Research Article

Taxonomic study of Family Papilionaceae of District Swabi, Khyber Pakhtunkhwa, Pakistan

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Abstract

A total of 26 species belonging to 14 genera of family Papilionaceae were collected and identified from the research area. The members of this family were found in abundance that is why infective amount of species were identified. *Madicago* was dominant genus with 6 species, *Trifolium* with 4 species, *Lathyrus* with 3 species following by *Trigonella* and *Vicia* with 2 species each. The rest of genera i.e *Alhaji*, *Arachis*, *Cicer*, *Dalbargia*, *Erythrina*, *Melilotus* *Pisum*, *Phaseolus* and *Sesbania* were represented by single species each. The reported species of family were include both the wild and cultivated species. 15 species (57.7%) were wild and 11 species (42.3%) were cultivated. The reported species of the family Papilionaceae were classified into herbs 20 species (77%) shrubs and under shrubs 4 species (15.3%) and trees 2 species (7.7%).

Key words: Papilionaceae, species, district Swabi.

Introduction

Swabi district lies between 33-55° and 34-23° north latitude and 72-13° and 72-49° east longitude. The total area of the district is 1,543 square km, while the total population of the district was 10, 26,840 as enumerated in March, 1998 with an intercensal percentage increase of 64.3 souls. It is bounded on north by Buner district, on east by Haripur district, on south by Attock district and west by Nowshera and Mardan districts. Swabi has two main regions; the northern hilly area and southern plain. The major parts of the northern hilly area lies in Gadoon area in north east, while the southern

area is composed of fertile plain and low hills. The soil of Swabi district ranges in texture from silty loam to silty clay or loamy type. District has extremes of climate. The summer is very hot. A steep rise of temperature is observed from May to June, but the highest temperature is observed in the month of August (40°C). A rapid fall of temperature is recorded from October. The coldest month is January (2°C). The maximum rainfall (125.8mm) received in July and August during which the weather become hot and humid. The relative humidity is quite high throughout the year. While

maximum humidity (73.3%) has been recorded in month of December [1].

According to Gundersen [2] Papilionaceae is a family of dicotyledonous plants closely related to family leguminosae. The plants are often considered to be sub family of leguminosae. It is represented by 480 genera and 12000 species but in Pakistan, it is represented by 82 genera and 600 species. Papilionaceae is cosmopolitan family. According to Ali and Nasir [3] it has an essentially worldwide distribution being found everywhere except Antarctica and the high altitudinal arctic regions. The family consists of herbs, sub shrubs, shrubs, trees and climbers. According to Cowen [4] the trees are often found in tropical regions while the herbaceous plants and shrubs are predominant in extra tropical warm temperate regions. Leaf rarely simple or mostly compound modified partly or completely into tendrils, alternate and stipulate. Inflorescence solitary or racemose paniculate or umbellate. Flower usually bisexual, irregular, complete, pedicellate and zygomorphic. Calyx gamosepalous. Corolla polypetalous and papilionaceous (butterfly shaped) differentiated into upper bigger outermost petal known as vexillum, two lateral free petals known as wings and two innermost petals are fused into boat like structure called keel. Stamen 10, rarely fewer, free or fused usually diadelphous. Anther uniform or dimorphic, basifixed or dorsifixed. Ovary unicarpellary, unilocular, superior, ovules numerous on marginal placenta. Fruit is legume or pod dehiscent by 2 or 1 sutures or indehiscent or jointed and breaking up into 1-seeded part. Seed sometimes arillate, with or without endosperm [5-7].

Materials and Methods

The present study was conducted during fall 2006 and spring 2007. The collections were made at the blooming period of plants especially in spring season because most of

the species appears in this season. According to Hulten, [6] most of the species are collected in the months of March, April and May. Research area was thoroughly visited and members of family Papilionaceae were collected. Plant specimens collected from various sites were tagged on spot with significant date, location and others characteristics. Standard methods were followed for the collection, drying, mounting, preparation and preservation of plant specimens following Nasir and Ali [3]. The collected specimens were identified on the basis of their morphological characters and with help of available literature of Ali and Nasir [7] and already determined herbarium specimens of Islamia College Peshawar. After identification, the voucher specimens were submitted in herbarium of Botany Department Islamia College Peshawar for future references.

Results and Discussions

Swabi district has an interesting location of biodiversity. This survey was undertaken with an aim of exploration, identification and documentation of the members of family Papilionaceae. In future, it will be helpful and serve for the conservation and sustainable utilization of plant resources of the area. In the light of the data recorded a total of 26 species belonging to 14 genera of family Papilionaceae were collected from different sites of the research area and documented. These are in agreements with previous reports [5-8]. These species were includes both wild and cultivated (Table 1). Information regarding botanical name, flowering period, flower color, habit, habitats and life form (duration) of the species are given in the checklist (Table 1). 6 species were recorded in the case of genus *Medicago*. *Trifolium* has 4 species, *Lathyrus* has 3 species, followed by *Trigonella* and *Vicia* have 2 species each. The rest of genera

Table 1. Checklist of Plants of Family Papilionaceae of District Swabi.

S.No.	Botanical Names	Flowering period	Flower Color	Habit	Habitat	Life form
1.	<i>Arachis hypogea</i> L.	June-August	Yellow	Erect Herb	Cultivated	Annual
2.	<i>Alhaji maurorum</i> Medic.	April-September	Pink or reddish	Erect Under shrub	Wild	Perennial
3.	<i>Cicer arietinum</i> L.	February-April	White to purple	Erect Under shrub	Cultivated	Annual
4.	<i>Dalbergia sissoo</i> Roxb.	March-May	Yellowish White	Erect Tree	Cultivated	Perennial
5.	<i>Erythrina suberosa</i> Roxb.	March-April	Scarlet	Erect Tree	Cultivated	Perennial
6.	<i>Lathyrus aphaca</i> L.	February-April	Pale yellow	Trailing Herb	Wild	Annual
7.	<i>Lathyrus erectus</i> Lagasca	March-April	Lilac or white	Erect Herb	Wild	Annual
8.	<i>Lathyrus odoratus</i> L.	February-March	Pink or purple	Climbing Herb	Cultivated	Annual
9.	<i>Medicago brachycantha</i> Bioss.	March-April	Yellow	Spreading Herb	Wild	Annual
10.	<i>Medicago laciniata</i> (L.) Mill.	March-April	Yellow	Spreading Herb	Wild	Annual
11.	<i>Medicago lupulina</i> L.	March-June	Yellow	Erect Herb	Wild	Annual
12.	<i>Medicago minima</i> (L.) Grufb.	April-July	Yellow	Spreading Herb	Wild	Annual
13.	<i>Medicago orbicularis</i> (L.) Bart.	March-April	Yellow	Ascending Herb	Wild	Annual
14.	<i>Medicago polymorpha</i> L.	March-May	Yellow	Spreading Herb	Wild	Annual
15.	<i>Melilotus parviflorus</i> Desf.	March-August	Yellow	Erect Herb	Wild	Annual
16.	<i>Phaseolus vulganis</i> L.	June-November	White or pink	Climbing under shrub	Cultivated	Annual
17.	<i>Pisum sativum</i> L.	January-March	White or lilac	Climbing Herb	Cultivated	Annual
18.	<i>Sesbania conocolor</i> Gillet	January-September	Yellow	Erect Under shrub	Wild	Annual
19.	<i>Trifolium alexandrianum</i> L.	April-July	Cream	Erect Herb	Cultivated	Annual
20.	<i>Trifolium dobium</i> Sibth..	April-July	Yellowish brown	Erect Herb	Wild	Annual
21.	<i>Trifolium repens</i> L.	April-July	White pinkish	Prostrate Herb	Cultivated	Annual
22.	<i>Trifolium resupinatum</i> L.	April-June	Pink or purple	Erect Herb	Cultivated	Annual
23.	<i>Trigonella foenum-graecum</i> L.	March-April	Yellowish white	Erect Herb	Cultivated	Annual
24.	<i>Trigonella monantha</i> C.A.	March-April	Yellow	Prostrate Herb	Wild	Annual
25.	<i>Vicia bithynica</i> L.	February-March	Purple white	Climbing Herb	Wild	Annual
26.	<i>Vicia peregrina</i> L.	April-May	Purplish red	Erect Herb	Wild	Annual

Table 2. Classification of plants based on their habit and actual number.

Plants	Total Plants reported	
	Actual number	Percentage
Herbs	20	77.0%
Shrubs/under shrubs	4	15.3%
Trees	2	7.7%

such as *Alhaji*, *Arachis*, *Cicer*, *Dalbergia*, *Erythrina*, *Melilotus*, *Phaseolus*, *Pisum* and *Sesbania* were represented by single species each. Out of 26 species 15 species (*Lathyrus aphaca*, *Lathyrus erectus*, *Melilotus parviflorus*, *Medicago polymorpha*, *Medicago minima*, *Medicago laciniata*, *Medicago brachycantha*, *Medicago orbicularis*, *Medicago lupulina*, *Trifolium dobium*, *Trigonella monantha*, *Vicia peregrina*, *Vicia bithynica*, *Alhaji maurorum*

and *Sesbania conocolor*) were wild. The rest of 11 species (*Arachis hypogaea*, *Lathyrus odoratus*, *Pisum sativum*, *Trifolium repens*, *Trifolium resupinatum*, *Trifolium alexandrianum*, *Trigonella foenum-graecum*, *Cicer arietinum*, *Phaseolus vulgaris*, *Dalbergia sissoo* and *Erythrina suberosa*) were cultivated and commonly found. They are grown as source of vegetables, pulses, timber, ornament and fodder for cattle (Table 1). The recorded species were classified

based on their habit and actual number. Out of 26 species, 20 species (77%) were herbs, 4 species (15.3%) were shrubs and under shrubs and 2 species (7.7%) were trees (Table 2). These findings are supporting the previous results [6-8].

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