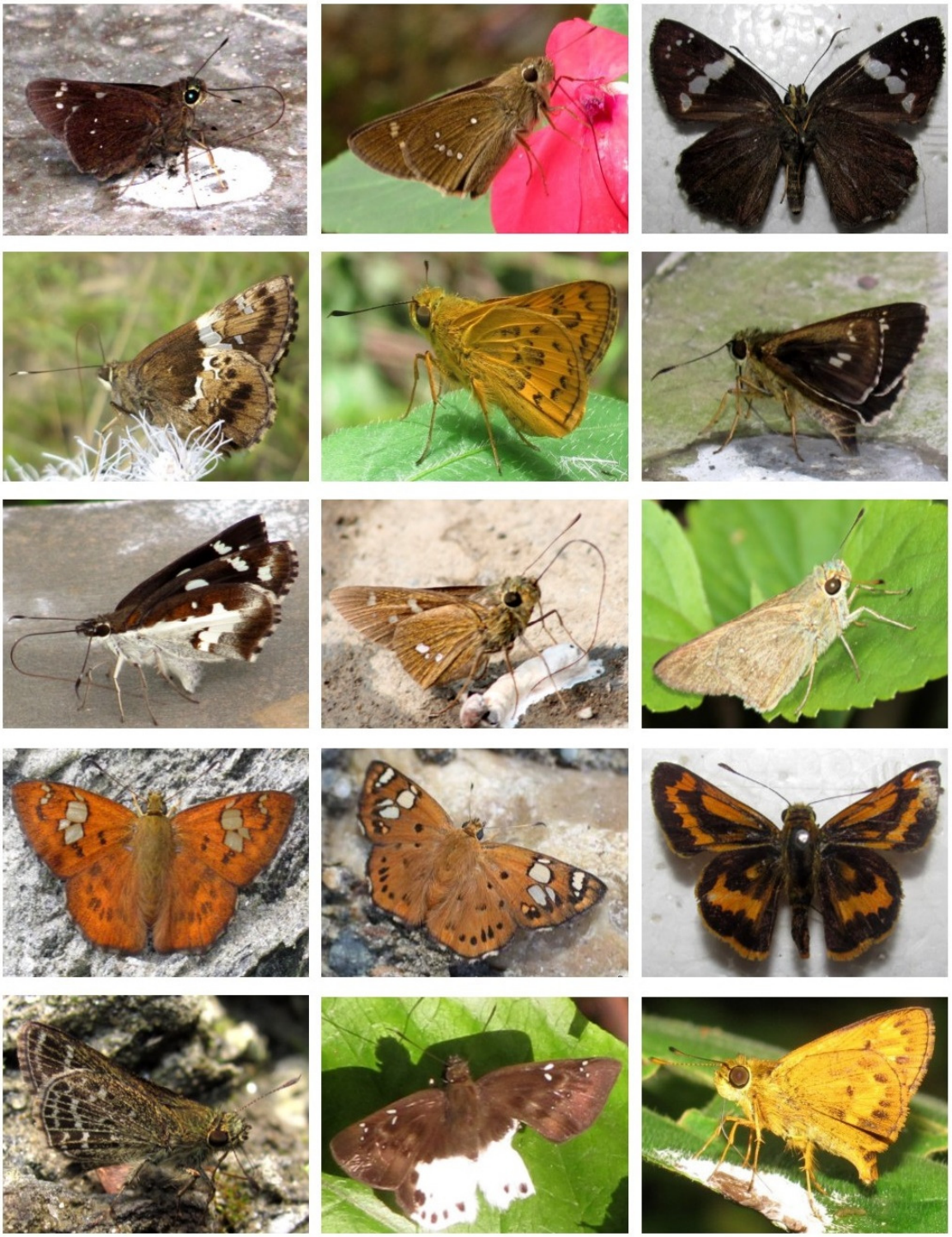


Photo 7. Hesperiidae recorded from Tsirang district, Bhutan. *Pelopidas assamensis; Pelopidas sinensis; Chamunda chamunda; Hyarotis adrastus; Potanthus nesta; Halpe arcuate; Udaspes folus; Polytremis discrete; Pelopidas mathias; Pseudocoladenia dan; Coladenia indrani indrani* (Sonam Dorji)*; Potanthus dara; Aeromachus stigmatus; Tagaides litigiosa; Oriens goloides.*

Photo Plate 7

BUTTERFLIES OF TSIRANG

HOME | BUTTERFLY BIOLOGY | SPECIES PAGE | PHOTO GALLERY | PUBLICATIONS | CONTACT

Dedicated to the celebration of the 60th Birth Anniversary of His Majesty the Fourth Druk Gyalpo, Jigme Singye Wangchuck

For any objections on the contents of website please write to jatishwor@bhutanbutterflies.org

Checklist of Butterflies of Tsirang

Singh & Chib (2015) reported the presence of 670 species; Papilionidae (55 species), Pieridae (51 species), Lycaenidae (160 species), Nymphalidae (265 species), and Hesperiidae (139 species) from all the parts of Bhutan which is far less than earlier expected to be approximately 800-900 species and subspecies of Bhutan butterflies present in Bhutan (Poel & Wangchuk, 2007). The main goal of species pages is to collect all the natural history information that is known about our butterflies, and to present it on-line for free to anyone interested in Bhutan butterflies. A major component of species pages is a constantly growing collection of reference photographs of Bhutan butterflies. These photographs depict butterflies in nature, illustrating the wing pattern variation across seasons, sex and individuals.

In Tsirang, 241 species of butterflies have been reported so far which is approximately 35 % of the total butterflies reported from Bhutan . Of which, few species are rare and important for conservation. Thus, understanding the butterfly ecology and their habitat is the first step towards conservation initiatives.

HOME | BUTTERFLY BIOLOGY | SPECIES PAGE | PHOTO GALLERY | PUBLICATIONS | CONTACT

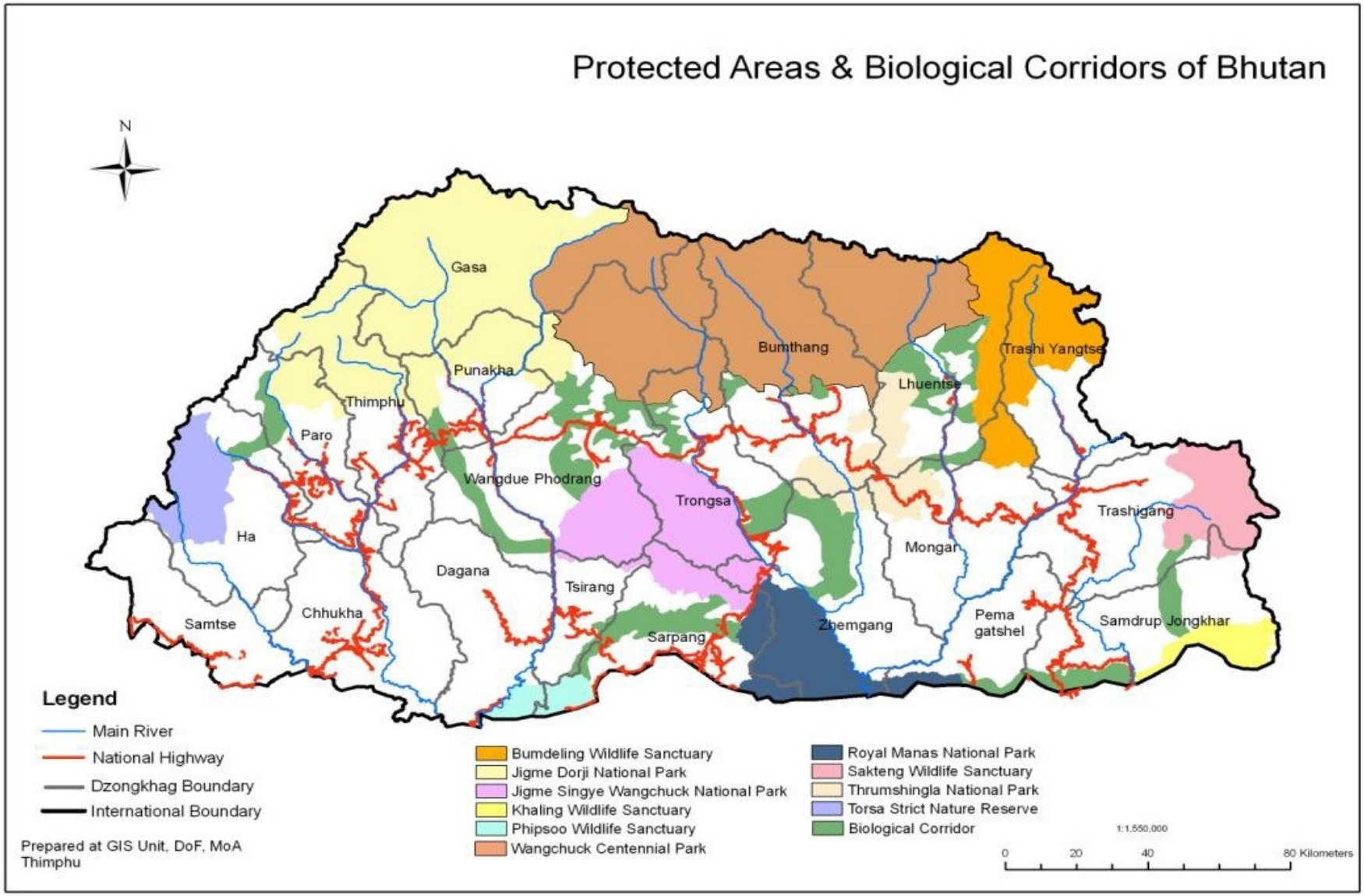
- Papilionidae [Swallowtails]
- Pieridae [Whites & Yellows]
- Nymphalidae [Brush-Footed]
- Lycaenidae [Blues]
- Hesperiidae [Skippers]

Warning:
All the photographs displayed here are the properties of Butte… …ohed and documented from different locations of Tsirang District, Bhutan. Used on these photos an… …ior permission from the authority is an offence. For permission Contact us.

Family: Nymphalidae [Brush-Footed]

The largest family among the butterflies consists of around 6,000 known species. The family consist of medium to large size butterflies. Fist pair of legs are useless for walking and covered with hairs, brush like in males, without claws. Antennal club usually very clear in the species of these family.

Photo 8 Screenshots of the website on Butterflies of Tsirang http://www.bhutanbutterflies.org/


Protected Areas & Biological Corridors of Bhutan
N
Gasa
Punakha
Thimphu
Paro
Ha
Wangdue Phodrang
Bumthang
Lhuentse
Trashi Yangtse
Trongsa
Trashigang
Mongar
Dagana
Tsirang
Samtse
Chhukha
Sarpang
Zhemgang
Pema gatshel
Samdrup Jongkhar
Legend
Main River
National Highway
Dzongkhag Boundary
International Boundary
Bumdeling Wildlife Sanctuary
Jigme Dorji National Park
Jigme Singye Wangchuck National Park
Khaling Wildlife Sanctuary
Phipsoo Wildlife Sanctuary
Wangchuck Centennial Park
Royal Manas National Park
Sakteng Wildlife Sanctuary
Thrumshingla National Park
Torsa Strict Nature Reserve
Biological Corridor
1:1,550,000
0 20 40 80 Kilometers
Prepared at GIS Unit, DoF, MoA
Thimphu