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**Saira Bibi**  
Department of Zoology, Hazara  
University, Mansehra, KPK,  
Pakistan

**Muhammad Fiaz khan**  
Department of Zoology, Hazara  
University, Mansehra, KPK,  
Pakistan

**Aqsa Rehman**  
Department of Zoology, Hazara  
University, Mansehra, KPK,  
Pakistan

# Evaluation of mosquito fauna in Haripur district Khyber Pakhtunkhwa, Pakistan

**Saira Bibi, Muhammad Fiaz khan and Aqsa Rehman**

### Abstract

During the present research we evaluated the mosquito fauna of District Haripur KPk, Pakistan. Study was conducted random sampling, during the study both male and female mosquitoes from the selected zone were collected. Species collected and identified were *Anopheles stephensi*, *C. theileri*, *C. mimeticus*, *C. annularis*, *A. shortii* And *Aedes albopictus*. We concluded from the present research, this area of the District possess a variety fauna of mosquito. Prevention measures for controlling the growth of mosquito's population otherwise should be taken, otherwise they will be very active in spreading the diseases.

**Keywords:** Mosquito, Haripur, identification

### 1. Introduction

Mosquitoes belong to the order Diptera, suborder Nematocera and family Culicidae, are slender biting insects, with about half and three thousand species <sup>[1]</sup>. Of insects orders Diptera represents one of the largest orders with more than 85,000 species, including a large number of disease vectors <sup>[2]</sup>. Altogether 3150 species of mosquitoes have been reported worldwide Mosquitoes are found throughout the world except in permanently frozen places <sup>[3]</sup>. Except for Antarctica Mosquitoes are cosmopolitan found everywhere <sup>[4]</sup>. Many species are native to subtropical and tropical regions some, such as *Aedes* have successfully adapted to cooler regions. Eggs from strains in the temperate zones are more tolerant to colder than ones from warmer regions <sup>[5]</sup>. Below freezing point they can even tolerate temperatures and snow, in addition, in suitable microhabitats adults can survive throughout winter <sup>[6]</sup>. Among different geographical regions of the world the diversity of the mosquito species varies. In the Neotropical region (31% of total known species; 1069/3492) the greatest diversity of mosquito species is found followed by the region of Oriental (30%), region of Afrotropical (22%) and regions of Australasian (22%). Having (5%) diversity in the Nearctic region (5%) recorded lowest species diversity <sup>[7]</sup>. Pakistan has an abundance of Ethiopian Palearctic and Oriental regions fauna. Insect fauna mentions transitional position of Pakistan, that is so the charming to mention <sup>[8]</sup>. In all types of environments in Pakistan Mosquitoes are found associated with water, such as stagnant water, septic tanks, sewage water etc. There is an urgent need to check the propagation of population of non-vector and vector mosquitoes in order to reduce vector borne diseases and their nuisance by using appropriate control methods <sup>[9]</sup>. There is need to have adequate knowledge about the species diversity and distribution pattern in a given area In order to manage the of mosquitoes to prevent the diseases, Of insects that affect the human health everywhere Mosquito constitutes the most important single family <sup>[10]</sup>. A lot of human population suffers from the malarial disease every year so there is need to identify the species of mosquitoes in order to prevent these disease. Previously studies were conducted from KPk region but, there is no previous study conducted about the chick list of mosquitos in district Haripur so the aim of the research work was to find out the diversity of mosquito fauna in district Haripur, KPk, Pakistan.

### 2. Materials and Methods

#### 2.1 Study area

Study area was conducted in the district Haripur KPk Pakistan. Haripur is the main city of the Haripur District in Hazara, Khyber Pakhtunkhwa in Pakistan, with Swabi and Buner to the

### Correspondence

**Saira Bibi**  
Department of Zoology, Hazara  
University, Mansehra, KPK,  
Pakistan

west, some 65 km north of Islamabad and 35 km south of Abbottabad. It is in a hilly plain area at an altitude of 520 m.

Having the 33.9946° N, 72.9106° E. With the pleasant weather and hilly areas with grasses and pine trees.

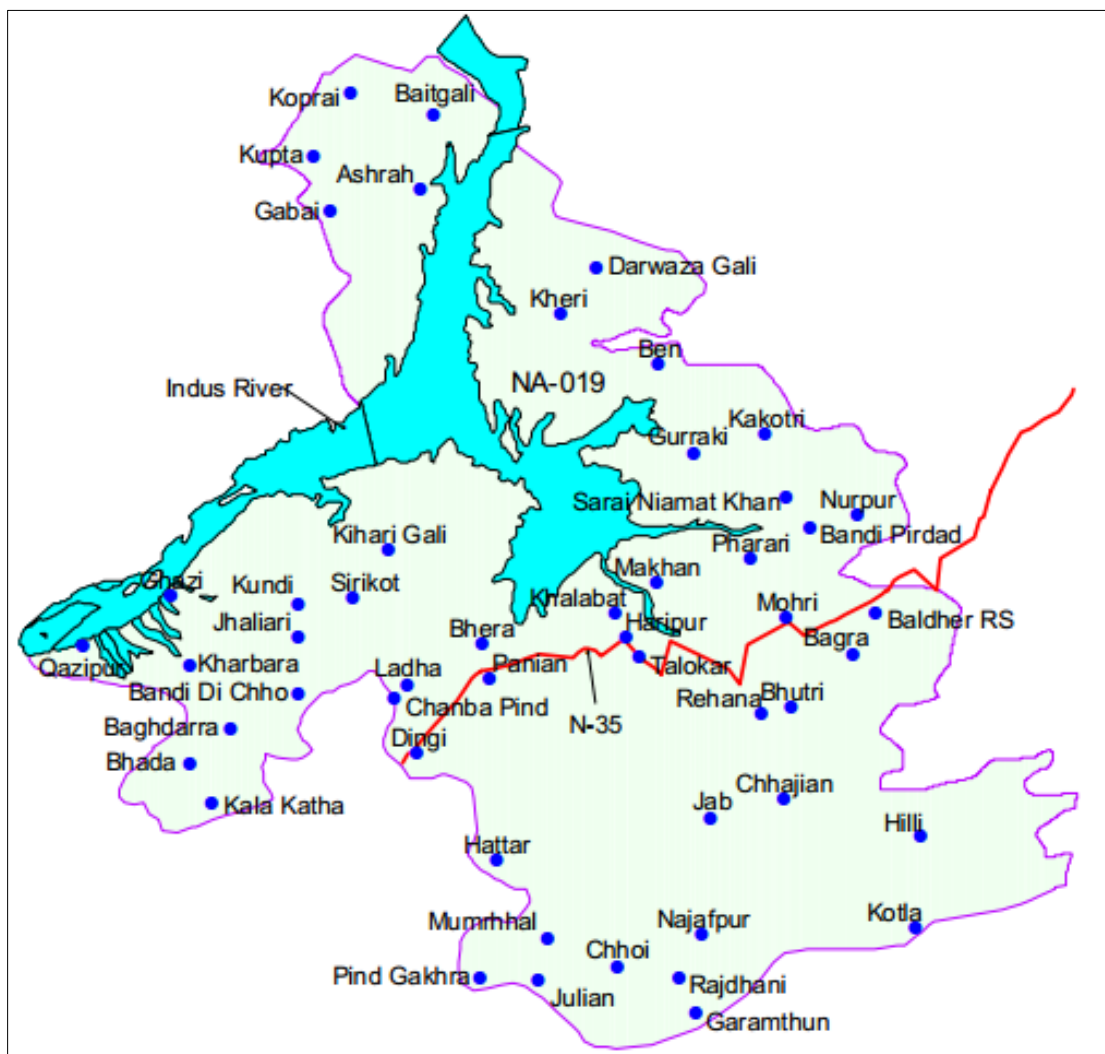


Fig 1: Map of district Haripur

**2.2 Collection and Identification**

Present study was conducted in district Haripur during the month of April to the month of September 2018, these month are very rich in mosquitos. In present study only outdoor collections were made. By dipper method Immature forms of mosquitoes were collected [6] from the breeding sources and other temporary pools in the study area the samples were collected. For later identification the emerged adults were preserved in plastic vessels. Using aspirator and from the bushes using sweep net the resting adults were collected from the cattle shed. Between 6 to 8 pm by the method followed by Pandian the biting adults were collected [11]. Near cattle shed and human dwellings, after collection the collected specimens were later identified by using the standard keys of Dutta [12].

**3. Results and Discussions**

The present study was conducted in District Haripur Khyber Pakhtunkhwa, Pakistan during the month of April to September 2018 in order to find out Mosquito fauna. At the time of 6-8 pm the collection was carried out especially. During the study we recorded the 8 species comprising the 3 orders, the collected species were *Aedes albopictus* *Culex mimeticus*, *C. theileri*, *A. shortii* *Anopheles stephensi*, *C.*

*annularis* (table.1). After collection the species were carried to the laboratory and identified. In a systematic way all the identified species mosquitoes were properly arranged. Present study is in agreement with the previous study from India Dibru Saikhowa biosphere reserve in Assam in this study they recorded 30 species of mosquitoes [12]. From Pakistan in Masti Khel District Karak Khyber Pakhtunkhwa, Pakistan 3 Genus were recorded which comprises 6 species [13]. From Dinger wala District Karak Khyber Pakhtunkhwa, Pakistan Five species of mosquitoes were collected by A total number of 3479 mosquitoes belonging to 8 species of 3 Genera [14].

Table 1: Collected species of mosquitoes from district Haripur.

S. No	Class	Order	Family	Genus	Species
1	Insecta	Diptera	Culicidae	<i>Culex</i>	<i>quinquefasciatus</i>
2					<i>mimeticus</i>
3					<i>theileri</i>
4				<i>Aedes</i>	<i>albopictus</i>
5					<i>shortii</i>
6				<i>Anopheles</i>	<i>maculatus</i>
7					<i>stephensi</i>
8					<i>annularis</i>
Total	1	1	1	3	8

#### 4. Conclusion

From the Current survey, we concluded district Haripur comprises a lot of mosquito fauna which are the main vector of Dengue fever and Malaria. Prevention should be taken by the humans from these mosquitoes.

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