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Butterflies species and Habitat of Tehsil Choa Saiydan Shah Punjab Pakistan

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Abstract
Butterflies and sensitive to temperature, solar radiation, microclimate and the most important the availability of the host plants for ovipositing and larval development. The present study was conducted in Tehsil Choa Saiydan shah (Chakwal) Punjab Pakistan during March to December 2014. A total of 500 specimens were collected from 20 localities of belong to 31 species, 20 genera and 4 families. Family Pieridae species are *Eurema brigitta, Eurema hecabe, Colias erate, Colias fieldi, Catopsilia Pomona, Catopsilia pyranthe, Colotis amata, Aporia nabellica, Pieris canidia, Pieris brassicae* and *Pieris deota*. Family Nymphalidae species are *Junonia almana, Cynthia cardui, Limenitis trivena, Danaus chrysippus, Danaus genutia, Tirumala limniace, Argyreus hyperbius, Phalanta phalanta, Junonia orithya* and *Catopsilia pyranthe*. Family Lycaenidae species are *Castalius rosimon, Tarucus callinara* and *Leptotes plinius* and Family Papilionidae species are *Hypermnestra Helios, Parnassius loxias, Papilio demoleus, Papilio arcturus, Papilio machaon, Papilio polyctor, Papilio clytia.* Preset study indicated that the *Pieris brassicae, Danaus chrysippus, Junonia orithya, Catopsilia pyranthe, Colias erate, Papilio machaon* are the most common species of butterflies, *Pieris brassicae* present very common during the month of March to July. The area has diverse fauna of butterflies and recommended for future studies.

Keywords: Butterflies, Pieridae, Nymphalidae, Lycaenidae, Papilionidae, Choa Saiydan shah

Introduction
Butterflies are considered as the symbol of grace and beauty since from the ancient time and are best known due to their bright colours, diurnal habitats, beautiful shapes and flight, which gives gratification to everyone [1, 2]. Butterflies are the most traditional insects present in numerous colorful patterns, extraordinary reproduction, nutritional behaviour and death. They are considered as potentially useful bio indicators of an ecosystem, sensitive to change in temperature and availability of host plants for ovipositing, and larval development [3]. They found everywhere almost every part of the earth where ever the flowering plants are found; except Arctic and Antarctic region of the planet [4]. Both adults and larvae of butterflies and moths are dependent of specific host plants for pollen, nectar and for foliage as their food. That is why butterfly diversity represents the overall plant diversity i.e. herbs and shrubs in the given area [5]. Butterflies interact with plants as herbivores and pollinators [6]. Adults of butterflies are divided into two categories on the basis of feeding i.e. nectar feeding butterflies and fruit feeding butterflies, they mainly get most of their nutritional requirements from decaying matter, plant sap and rotting fruits [7].

Martial and Methods
Study Area
Choa Saiydan Shah is one of the Tehsils of District Chakwal Punjab Pakistan of about 27822 acre area, located in the south of Chakwal about 35 kilometers from the centre on the Chakwal in the east of Kallar kahar, about 27 km from M2 motorway. The town is located in bowl shaped valley, surrounded by hills. The dominant vegetation and trees of the hill are *Acacia modesta*, *Prosopis cineraria, Acacia nilotica, Ziziphus mauritiana, Ficus benjamina* and *Saccharin sponteunum.* It is 2218 ft (676m) above the sea level with coordinates 32°43′00″N 72°59′00″E.

Aim of present study was to explore the butterflies species and Habitat of Tehsil Choa Saiydan Shah (Chakwal) Punjab Pakistan. This study was conducted during March 2014 to December 2013. The butterflies were collected during day time from March to December 2014. The collection was done with the help of Arial net and by hands. The collected specimens were killed with the help of cyanide bottles. After killing the specimens were pinned and set their body parts on thermopile sheet in entomology laboratory. Collected specimens were tagged with their common name, scientific name, family, and subfamily.
The identification of adult butterflies was done with the help of available literature [8-10 11] and identification keys [12, 13].

Results
This was the first study of fauna of butterflies and species habitat of this area. In present study a total number of 500 specimens were collected belong to 31 species, 20 genera, 10 subfamilies and 4 families. Family Pieridae comprises the largest number of specimens i.e. 145 (48%), Family Nymphalidae 105 (35%) specimens were collected followed by 30 (10%) specimens of Family Papilionidae and 20 (6%) specimens are of Family Lycaenidae. The checklist of butterflies of Tehsil Choa Saiydan Shah (Chakwal) Punjab Pakistan followed by systematic position of each species given below

Systematic Classification of Collected Butterflies
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

Subfamily: Coliadinae
Species: 1 *Eurema hecabe*, Common Grass Yellow (Linnaeus, 1758)
Species: 2 *Eurema brigitta*, (STOLL, 1780)
Species: 3 *Colias erate*, Small Grass Yellow (Esper, 1805)
Species: 4 *Colias fieldii*, Dark Clouded Yellow (Ménétriés, 1855)
Species: 5 *Catopsilia pomona*, Lemon Migrant Butterfly (Fabricius, 1775)
Species: 6 *Catopsilia pyranthe*, White Migrant Butterfly (Linnaeus, 1758)
Species: 7 *Colotis amata*, Small Salmon Arab (Fabricius, 1775)
Subfamily: Pierinae
Species: 8 *Aporia nabellica*, Dusky Black vein (Boisduval, 1836)
Species: 9 *Pieris canidia*, Asian Cabbage White (Linnaeus, 1768)
Species: 10 *Pieris brassicae*, Large Cabbage White (Linnaeus, 1758)
Species: 11 *Pieris deota,* Kashmir Large White (de Nicéville, 1884)

Family: Papilionidae)

Sub-Family: Parnassiinae
Species: 1 *Hypermnestra helios,* Desert Apollo (Nickerl, 1846)
Species: 2 *Parnassius loxias,* (Pungeler, 1901)
Subfamily: Papilioninae
Species: 3 *Papilio demoleus,* Lemon Butterfly) (Linnaeus, 1758)
Species: 4 *Papilio arcturus*, Blue Peacock (Westwood 1842)
Species: 5 *Papilio machaon*, Common Yellow Swallowtail (Linnaeus, 1758)
Species: 6 *Papilio polyctor*, Common Peacock (Boisduval, 1836)
Species: 7 *Papilio clytia,* Common Mime (Linnaeus, 1758)

Family: Lycaenidae

Subfamily: Polyommatinae
Species: 1 *Castalius rosimon,* Common Pierrot (Fabricius, 1775)
Species: 2 *Tarucus callinara,* Spotted Pierrot (Butler 1886)
Species: 3 *Leptotes plinius,* Zebra Blue (Fabricius, 1793)

Family: Namphalidae
Subfamily: Nymphalinae
Species: 1 *Junonia orithya,* Blue Pansy (Linnaeus, 1758)
Species: 2 *Junonia almana*, Peacock Pansy (Linnaeus, 1758)
Species: 3 *Cynthia cardui,* Painted Lady (Linnaeus, 1758)
Subfamily: Limenitidinae
Species: 4 *Limenitis trivena,* Indian White Admiral (Moore, 1864)
Subfamily: Danainae
Species: 5 *Danaus chrysippus,* Plain Tiger (Linnaeus, 1758)
Species: 6 *Danaus genutia,* Striped Tiger (Cramer, 1779)
Species: 7 *Tirumala limniace,* Blue Tiger (Cramer, 1775)
Subfamily: Heliconiinae
Species: 8 *Argyreus hyperbius,* Tropical or Indian Fritillary (Linnaeus, 1763)
Species: 9 *Phalanta phalanta,* Common Leopard (Drury, 1773)
Subfamily: Coliadinae
Species: 10 *Catopsilia pyranth,* White Migrant Butterfly (Linnaeus, 1758)

Discussion
Butterflies fauna studied by many scholars from the different provinces of Pakistan Ahsan and Iqbal studied the butterfly fauna of Lahore [14]. Naz surveyed the butterfly fauna of Buner Khyber Pakhtunkhwa in the period of 10 months [15]. Khan reported about16 species from Kotli, 19 species from Bhimber and 20 species from Mirpur. About 450 specimens were collected during this study belonging to 36 species of 25 genera from 8families [16].
Previously different scholars have done studies on butterflies from different locations of Punjab Pakistan, but area under studied remains untouched regarding butterflies. The present study was the first attempt to explore the butterflies' fauna of Tehsil Choa Saiydan Shah (District Chakwal). During studied period March2013 to December 2013, 300 specimens were collected from the different localities of this area; 31 species belonging to 20 genera, 10 subfamilies and 4 families. Family Pieridae comprises the largest number of specimens' i.e. 145 (48%), Family Nymphalidae 105 (35%) specimens were collected followed by 30 (10%) specimens of Family Papilionidae and 20 (6%) specimens are of Family Lycaenidae. Preset study indicated that the *Pieris brassicae, Danaus chrysippus, Junonia orithya, Catopsilia pyranthe, Colias erate, Papilio machaon* are the most common species of butterflies, *Pieris brassicae* present very common during the month of March to July. Above study also showed that the butterflies with large size are rear and numbers of butterflies increases as the size decreases. It may be due to unavailability of plantation or uncontrolled catching of large butterflies.

Table 1: Butterflies Specie, wing span, Occurrence, Habitat (Grassland, Plantation, Botanical and Nursery Garden and Scrub) and Distribution (V= Very)

Sr. no.	Species	Wing span (mm)	Occurrence	Habitat	Distribution
1	*Junonia orithya*	40-55mm	August to October	Grassland, Plantation, Botanical and Nursery Garden, Scrub	Common
2	*Junonia almana*	40-60mm	June, July	Grassland, Plantation	Common
3	*Cynthia cardui*	50–65 mm	July to September	Botanical and Nursery Garden, Scrub	V. common
4	*Limenitis trivena*	53 to 81 mm	July to September	Grassland, Plantation, Botanical and Nursery Garden, Scrub	Rear
5	*Danaus chrysippus*	70-80mm	July to September	Grassland, Plantation, Botanical and Nursery Garden, Scrub	Rear
6	*Danaus genutia*	75 to 95 mm	July to September	Grassland, Plantation, Botanical and Nursery Garden, Scrub	Rear
7	*Tirumala limniace*	98–106 mm	August	Grassland, Plantation, Botanical and Nursery Garden, Scrub	V. rear
8	*Argyreus hyperbius*	80–98 mm	August	Botanical and Nursery Garden, Scrub, Grassland	Rear

9	*Phalanta phalanta*	50–55 mm	August, September	Nursery Garden, Scrub	Common
10	*Catopsilia pyranthe*	60-65mm	August, September	Botanical and Nursery Garden	Common
11	*Eurema hecabe*	35-45mm	August, September	Grassland, Plantation	V. common
12	*Eurema brigitta*	30–35 mm	August, September	Botanical and Nursery Garden, Scrub	V. common
13	*Colias erate*	23–26 mm	October, November	Grassland, Plantation, Botanical and Nursery Garden, Scrub	V. common
14	*Colias fieldi*	40-48 mm	July	Grassland, Plantation, Botanical and Nursery Garden, Scrub	Common
15	*Catopsilia pomona*	50-70mm	July	Garden, Scrub	Common
16	*Catopsilia pyranthe*	61- 65mm	July	Botanical and Nursery Garden, Scrub, Grassland	Rear
17	*Colotis amata*	28- 30mm	July to September	Nursery Garden, Scrub	V. common
18	*Aporia nabellica*	60-70mm	March to July	Grassland, Plantation, Botanical and Nursery Garden	Rear
19	*Pieris canidia*	50-60 mm	March to May	Scrub, Grassland, Plantation, Botanical	Common
20	*Pieris brassicae*	55-70 mm	March to July	Botanical and Nursery Garden, Grassland	V. common
21	*Pieris deota*	40- 60mm	August	Grassland, Plantation	Common
22	*Hypermnestra helios*	52-66mm	August	Grassland, Plantation	Common
23	*Parnassius loxias*	62–94 mm	October	Grassland, Plantation, Botanical and Nursery Garden	Rear
24	*Papilio demoleus*	60-80mm	October, November	Scrub	Rear
25	*Papilio philoxenus*	100-120mm	September	Scrub	V. Rear
26	*Papilio machaon*	65-75mm	September	Scrub	Rear
27	*Papilio polyctor*	100-120mm	September to November	Botanical and Nursery	V. rear
28	*Papilio clytia*	80-110mm	August	Grassland, Plantation, Botanical and Nursery Garden	V. rear
29	*Castalius rosimon*	25-30	July, August	Botanical and Nursery Garden	V. common
30	*Tarucus callinara*	18-23	September, October	Botanical and Nursery Garden	V. common
31	*Leptotes plinius*	21-23	June	Botanical and Nursery Garden, Grassland	V. common

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