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## Mosquitoes fauna from Babel Khel district Karak, Khyber Pakhtunkhwa, Pakistan

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### Abstract

The aim of the present study was to investigate mosquito fauna in Babel Khel District Karak Khyber Pakhtunkhwa, Pakistan. The survey was conducted from March 2013 to February 2016. Mosquitoes were collected from different temporary and permanent breeding sites such damp soil, standing water bodies and tires fill of automobiles. The collection was carried out regularly from the three selected sites of the study area like Upper Babel Khel, Central Babel and Lowe Babel Khel respectively. A total of 4344 specimens of mosquitoes were recorded which belongs to 1 Class Insecta, one Order Diptera, One family Culcidae, 3 Genus *Culex*, *Anopheles*, *Aedes* and 6 species respectively. The recorded species were *Culex quinquefasciatus*, *C. mimeticus*, *Anopheles maculates*, *A. stephensi*, *A. annularis* and *Aedes shortii* respectively. In the current study maximum collection was carried out from central Babel Khel.

**Keywords:** Babel Khel, mosquito, fauna, identification, family, vector, malaria

### 1. Introduction

Mosquitoes are vectors for a number of infections like malaria, dengue, yellow fever etc. and are involved in the transmission of diseases to millions of people annually. Several factors have been reported to affect the role of mosquitoes as vectors and in disease transmission [1]. They have a worldwide distribution and breed in a variety of permanent and temporary water bodies [2]. Mosquitoes exhibit spatial and temporal distribution on the basis of species, climatic conditions and environment [3]. They breed in natural or manmade temporary, semi-permanent as well as permanent water bodies with a variety of oviposition sites such as ground water sites (pools, rivers and lakes) and container sites including bottles, cups, tree holes [4]. Larval distribution is greatly influenced by several factors such as elevation, water movement, water condition (polluted, fresh etc.), water temperature, vegetation, types of water source and many others [4]. Oviposition, development of the larva, adult emergence and many other processes take place in mosquito larval habitats, which thus play an important role in determining adult distribution and abundance [5]. Mosquito species have also been classified on the basis of their larval habitat characteristics [6, 7]. The aim of the research work was to find out the mosquito fauna for the first time on Babel Khel District Karak, Khyber Pakhtunkhwa, Pakistan.

### 2. Materials and Methods

#### 2.1 Study Area

Babel Khel is one of the well-known areas situated in District Karak Khyber Pakhtunkhwa, Pakistan. Babel Khel is named after its Founder Babel. One of the most famous personalities of Babel Khel is Daftar Khan (ex-Political Agent). The area is clean having water resources like tube wells and Pressure pumps. This site comprises sandy and muddy soil. There is a variety of fauna exist in this area. This area is very beautiful for its natural habitat like trees and other important medicinal plants like *Aleovera* etc.

#### 2.2 Collection of samples

Sampling of mosquito fauna were collected from March 2013 to February 2016 from fresh as well as polluted water bodies from a variety of breeding sites of mosquitoes in three selected sites of the research area i.e. Upper Babel Khel, Central Babel Khel and Lower Babel Khel respectively.



Fig 1: Map of Babel Khel District Karak Khyber Pakhtunkhwa Pakistan.

Sampling was done from these selected sites of slow moving and standing water bodies, including both temporary and permanent breeding habitats of mosquitoes scattered over the three sites. Mosquitoes were collected with the help of a manual aspirator and killed with cotton swab of chloroform.

**2.3 Preservation and identification**

Samples were preserved in glass tubes over dry silica gel and were later identified using Taxonomic keys provided in “The fauna of British India, including Ceylon and Burma” by Christophers (1933) [8] and Barraud (1934) [9].

**3. Results and Discussion**

A total of 4344 adult mosquitoes comprising 2738 female and 1606 male individuals were collected from the three selected sites as shown in the (Figure 1). Taxonomic identification revealed six species of mosquitoes belonging to 1 Class Insecta, 1 Order Diptera, 1 Family Culicidae, 3 Genus Culex, Anopheles, Aedes and 6 species respectively. The identified individuals of the mosquito species were *Culex quinquefasciatus*, *C. mimeticus*, *Anopheles maculates*, *A. stephensi*, *A. annularis* and *Aedes shortii* respectively shown in Table.1 and 2. In the current study maximum collection was carried out from Central Babel Khel (1729) due lot of resources of mosquitoes habitat availability following by Lower Babel Khel (1449) and Upper Babel Khel (1149) respectively. There is no published information regarding mosquito species till now in Babel Khel of district Karak. With the aim of contributing to this knowledge, occurrence of species and habitats used by mosquito fauna were investigated. This preliminary survey emphasized on collection of mosquitoes fauna from variety of breeding habitats. A study was conducted by Suleman *et al.* (1993) in Peshawar area and recorded (31) species of the mosquitoes [10]. In the present research conducted in Babel Khel area only six species were recorded like *Culex quinquefasciatus*, *C. mimeticus*, *Anopheles maculates*, *A. stephensi*, *A. annularis*

and *Aedes shortii* respectively. The results of the both study area show a lot of variation in species number. The variation may be due to climatic factors like intensity of light, humidity and pollution resources. In another study 31 species of mosquitoes were recorded by Noreen (2009) from Charsadda during [11]. In the present research only 6 species of mosquitoes were identified up to the species level. This explains the high prevalence of the species in northern areas, a suspected vector of Plasmodium especially in mountainous and hilly areas of northern KP (Suleman *et al.*, 1993) [12].

**Table 1:** Identification of mosquito fauna in Babel Khel District Karak KP, Pakistan.

S.No	Class	Order	Family	Genus	Species
1	Insecta	Diptera	Culicidae	Culex	<i>Quinquefasciatus</i>
2	Insecta	Diptera	Culicidae		<i>Mimeticus</i>
4	Insecta	Diptera	Culicidae	Anopheles	<i>Maculatus</i>
5	Insecta	Diptera	Culicidae		<i>Stephensi</i>
6	Insecta	Diptera	Culicidae		<i>Annularis</i>
8	Insecta	Diptera	Culicidae	Aedes	<i>Shortii</i>
Total	01	01	01	03	06

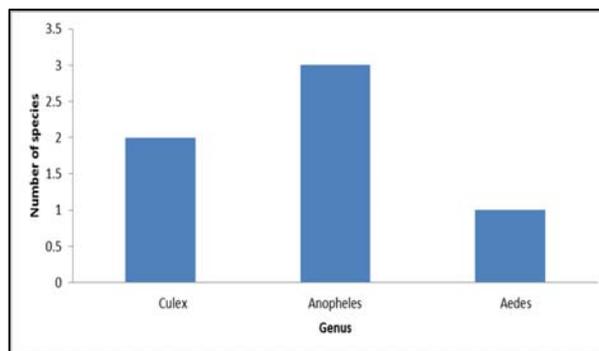
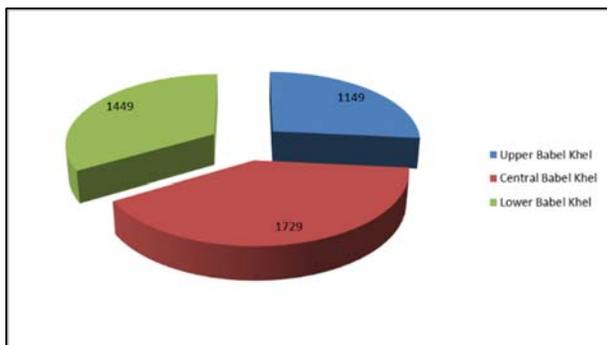


Fig 2: Genus wise fauna of mosquito in Babel Khel Khyber Pakhtunkhwa, Pakistan.



**Fig 3:** Numbering of mosquito fauna in Babel Khel sampling sites KP, Pakistan.

#### 4. Conclusion

From the present research it was concluded that Babel Khel area lies in highly risk factor for Dengue and Malaria fever. Furthermore, proper mosquito repelling spray should be done time to time to control the population of mosquito fauna. Maximum fauna of mosquito was collected from the Central zone of Babel Khel District Karak Khyber Pakhtunkhwa, Pakistan. The main reason of the mosquito fauna, noticed during the research was standing water in land and tires as well respectively.

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