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The Late Season Butterflies of Koshi Tappu Wildlife Reserve, Eastern Nepal

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Abstract
Koshi Tappu Wildlife Reserve was explored for butterflies in November, 1999. This was indeed little late for lowland butterflies still brought a list of 54 species categorized under seven families out of 14 families occurring in Nepal. Most of the recorded species in this wetland were common to moderately common in status inhabiting open areas and visitors of water sources and flowers. The altitudinal range and global distribution of each and every recorded species have also been mentioned here.

Keywords: Butterflies, Koshi Tappu Wildlife Reserve

Introduction

Koshi Tappu Wildlife Reserve accommodates tropical butterflies inhabiting mostly of open, wetland and bushy habitat types. The season for butterfly in this part basically starts from the first week of March and lasts upto the end of November. The peak season for diversity is associated mainly with warm and humid climate of June which lasts upto the end of September. Though species richness was found less in the month of November, still this study provided a list of 54 species.

Common vegetations along the trails and spurs of this Reserve are *Dalbergia sissoo, Acacia catechu, Lantana camera, Zizyphus* sp., *Eupatorium* and grasses. *Lantana* and *Zizyphus* were seen acting as good hosts attracting many species like *Precis atlites*, *Eurema hecabe*, *Castalius rosimon* etc. Grass loving species like *Pelopidas mathias* and *Borvo bevani* were sighted frequently in this part. Water loving *Neptis hylas,* shade loving *Melanitisleda* and *Mycalesis* species were common around the central part of this Reserve area.

The popular species of Koshi Tappu Wildlife Reserve is *Eurema hecabe* which has a continuous brood all the year round, while many other species have single or two broods and disappear during hibernation period mainly in December to the end February. The fresh forms emerge out in March and appear till the end of November. Other common species in this part includes *Catopsilia pyranthe*, *Euploea core*, *Castalius rosimon* etc.

November is the late period for butterflies so the species occurring in this month like *Eurema hecabe*, *Precis atlites*, *Precis almana* and *Ariadne merione* were observed in faded and damaged forms. Titegachhi side of this Reserve has the representation of better diversity where good forest of *Shorea robusta* and other mixed vegetations can be seen. This area displays butterflies like

Anaemorphen descombesi, *Cathaemia hyparete*, *Euploea mulciber* and some lycaenids. The eastern Prakashpur has comparatively better diversity of butterfly than other parts. Big swallowtails like, *Menelaides helenus*, *Archillides polyctor*, *Pachiliopta aristolochae* and *Menelaides polytes* can be observed frequently around this side. *Menelaides polytes* are lacking in the mid part of this Reserve. Haripur, the western part of Koshi Tappu Wildlife Reserve has good representation of *Precis almana*, *Precis hierta*, *Precis ephita*, *Precis orithya*, *Colias electo fieldii*, *Zizeeria maha* etc.

Materials and methods

The time from the third week of November to the first week of December was devoted to carry out a study survey of the late season butterflies of Koshi Tappu, covering almost all the potential sites lying within the perimeter of this Reserve area. Some confusing species were collected by sweeping butterfly net while the species easily identifiable in the field were just noted down. To make a comparative study, the areas lying at the periphery of this reserve were also considered in order to determine the exact occurring species inside and outside. All the collected specimens were brought to Natural History Museum in Kathmandu to confirm their species level by identification work. These were tallied with the specimens already have been deposited in the museum besides consulting relevant literatures (Smith, 1989; Khanal and Smith, 1997). All the collected specimens are deposited at Natural History Museum in Kathmandu.

Results and discussion

54 species of butterfly were reported in November, 1999. All the reported species with their altitudinal range, habitat types and global distribution have been provided in Table 1.

Almost all the species reported in Koshi Tappu Wildlife Reserve are characterized with tropical climatic type. *Castalius rosimon* which rely solely upon leguminous plants are abundant especially in summer and autumn but disappears completely in the cold month of January. This reveals an interesting fact that the winter season checks the growth of leguminous plants which in turn affects the survival of *Castalius rosimon* during that period (Shrestha *et al.,* 2001).

Pieris brassicae a most popular species across the country was totally absent in the central part of this reserve though was quite abundant outside. *Delias acalis* Wallace (1867) is not a common species. Its subspecies *pyramus* which also occurs here was first described from Nepalese specimen (Khanal and Smith, 1997). Previously it was designated as *Delias thysbe* (Smith, 1989).

This reserve houses multi species of butterfly which are found mostly nearby water, bushes, flowers and open areas. The bushes and other vegetations growing on the trail and wetland sides attract diversified species. Some important host vegetations for butterflies in this part of the reserve are *Lantana*, *Ipomea*, *Zizyphus*, and *Eupatorium* etc. Bamboo plantation along the trail sides can give good result sheltering many species of bamboo loving satyrids.

Almost all the species observed during this time of the year has been ranked as common to moderately common in status. Rare species generally emerge out from June to August. So this study month, November, can be said little late to trace out existing diversity to its maximum level.

Table 1. ***Global distribution of butterflies***

Family	S. N	Genus and species	Altitudinal Range	Habitat	Global Distribution
Papilionidae	1.	*Menelaides polytes romulus* Cramer 1775	Terai to 1820 m	Open, Flowers	Indo Malayan region, China, Nepal
	2.	*Archillides polyctor* Doubleday 1842	606 m to 2365 m	Open and Wooded Areas	Northern India, Myanmar (Smith, 1989), Nepal
	3.	*Papilio demoleus* Linnaeus 1758	Terai to 1520 m	Open places, and flowers	Australia, S.China, India, Malaya, Nepal
	4.	*Papilio machaon emhippocrates*Verity	Terai to 1970 m	Open and Sunny places	Europe, Asia
	5.	*Menelaides helenus* Linnaeus 1758	Lowland to 1970 m	Open places, visits flowers and water.	India, Myanmar,Nepal,
	6.	*Pachiliopta aristolochae* Fabricius 1775	Lowland to 1580 m	Open places, visits flowers	Tropical parts of south Asia
Pieridae	7.	*Catopsilia pyranthe Linnaeus 1758*	Terai to 272 m	Open, sunny and flowers	Africa,Arabia to India, Sri Lanka, Malaya, Nepal
	8.	*C. pomana* Fabricius 1775	Terai to 1515 m	Wetland, bright sun	Indo-Australian region
	9.	*Goenpteryx rhamni* Doubleday 1847	Up to 3760 m	Jungles and open places	Europe and Asia
	10.	*Catophaga lyncida Cramer*	Up to 1580 m	Open and Wetland areas	Australia, Phillipines, India, Nepal
	11.	*Eurema hecabe contubernalis* Moore 1886	Terai to 2640 m	Wetland areas and open places	Sri Lanka, India, Australia, Myanmar, Nepal.
	12	*Eurema blanda silhetana* Wallace 1867	Lowland to 1790 m	Open and wetland areas	India, Sri Lanka, Myanmar, Australia, Nepal.
	13.	*Eurema brigitta rubella* Wallace 1567	Terai to 3030 m	Grassland and wetland	Sri Lanka, India, Nepal, Myanmar, Africa
	14.	*Anaemorphen descombesi* Fruhstorter 1910	Terai to 1515 m	Open areas	Thailand, Malaysia, Myanmar, Nepal, India
	15.	*Cathaemia hyparete* Linnaeus 1758	Lowland to 1670 m	Open places	India, Philippines, Nepal.
	16.	*Delias acalis Wallace* (1867)	Lowland to 1580 m	Open places	India, Nepal, Myanmar, Malaysia
	17.	*Delias pasithoe* Linnaeus 1758	Terai to 1455 m	Open places, wetland	India, China, Burma, Nepal
	18.	*Cepora nerissa phryne*	Lowland to 1820	Wetland and	Indonesia, Nepal,

		(Fabricius 1775)	m	open places	India
	19.	*Pareronia valeria hippie* (Fabricius 1787	Lowland to 1520 m	India, Nepal, Philippines	Open areas
Lycaenidae	20	*Zizeeria maha* (Kollar 1848)	Terai to 2430 m	Grassy areas	China, Japan, Myanmar, India, Nepal
	21	*Freyeria putli* (Kollar 1848)	Up to 1970 m	Grassy areas	India, Sri Lanka, Myanmar, Nepal
	22.	*Celastrina puspa* Horsfield	Lowland to 2580 m	Near water, forest and open places	India, Nepal, Sri Lanka to Philippines
	23.	*Castalius rosimon* Fabricius 1775	Up to 1215 m	Open areas	Philippines, Malaysia, India, Nepal.
	24	*Caleta caleta* Hewitson 1876	Up to 606 m	Open areas	India, Nepal, Sri Lanka, Burma, Philippines
	25	*Jamides celeno aelianus* (Fabricius 1793)	Lowland to 1670 m	Open places, near water	Thailand, Myanmar, Nepal, Sri Lanka, India
	26.	*Lampides boeticus* Linnaeus 1767	Lowland to 3950 m	Open places and visits flowers	India, Nepal
	27	*Zizina otis otis* (Fabricius 1787)	Terai to 1520 m	Sunny areas	Nepal, India, China
Nymphalidae	28.	*Precis lemonias* (Fruhstorfer 1912)	Terai to 1820 m	Flowery and open place	India, China, Nepal, Sri Lanka
	29.	*Precis almana* Linnaeus 1758	Up to 1790 m	Open places	Nepal, India, Sri Lanka, Philippines
	30.	*Precis atlites* Linnaeus 1763	Up to 1970 m	Open places	India, Sri Lanka, Myanmar, Nepal
	31.	*Precis orithya* Hubner 1816	Up to 2060 m	Open grassy places	Australia, India, Sri Lanka, Nepal, Africa
	32.	*Precis iphita* Fabricius 1779	Up to 1970 m	Many types	India, Sri Lanka, China, Nepal
	33.	*Precis hierta* Fabricius 1798	Terai to 2030 m	Sunny and open grasslands	China, India, Myanmar, Sri Lanka, Nepal
	34.	*Neptis hylas* Moore 1874	Terai to 3180 m	Open and forest areas	India, China, Sri Lanka, Myanmar, Nepal
	35.	*Athyma perius* Linnaeus 1758	Terai to 2275 m	Open areas	India, China, Nepal, Myanmar
	36.	*Athyma opalina* (Elwes 1888)	Terai to 2730 m	Open and wooded areas	India, Nepal, Myanmar
	37.	*Phalanta phalantha* Drury 1770	Up to 3030 m	Open, grassy areas and also flowers.	Japan, Australia, India, Sri Lanka, Myanmar, Philippines, Nepal.

	38	*Hypolymnas bolina* Drury 1773	Up to 1455 m	Flowers, open places	Mauritius, India, Australia, Nepal
	39.	*Vagrens egista* Cramer 1780	Terai to 2272 m	Near water, sunny forest	India, Australia, Philippines, Myanmar, Nepal
	40	*Ariadne merione* Cramer 1777	Up to 1515 m	Open areas	India, Sri Lanka, Myanmar, Nepal
Satyridae	41.	*Melanitis leda leda* Linnaeus 1758	Terai to 1820 m	Shady and dark places, open and forest areas	Asia, Australia, Africa
	42.	*Mycalesis persius* Fabricius 1798	Terai to 1820 m	Shady forest	Myanmar, Sri Lanka, India, Nepal
	43.	*Orsotriona medus*???	Lowland species	Open and forested areas	India, Nepal, Myanmar, Sri Lanka, Australia, New Guinea
Danaidae	44.	*Euploea core core* Cramer 1780	Lowland to 1666 m	Open places	India, Nepal, Myanmar, Sri Lanka, Australia
	45.	*Euploea klugii collari* Moore 1858	Lowland species	Open places	China, India, Nepal, Sri Lanka, Myanmar, Malaysia
	46.	*Danaus genutia* Cramer 1779	Lowland to 2730 m	Open areas	India, China, Nepal, Myanmar, Sri Lanka, Malaysia.
	47.	*Danaus chryssipus* Linnaeus 1758	Up to 2727 m	Open areas	Many countries
	48.	*Danaus aglea* Moore 1883	Terai to 1818 m	Open habitat	Myanmar, Thailand, Malaysia, Sri Lanka, Nepal, India.
Hesperidae	49.	*Pelopidas sinensis* Mabille 1877	Upto 2430 m	Open, sunny and flowery areas	India, china, Nepal
	50.	*Pelopidas mathias* Fabricius 1798	Terai to 1460 m	Open places	India, Myanmar, Malaya, Nepal
	51.	*Borbo bevani* Moore 1878	Terai to 1520 m	Sunny grassland	Nepal, Bhutan, India, Myanmar, China
	52.	*Spialia galba* Fabricius 1793	Terai to 1665 m	Open grassland	India, Sri Lanka, Burma, Nepal
	53.	*Tagiades litigiosa* Moschler 1878	Terai to 1520 m	Open, near water	China, Myanmar, India, Nepal
	54.	*Parnara guttata* Moore 1865	Up to 2275 m	Open and sunny places	India, China, Myanmar, Nepal.

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