



BUTTERFLIES OF DISTRICT BATTAGRAM KHYBER PAKHTUNKHWA, PAKISTAN

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Abstract

A feasibility study of studying butterfly fauna of Battagram district was conducted from March to October of the year 2018 and found 29 species that belong to 19 Genera and six families. All the study sites located at the varied ecological zones including Battagram City, Thakot, Shamlai, and Allai Tehsil including Allai Valley pointed the authors towards the biological richness of an area. The families that have been recognized by the parents are Nymphalidae (Eleven species), Pieridae (nine species), Papilionidae (Four species), Satyridae (Three species), Libytheidae (One species), and Danaidae (One species).

In the field, aerial nets, ethyl acetate jars, and entomological boards were employed in the collection made. The taxonomic position of the collected specimens was determined by consulting taxonomic literature and museum-lent purposes for specimen identification The identified specimens were donated to the Insect Museum of the Health Service Academy Islamabad. Supporting photographic data are presented to identify the species.

This work also affirms the possibilities of the butterfly to act as a pollinator and as an indicators for environmental health referencing threats such as loss of habitat and the application of pesticides. These results enable further research and conservation of biologically diverse sites of the studied area of Battagram.

Introduction

The Battagram butterflies survey was conducted from March to October of the year 2018. During the field work during this period about fourteen sites will be identified which produced a Worth about three hundred specimens some of the important sites are: Battagram City the administrative headquarters of Thakot Shalmali Ajmera Banian and the picturesque Allai Valley which embodies the natural and cultural capital of Battagram area. Some of the other sectors are Rashang, Paimal Sharif, Kuzabanda, and Peshora sectors – it is a great place of natural and social powerhouse. Almost all these important village tracts possess the

rural-like look of the district such as Kot Gala, Ajmera Banda, Shingli Payeen and Shingli Bala Other such village tracts contribute to the geographical and natural variations of terrain of Battagram include Battal, Chapra, Salazai, Jigai, Kas Pul and Dheri. All these areas are within the ecological-culture-historical geography of the district. When taken to the species level these specimens were identified and thereby added documentation of twenty-nine species of 19 genus and 6 families.

Nymphalidae: 7 genera, 11 species.

Pieridae: 6 genera, 9 species.

1. Papilionidae: 1 genus, 4 species.

2. Satyridae: 3 genera, 3 species.

3. Libytheidae: 1 genus, 1 species.



4. Danaidae: 1 genus, 1 species.

Highlights

Most diverse families: Nymphalidae and Pieridae.

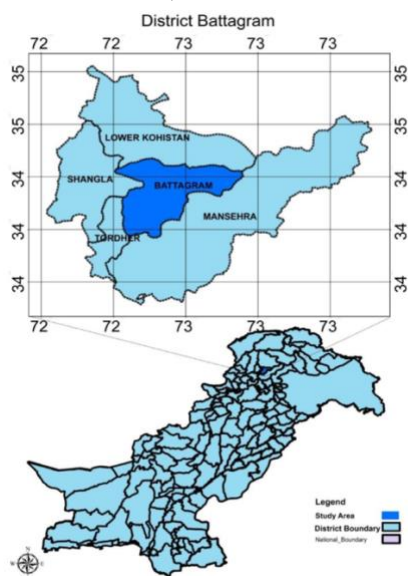
Rare families: Only two families have only one species each – Libytheidae, and Danaidae.

Significance: Butterflies are pollinators and bioindicators or measures of the health status of ecosystems associated with them.

Materials and Methods

Study Areas

This study was conducted in the summer of (2018) in the District Battagram of Khyber Pakhtunkhwa, Pakistan



(Fig. A) Sampling was performed in one square kilometer area at each site.

Collection Methods

The collected butterfly specimens belong to the Battagram region of Pakistan and to give the details of capturing each butterfly specimen standard process has been followed step-wise. Here is the detailed procedure:

Tools Used

Aerial Nets: Aerial samples were collected using aerial nylons with long handles of

between 3 to 4 feet long. Among the nets used were revolving wire rings with a diameter of 25 cms which were chosen in a manner not to harm the butterflies and part of their body and wings.

Sampling Timing

Session Duration: Mean time taken per sample from each center ranged from 30-60 minutes for surveys.

Frequency: The frequency of multiple sessions was chosen as 10-15 days to capture samples of different species,

Daylight Hours: All the collections were done in the daylight because it was realized that butterflies were most active during that period.

Killing and Preservation

Killing:

Sites were followed by euthanasia or by killing in killing jars which had vessels containing cotton soaked in ethyl acetate at the base to eliminate any tissue deterioration.

Stretching:

The last of the surviving mosquitoes was dissected only a few days after the anis diapsis of other mosquitoes on the entomologic boards. Their bodies had been put in entomological pins and their antennae lay – had been arranged in midline to facilitate their identification later.

Relaxation:

Incompliant materials were placed in the calorific for mini weeks to submerge the body for INR; PAGE stretching to be made.

Drying:

Thereafter, the specimens were stretched and mounted on the stretching boards for not less than 4 days later within the process.



This step maintained their shape and were less likely to be subjected to physical abuse during storage at that time.

Storage:

Subsequently, slides were washed away from the vial with noted media and after allowing the slide to dry, the specimens were transferred to wooden boxes. To avoid the buildup of pests, the boxes used lay on naphthaline balls & these boxes were therefore sprinkled with copex powder.

Photographs

Full-Body Images: The entire specimens were taken photographing the total morphological outlook with digitalized high-resolution digital cameras.

Detailed Taxonomic Features: For instance, on some occasions that involved the analysis of species using the networks of the veins in the leaves, the scales, or the genitalia of the male samples, photographs were taken using the micro-cameras.

Identification

Literature Comparison: Certain of these specimens were identified by general taxonomic materials while others were identified by special literature on butterflies as well as guides.

Reference Collection: Recapture was again easier said with the specimens collected earlier with the samples deposited in the National Insect Museum (NIM Pak) available at the National Agricultural Research Centre (NARC Islamabad).

Taxonomic Keys: The above modifications have been made to increase the maneuverability of designing the family, of a generic and of the specific identification keys... irrespective of any future researcher's needs.

Depository

Final Storage: Subsequently the specimens were collected and kept in the Insect Museum of the Department of Entomology of Health Services Academy Islamabad. This was of immense benefit to retain them for future uses of references by skilled scholars, university students, taxonomists, conservationists, and biologists.

Results

A summary of species and family-wise distribution is provided below:

The Fauna of the Battagram Butterfly described in the current study in terms of families is quite normal and is represented in almost all the families. There are 7 genera and 11 species of this family: *E. aconthea*, *Ar. hyperbius*, *Ar. kamala*, *Ju. almana*, *Ju. orithya*, *Ju. hierta*, *Va. cardui*, *Va. indica*, *Ar. merione*, *Holo. bolina* and *N. hylas*. The second is the family Pieridae with 6 varieties of genera and 9 special kinds which are Pieridae: Such species as *Pontia daplidace*, *Colias erate*, *Colias electo*, *Colias eurytheme*, *Eurema hecabe*, *Pieris brassicae*, *Catopsilia pyranthe*, *Catopsilia crocale*, and *Gonepteryx rhamni*. Family Papilionidae includes 1 genus and 4 species: Some of these butterflies are very familiar with *Papilio polytes*, *Papilio machaon*, *Papilio demoleus*, and *Papilio polyctor* and can be classified as common butterflies. The family Satyridae is represented by 3 genera and 3 species: The butterflies: genus *Lethe rohria*, *Aph. بهران-bar*, *Hipparchia parasitas*, *Yepthima asterope*. Family Libytheidae includes *Libythea lepita* and Family Danaidae has genus *Danaus* and the only species is *Danaus chrysippus*. As a brief description of the rich butterfly fauna of India and familiarizes the reader with emergency butterflies, this work confirms that there are 19 genera and 29 species of butterfly with 6 families.

Family Nymphalidae: 7 genera, 11 species

Euthalia acantha, *Argynnis hyperbius*, *Argynnis kamala*, *Junonia almana*, *Junonia orithya*, *Junonia hierta*, *Vanessa cardui*, *Vanessa indica*, *Ariadne merione*, *Hypolimnas bolina*, *Neptis hylas*.

Family Pieridae: 6 genera, 9 species

Pontia daplidace, *Colias erate*, *Colias electo*, *Colias eurytheme*, *Eurema hecabe*, *Pieris brassicae*, *Catopsilia pyranthe*, *Catopsilia crocale*, *Gonepteryx rhamni*.

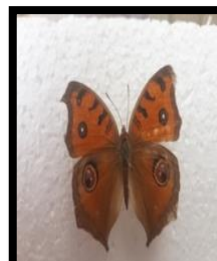
Family Papilionidae: 1 genus, 4 species

Papilio polytes, *Papilio machaon*, *Papilio demoleus*, *Papilio polyctor*.

Family Satyridae: 3 genera, 3 species

: This species of butterflies includes *Lethe rohria*, *Hipparchia parasitas*, *Yepthima asterope*.

Family Libytheidae: 1 genus, 1 species



Libythea

lepita.

Family Danaidae: 1 genus, 1 species

Danaus chrysippus.

Diversity Highlights

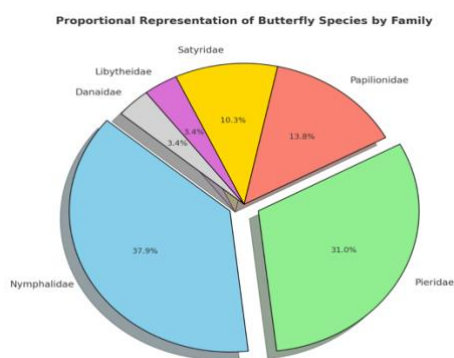
The **Nymphalidae** family emerged as the most diverse, contributing 11 species.

The **Pieridae** family followed with 9 species.

Families **Danaidae** and **Libytheidae** were the least diverse, with one species each.

Summary

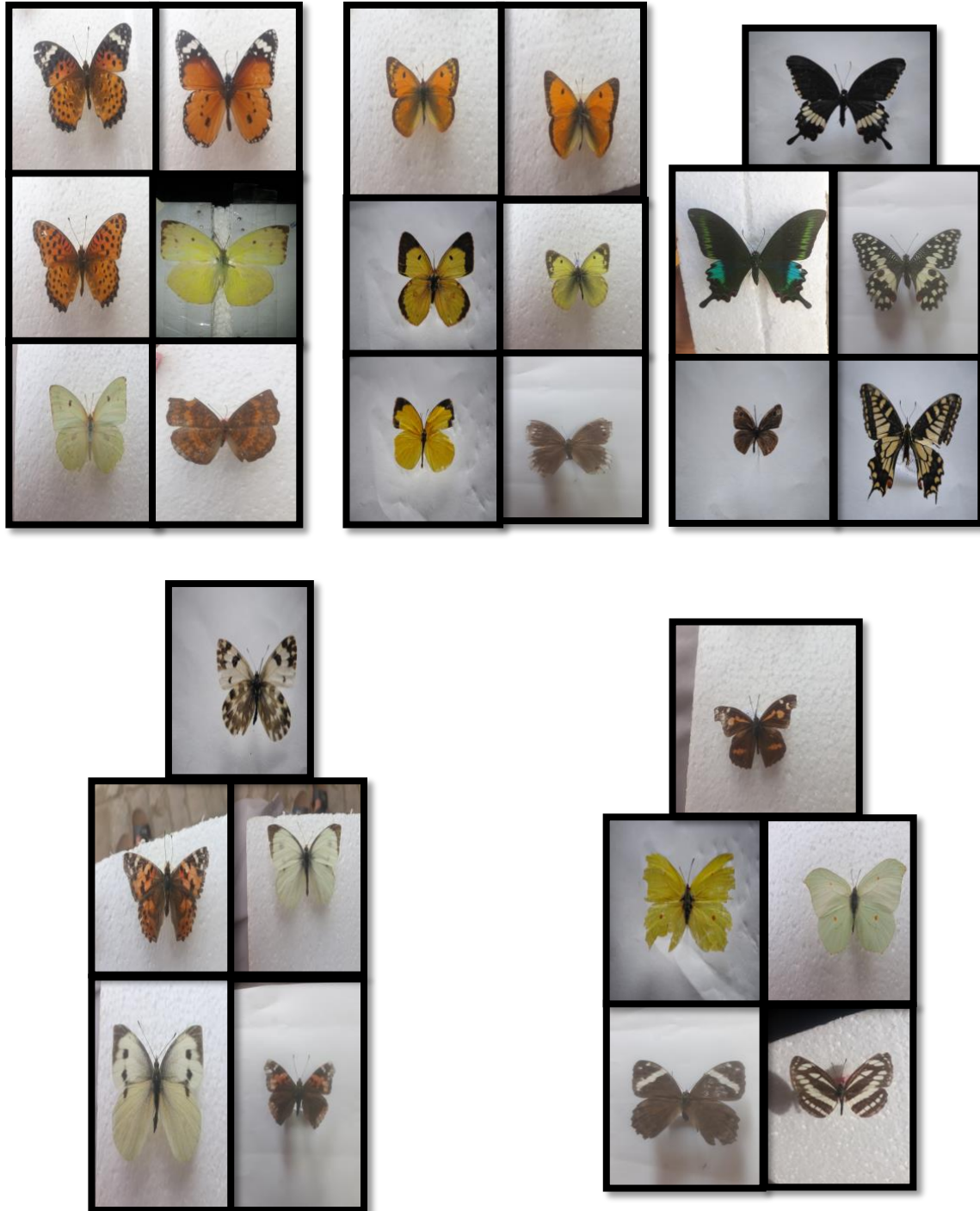
The study identified 30 butterfly species across 19 genera and 6 families in District Swabi. Nymphalidae and Pieridae families were the most diverse, highlighting the richness of the region's butterfly fauna. Comprehensive data, including





photographs, taxonomic keys, and detailed descriptions, were compiled to aid further research and conservation. These findings emphasize the ecological importance of butterflies and the urgent need for

conservation efforts to protect them from environmental threats such as deforestation, industrialization, and pesticide use.



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