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**Saqib Younas**

Department of Zoology, Govt  
Post Graduate College, Karak,  
KPK, Pakistan

**Shafiullah Gul**

Department of Zoology, Govt  
Post Graduate College, Karak,  
KPK, Pakistan

**Hameed Ur Rehman**

Department of Chemistry, Kohat  
University of Science and  
Technology-26000, KPK,  
Pakistan

**Faisal Junaid**

Department of Zoology, Govt  
Post Graduate College, Karak,  
KPK, Pakistan

**Wali Muhammad Achakzai**

Department of Zoology,  
University Baluchistan, Quetta.

**Shagufta Saddozai**

Zoology Department SBK  
Women's University Quetta

**Khalid Usman**

Department of Zoology, Hazara  
University, Mansehra

**Zawar Ahmad**

Department of Animal  
Genomics & Biotechnology,  
PARC institute of Advance  
Studies in Agriculture NARC  
Islamabad, Pakistan

**Correspondence****Hameed Ur Rehman**

Department of Chemistry, Kohat  
University of Science and  
Technology, 26000-KPK,  
Pakistan

## Zoological fauna of Khurum Dam and Muhabbat Khel Dam of district Karak, Khyber Pakhtunkhwa, Pakistan

**Saqib Younas, Shafiullah Gul, Hameed Ur Rehman, Faisal Junaid, Wali Muhammad Achakzai, Shagufta Saddozai, Khalid Usman and Zawar Ahmad**

**Abstract**

The present research was conducted to explore the vertebrate and invertebrate fauna in Khurum dam and Muhabbat Khel dam of district Karak, Khyber Pakhtunkhwa province of Pakistan during the period from April 2016 to December 2016. The Khurum dam and Muhabbat Khel dam having all the vertebrates including fishes, amphibians, reptiles, birds and mammals. Fishes of both dams include *Cyprinus carpio*, *Crossocheilus diplocheilus*, *Ctenopharyngodon idella*, *Salmophasia bacaila*, *Aspidoparia morar*, *Ompok pabda*, *Labeo rohita*, *Cirrhinus cirrhosus*, *Hypophthalmichthys molitrix*. The family Cyprinidae is dominant in both dams. The Amphibians of both dams include *Rana tigrina*, *Euphyctis cyanophlyctis*, *Duttaphrynus melanostictus* and *Rana tigrina*. The Reptiles of Khurum dam are *Chamaeleo zeylanicus*, *Saara hardwickii*, *Xantusia vigilis*, *Lamppropeltis getula* and in Muhabbat Khel dam *Xantusia vigilis*, *Lamppropeltis getula* are present. In Khurum dam nine species of birds are present, which is following *Passer domesticus*, *Acridotheris tristis*, *Anas crecca*, *Perdix Perdix*, *P. cristatus*, *Numida meleagris*, *Grus grus*, *Pycnonotus barbatus*, *Upupa epops*. While in Muhabbat khel dam *Passer domesticus*, *Acridotheris tristis*, *Anas crecca*, *Buteo jamaicensis*, *Cairina moschata*, *Dicrurus adsimilis*. The family Bovidae of mammals is more abundant in both dams. The invertebrates found in Khurum dam are *Sympetrum flaveolum*, *Pandinus imperator*, *Pterostichus melanarius*, *Anax junius*, *Solenopsis invicta*, *Hirudo medicinalis* and *Sceliphron caementarium*. *Vespa velutina*, *Hirudo medicinalis*, *Pandinus imperator* are present in Muhabbat Khel dam. So from the present study, it may be concluded that Khurum and Muhabbat Khel dams are very suitable for the growth of both vertebrates and invertebrates. Hence our present study will provide useful information about the diversity of vertebrates and invertebrates of the both dams that could be later valuable in systematic and conservation.

**Keywords:** Khuram dam, mammals, metatherian, Saara hardwickii

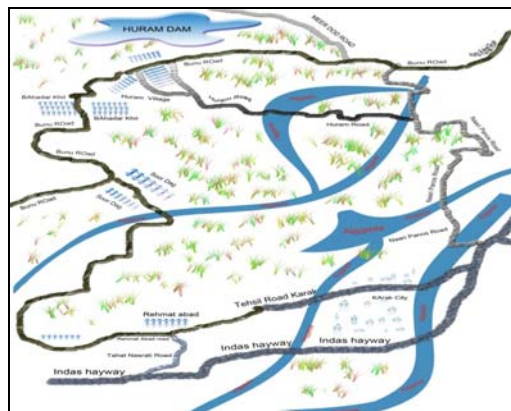
**1. Introduction**

Khuram dam located northern area of the Karak district. The dam was constructed by the K.P.K Government of Pakistan in 2010. It is located at a distance of 35 kilometers from district through Naripanos road at a distance of 47 kilometers through Bahadar Khel road. The length of the dam is about 600 meters and width 30 to 35 meters. The depth of the dam varies from 40 to 50 feet. Muhabat Khel dam; this dam is located near the series of karat hills just adjacent to the wildlife sanctuary/cage and located some 08–10km from Khaisari dam. The dam was constructed by water for livelihood project halloyetas several inter corporation Pakistan (tech corporation by soil conservation department Karak on July 10, 2009). Here we will describe the vertebrates and invertebrate faunas of both dams. Vertebrates including Fishes, Amphibians, Reptiles, Birds, and Mammals.

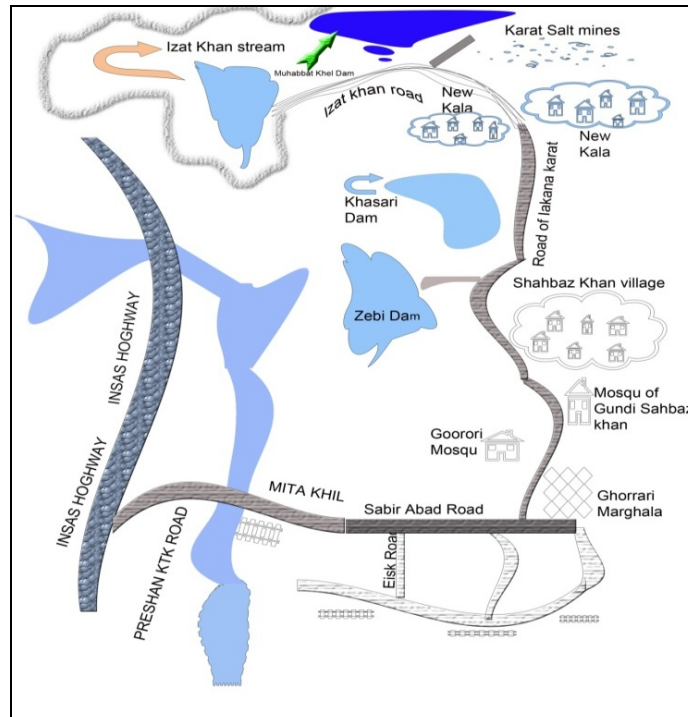
Biodiversity is the quantity, variety and distribution across biological scales ranging through genetics and life forms of populations, species, communities and ecosystems [1]. About half of the total number of vertebrates are fishes in the world. They live in almost all aquatic habitats. Out of 21, 723 living species of fishes recorded so far, 8,411 are freshwater species and 11,650 are marine water species [2]. Fishes show huge diversity in their morphology, in the habitats they occupy and in their life history. Unlike the other frequently documented vertebrates, fishes are a diverse group [3]. Among the aquatic fauna, fishes are one of the most important fundamentals and play a key role in the wealth of many nations as they have been found as a constant item in the diet of many nations [4]. Due to dietary contents proteins, fats, vitamin A,

D, phosphorous and other compound/element presence in ichthyofauna has been used as a diet of human since immemorially. It also enhances the economical level of commercials [5]. In Pakistan different studies were carried out to know about the fish biodiversity in different areas [6]. In Pakistan freshwater fish fauna has a minimum number of 193 fish species, belonging to class Actinopterygii, sub-class Teleostei, 3 cohorts, 6 superorders, 13 orders, 30 families and 86 genera are reported [7-8]. Amphibians are cold blooded vertebrates and aquatic environments is must in a part of their life cycle. Except the caecilians, amphibians have paired limbs and naked skin. The caecilians have scales that are hidden under the skin. Frogs are both diurnal and nocturnal, but toads are almost nocturnal. They are the earliest tetrapod land vertebrates. There are 7,044 species of amphibians in three orders exist today in the world [9]. Amphibians occupy a great variety of climatic and ecological zones [10]. Amphibians are scattered throughout northern and western mountains, Balochistan tableland and arid plains of Punjab and Sind are the unusually wide range of habitats co-inhibiting with a wide assemblage of amphibian and reptile species [11]. The 24 species of anuran amphibians falling in three cosmopolitan families Bufonidae, Microhylidae, Ranidae, and wide ranging Tibeto-Himalayan family Megophryidae, have been recorded within the limits of Pakistan [12]. Ranidae is the richest family of Order Anura under Class Amphibia, including 750 true frog species contained in 61 Genera [13]. The pioneer work on the systematic of true frogs in Pakistan's some specific areas is previously done [14-16]. According to IUCN (2009), there are now 1,677 reptile species have been included on the IUCN Red List, with 293 added in 2009. In total, 469 are threatened with extinction and 22 are already Extinct or Extinct in the wild. Pakistan has 179 species of reptilian fauna consisting of turtles, tortoises, crocodile, gavial, lizards and snakes [17]. Lizards (Suborder Sauria) are the dominant group of reptiles in Pakistan [18]. Birds is important indicators of the ecosystem of an area. They play a key role in the biological system of the universe. Depending on the taxonomic viewpoint, the number of known living bird species varies anywhere from 9,800 to 10,050 [19]. Birds and their diversity constitute a main part of the natural environment and play a functional role as agents of flower pollination, seed dispersal, source of food chain and agents in breaking seed dormancy during their migration and local movement [20]. Class Aves contains two suborders: Archaeornithes and Neornith, three Superorders and 29 Orders [21]. According to IUCN many bird species have a high threat to extinction [22-24] described avifauna distribution in the whole country [25] described the avifauna of Salt Range, Pakistan. In urban areas, forest dwelling birds may have lower

abundances and lower nesting success [26, 27] recorded the diversity of water birds of Taunsa barrage [28] observed the water bird and its ecology and threats at Head Trimu, district Jhang [29-30] recorded the avifauna of Ravi siphon and Head Qadir abad respectively. Mammals (class Mammalia) are an extraordinary group, showing an amazing diversity of species, forms, ecologies, physiologies, life histories and behaviors. According to IUCN [31], out of 4763 mammalian species of the world, 1137 are threatened. Mammalian fauna of Pakistan is represented by 195 species belonging to 10 orders [32, 33]. Out of 195 mammal species, 5 are endemic to Pakistan, 12 are Critically Endangered (1 endemic), 12 Endangered, 20 Vulnerable, 32 Near Threatened, 71 Least Concern, 38 Data Deficient, 8 Regionally Extinct and 2 are Not Evaluated [34]. Their taxonomic diversity of 5416 extant or recently extinct species [35] increases every year with the discovery of new ones [36], even in well-known groups such as primates (e.g. [37]). The greatest numbers of extant species (99%) are consisted in the subclass Theria which consists of 5136 eutherian mammal species (i.e. placental species such as rodents, bats, carnivores, primates, cows, whales and elephants), and a smaller proportion (346 species) of metatherian species (i.e. marsupial mammals such as kangaroos and opossums). Traditionally, the rest of the class Mammalia has been classified into the subclass 'Prototheria', which is wholly extinct apart from five species of egg-laying mammals—the platypus and echidnas (Monotremata) [38]. However, the validity of Prototheria has been questioned and other arrangements have been proposed, for example, grouping monotremes with recently discovered fossil forms into a new clade Australosphenida [39]. Invertebrates are a very diverse and influential group that comprises more than 90% of the estimated 10 million-plus animal species, mainly arthropods [40]. They are widely used in research, aquaculture, farming, and as displays in aquarium [41]. Invertebrates such as shrimps, clams, squids, locusts, termites, grasshoppers, and beetle grubs, as well as honey from bees serve as a major source of human food worldwide [40]. For instance, research utilizing invertebrates include everything from field research on biodiversity and conservation to use as laboratory models for the biological systems of other animals, including humans [40, 43]. Public concern is also economically motivated. For example, the increased occurrence of colony-collapse disorder in honey bees has led to increased research into bee health and welfare, because of their importance in producing honey and pollinating crops [42]. But the most striking example of the public's increased concern about invertebrate welfare is the growing dialogue on the welfare of decapods crustaceans during a live cooking [43, 44].



Map of Khurram dam



Map of Muhabbat Khel dam

## 2. Material and method

The fish sample was collected from the different sites of the Khurum dam with the help of local fisherman using different types of catch nets which are followed hand nets, cast nets, and different size of hooks with regular intervals. After the collection immediately photographs were taken and then immediately the same species were preserved with 10% formalin, and 10% alcohol in bottle with respect to the size of the species. In laboratory each species were identified up to species level and the reorganization of the species was made mainly on the basis of the color pattern, specific spots or marks on the surface of the body, shape of the body, the structure of various fins etc, by using different books hints and different systemic and identification keys [45-47]. Surveys of amphibians were conducted during day and night using different survey methods. Amphibian species encountered in different habitats along with the number of individuals were recorded on data sheets. Amphibian specimens were identified with the aid of the following literature [48-53]. Nomenclature for Amphibians was followed from [9]. Reptiles seem to be very active after dusk during the summer season. Snakes and Lizards are diurnal in activity and also seen most active during mid-morning. Certain geckos and snakes are active mostly at night time. Reptiles take hide themselves under the stones or rocks. In the day time surveys, stones or rotten fallen trees were turned over to record the presence of reptiles. Information was also collected from the local wildlife staff and from the communities of the study areas. The classification and names of the species in the present work are based on [54]. Voucher specimens were injected and preserved in 10% formalin solution or 50-70% alcohol and then transported to the laboratory for their identification by using keys [55, 56]. Observations of birds were made in the morning and afternoon between the months of April 2016 to December 2015. Surveys were conducted daily basis at different locations of the both dams. At each sighting bird were counted using a binocular (8x to 32x) and identified. In case of doubtful identification, photographs were taken and the

species is identified later by consulting experts. The identification of birds was carried out using standard literature of [57-60]. Expected number of birds at each study sites was calculated by taking the average of each species and then obtained %age abundance.

Medium-sized and large mammals were recorded through signs such as footprints, scats and dens, during drinking water and also by gathering information from locals, hunters and game watchers of the Department of Wildlife, Karak. In certain cases direct observations of the mammals were made using field binocular (32x50). All species were arranged according to taxonomic classification and their IUCN conservation status determined [61-62]. Invertebrates were also observed during the present study of Khuram and muhabbat Khel dam. For the proper identification of invertebrates various identification keys were also used such [63, 64]



Fig 1: View of Khurram Dam



Fig 2: View of Muhabbat Khel Dam

### 3. Results

#### 1 Fishes

**Table 1:** Taxonomic position of Khuram dam fishes.

S.N.	Class	Order	Family	Genus	Species
1	Actinopterygii	Cypriniformes	Cyprinidae	<i>Ctenopharygodon</i>	<i>C. idella</i>
2	Actinopterygii	Cypriniformes	Cyprinidae	<i>Crossocheilus</i>	<i>C. diplocheilus</i>
3	Actinopterygii	Cypriniformes	Cyprinidae	<i>Cyprinus</i>	<i>C. carpio</i>
4	Actinopterygii	Cypriniformes	Cyprinidae	<i>Aspidoparia</i>	<i>A. morar</i>
5	Actinopterygii	Cypriniformes	Cyprinidae	<i>Salmophasia</i>	<i>S. bacaila</i>
6	Actinopterygii	Siluriformes	Siluridae	<i>Ompok</i>	<i>O. pabda</i>

**Table 2:** Species of fishes found in Muhabbat Khel Dam

S.N.	Class	Order	Family	Genus	Species
1	Actinopterygii	Cypriniformes	Cyprinidae	<i>Labeo</i>	<i>L. rohita</i>
2	Actinopterygii	Cypriniformes	Cyprinidae	<i>Cirrhinus</i>	<i>C. cirrhosus</i>
3	Actinopterygii	Cypriniformes	Cyprinidae	<i>Hypophthalmichthys</i>	<i>H. molitrix</i>
4	Actinopterygii	Cypriniformes	Cyprinidae	<i>Cyprinus</i>	<i>C. carpio</i>

#### 2. Amphibians

**Table 3:** Species of amphibians found in Khurum dam.

Local name	Class	Order	Family	Genus	Species
frog	Amphibia	Anura	Dicroglossidae	<i>Rana</i>	<i>Rana tigrina</i>
True frog	Amphibia	Anura	Ranidea	<i>Euphlyctis</i>	<i>Euphlyctis cyanophlyctis</i>
Common toad	Amphibia	Anura	Bufoidea	<i>Duttaphrynus</i>	<i>Duttaphrynus melanostictus</i>

**Table 4:** Species of amphibians found in Muhabbat Khel dam.

Local name	Class	Order	Family	Genus	Species
Frog	Amphibia	Anura	Dicroglossidae	<i>Rana</i>	<i>Rana tigrina</i>

#### 3. Reptiles

**Table 5:** Species of Reptiles found in Khurum dam.

Local name	Class	Order	Family	Genus	Species
Chameleon	Reptilia	Squamata	Chamaeleonidae	<i>Chameleo</i>	<i>Chamaeleo zeylanicus</i>
Spiny tailed lizard	Reptilia	Squamata	Agamidae	<i>Saara</i>	<i>Saara hardwickii</i>
Desert lizards	Reptilia	Squamata	Xantusiidae	<i>Xantusia</i>	<i>Xantusia vigilis</i>
Desert king snake	Reptilia	Squamata	Colubridae	<i>Lampropeltis</i>	<i>Lampropeltis getula</i>

**Table 6:** Species of Reptiles found in MUHABBAT KHEL dam.

Local name	Class	Order	Family	Genus	Species
Desert lizards	Reptilia	Squamata	Xantusiidae	<i>Xantusia</i>	<i>Xantusia vigilis</i>
Desert king snake	Reptilia	Squamata	Colubridae	<i>Lampropeltis</i>	<i>Lampropeltis getula</i>

#### 4. Birds

**Table 7:** Species of Birds found in Khurum dam.

S. No.	Local name	Class	Order	Family	Genus	Species
1	Charchnra	Aves	Passeriformes	Passeridae	<i>Passer</i>	<i>Passer domesticus</i>
2	Mynah	Aves	Passeriformes	Sturnidae	<i>Acridotheres</i>	<i>Acridotheris tristis</i>
3	Common teal	Aves	Anseriformes	Anatidae	<i>Anas</i>	<i>Anas crecca</i>
4	Seenzara	Aves	Galliformes	Phasianidae	<i>Perdix</i>	<i>Perdix perdix</i>
5	Moor	Aves	Galliformes	Phasianidae	<i>Pavo</i>	<i>P. cristatus</i>
6.	Teetara	Aves	Galliformes	Numididae	<i>Numida</i>	<i>Numida meleagris</i>
7.	Zorye	Aves	Galliformes	Gruidae	<i>Grus</i>	<i>Grus grus</i>
8.	Bulbul	Aves	Passeriformes	Pycnonotidae	<i>Pycnonotus</i>	<i>Pycnonotus barbatus</i>
9.	Hudhud	Aves	Bucerotiformes	Upupidea	<i>Upupa</i>	<i>Upupa epops</i>

**Table 8:** Species of Birds found in Muhabbat Khel dam.

S. No	Local name	Class	Order	Family	Genus	Species
1.	Charchnra	Aves	Passeriformes	Passeridae	<i>Passer</i>	<i>Passer domesticus</i>
2.	Mynah	Aves	Passeriformes	Sturnidae	<i>Acridotheres</i>	<i>Acridotheris tristis</i>
3.	Common teal	Aves	Anseriformes	Anatidae	<i>Anas</i>	<i>Anas crecca</i>
4.	Hawk	Aves	Accipitriformes	Accipitridae	<i>Buteo</i>	<i>Buteo jamaicensis</i>
5.	Duck	Aves	Anseriformes	Anatidae	<i>Cairina</i>	<i>Cairina moschata</i>
6.	Jannat balbali	Aves	Passeriformes	Dicruridae	<i>Dicrurus</i>	<i>Dicrurus adsimilis</i>



5. Mammals

Table 9: Species of Mammals found in Khurum dam.

S. No	Local name	Class	Order	Family	Genus	Species
1.	Goat	Mammalia	Artiodactyla	Bovidae	<i>Capra</i>	<i>Capra hircus</i>
2.	Sheep	Mammalia	Artiodactyla	Bovidae	<i>Ovis</i>	<i>Ovis aries</i>
3.	Cattle	Mammalia	Artiodactyla	Bovidae	<i>Bos</i>	<i>Bos taurus</i>
4.	Donkey	Mammalia	Perissodactyla	Equidae	<i>Equus</i>	<i>Equus asinus</i>
5.	Dog	Mammalia	Carnivora	Canidae	<i>Canis</i>	<i>Canis lupus</i>
6.	Cat	Mammalia	Carnivora	Felidae	<i>Felis</i>	<i>Felis catus</i>
7.	Jackal	Mammalia	Carnivora	Canidae	<i>Canis</i>	<i>Canis adustus</i>

Table 10: Species of Mammals found in Muhabbat Khel dam.

S. No	Local name	Class	Order	Family	Genus	Species
1.	Soya	Mammalia	Lagomorpha	Leporidae	<i>Oryctolagus</i>	<i>O. cuniculus</i>
2.	Mekha	Mammalia	Artiodactyla	Bovidae	<i>Bubalus</i>	<i>B. bubalis</i>
3.	Sheep	Mammalia	Artiodactyla	Bovidae	<i>Ovis</i>	<i>Ovis aries</i>
4.	Donkey	Mammalia	Perissodactyla	Equidae	<i>Equus</i>	<i>Equus asinus</i>
5.	Dog	Mammalia	Carnivora	Canidae	<i>Canis</i>	<i>Canis lupus</i>

6. Invertebrates

Table 11: Species of Invertebrates found in Khurum Dam.

S. No	Local name	Class	Order	Family	Genus	Species
1.	Dragonfly	Insecta	Odonata	<b>Petaluridae</b>	<i>Sympetrum</i>	<i>Sympetrum flaveolum</i>
2.	Scorpion	Arachnida	Scorpiones	Scorpionidae	<i>Pandinus</i>	<i>Pandinus imperator</i>
3.	Beetle	Insecta	Coleoptera	Carabidae	<i>Pterostichus</i>	<i>Pterostichus melanarius</i>
4.	Common green damer	Insecta	Odonata	Aeshnidae	<i>Anax</i>	<i>Anax junius</i>
5.	Ants	Insecta	Hymenoptera	Formicidae	<i>Solonopsis</i>	<i>Solonopsis invicta</i>
6.	Leech	Clitellata	Arynchobdellida	Hirudidae	<i>Hirudo</i>	<i>Hirudo medicinalis</i>

Table 12: Species of Invertebrates found in Muhabbat Khel dam.

S. No	Local name	Class	Order	Family	Genus	Species
1.	Leech	Clitellata	Arynchobdellida	Hirudidae	<i>Hirudo</i>	<i>Hirudo medicinalis</i>
2.	Scorpion	Arachnida	Scorpiones	Scorpionidae	<i>Pandinus</i>	<i>Pandinus imperator</i>
3.	Mud dauber	Insecta	Hymenoptera	Sphecidea	<i>Sceliphron</i>	<i>Sceliphron caementarium</i>
4.	Wasp	Insecta	Hymenoptera	Vespidea	<i>Vespa</i>	<i>Vespa velutina</i>



#### 4. Discussion

The present study was conducted in order to know about the diversity of vertebrates and invertebrates of Khurum as well as Muhabbat Khel dam. Both the vertebrates and invertebrates were explained up to species level and their complete taxonomic systematic representation was given in Tables 1-12. In Khurum dam survey of fish fauna confirms the presence of 6 species belonging to two order Cypriniformes and Siluriformes and two families such as Cyprinidae and Siluridae. The five species belong to one family Cyprinidae i.e. *Cyprinus carpio*, *Crossocheilus diplochielus*, *Ctenopharyngodon idella*, *Salmophasia bacaila*, *Aspidoparia morar* and one belong to family Siluridae i.e. *Ompok pabda*. While in Muhabbat khel dam 4 species were discovered which belong to one family Cyprinidae. The species are *Labeo rohita*, *Cirrhinus cirrhosus*, *Hypophthalmichthys molitrix*, *Cyprinus carpio*. A grateful work on the Zebi dam, of District Karak was performed by Ilyas<sup>[65]</sup> who identified about cyprinid species which are *Cyprinus carpio*, *Barilius vagra*, *Labeo rohita*, *Carassius auratus*, *Catla catla*, *Cirrhinus mrigala*, *Ctenopharyngodon idella*, *Puntius ticto*, *Puntius sophore*, *Hypophthalmichthys molitrix*, respectively. Butt reported 94 species of fishes from the whole province of K.P.K.<sup>[66, 67]</sup> Saqib *et al* worked on Khurum dam and described six species of fishes. The five species belong to one family Cyprinidae *Cyprinus carpio*, *Crossocheilus diplochielus*, *Ctenopharyngodon idella*, *Salmophasia bacaila*, *Aspidoparia morar* and one belong to family Siluridae i.e. *Ompok pabda*.

The amphibians which are present in both Khurum as well as Muhabbat Khel dams they belong to one Order (Anura) and three family (Dicroglossidae, Ranidae, Bufonidae). In Khurum dam three species were identified which are *Rana tigrina*, *Euphlyctis cyanophlyctis*, *Duttaphrynus melanostictus* and only one species identified in Muhabbat Khel dam which are *Rana tigrina*. The species of reptiles observed in Khurum dam they belong to one order (Squamata) and four different family (Chamaeleonidae, Agamidae, Xantusiidae, Colubridae). The four species are *Chamaeleo zeylanicus*, *Saara hardwickii*, *Xantusia vigili*, *s Lampropeltis getula*. The species of Muhabbat Khel dam belong to one order (Squamata) and two family (Xantusiidae, Colubridae). The species are *Xantusia vigili*, *s Lampropeltis getula*. Khan (1986)<sup>[68]</sup> reported one species of toad, three frogs and nine species of lizards and snakes each from the District of Mianwali which is located 164 km from Chakwal District, North-western Punjab. In Khurum dam nine species of birds are discovered which are *Passer domesticus*, *Acridotheris tristis*, *Anas crecca*, *Perdix Perdix*, *P. cristatus*, *Numida meleagris*, *Grus grus*, *Pycnonotus barbatus*, *Upupa epops*. While in Muhabbat khel dam *Passer domesticus*, *Acridotheris tristis*, *Anas crecca*, *Buteo jamaicensis*, *Cairina moschata*, *Dicrurus adsimilis*. Irfan,<sup>[69]</sup> during a survey of Changa Manga noted (524) bird's maximum numbers. During our research work we observed some mammals during grazing and drinking of water in Khurum dam, six species are *Capra hircus*, *Ovis aries*, *Bos Taurus*, *Equus asinus*, *Canis lupus*, *s Canisadustus*, *Felis catus*. They belong to order (Artiodactyla, Perissodactyla, Carnivora) and families (Bovidae, Equidae, Canidae, Felidae). The species of Muhabbat Khel dam belong to four orders (Lagomorpha, Artiodactyla, Perissodactyla, Carnivora) and four families (Leporidae, Bovidae, Equidae, Canidae). The five species are *O. cuniculus*, *Equus asinus*, *Canis lupus*, *s B. bubalis*, *Ovis aries*. Roberts (1997)<sup>[70]</sup> recorded 23 mammalian species (15 small and 8 large

mammalian species) from river Chenab belonging to 20 genera, 11 families, and 6 orders. There are ten different species of small invertebrates which includes arthropods; insects and other arachnids were identified in both Khurum and Muhabbat Khel dams. The classes Insecta were dominant to other classes of invertebrates in both dams. Six species of invertebrates were discovered in Khurum dam which belong to three classes (Insecta, Clitellata, Arachnida) and five orders (Hymenoptera, Scorpiones, Arachnida, Odonata, Coleoptera). The 6 species are *Sympetrum flaveolum*, *Pandinus imperator*, *Pterostichus melanarius*, *Anax junius*, *Solenopsis invicta*, *Hirudo medicinalis*. Zaryab *et al* conducted study on Tanga dam of district Karak, Khyber Pakhtunkhwa province of Pakistan during the period from August to October

2016. Tanga dam includes all the vertebrates, including fishes, amphibians, reptiles, birds and mammals. Fishes include *Catla catla*. Amphibians include *Rana tigrina*. Reptiles include *Xanthus vigilis* and *Lampropeltis getula*. Birds include *Passer domesticus*, *Acridotheres tritis* and *Anas crecca*. Mammals include *Capra hircus*, *Ovis aries*, *Canis adustus*, *Bos taurus*, *Equus asinus*, *Canis lupus* and *Felis catus*. Among invertebrates *Pandinus imperator*, *pterostichus melanarius*, *Solenopsis invicta* and *Hirudo medicinalis* were abundant in Tanga dam<sup>[71]</sup>.

In Muhabbat Khel dam four species are observed, which belongs to three classes (Insecta, Clitellata, Arachnida) and three orders (Hymenoptera, Scorpiones, Arachnida) and four families (Hirudidae, Scorpionidae, Sphecidea, Vespidae). The four species are *Sceliphron caementarium*, *Vespa velutina*, *Hirudo medicinalis*, *Pandinus imperator*.

#### 5. Conclusion

From the current study it can be concluded that Khurum and Muhabbat Khel dam provide suitable environmental conditions to support the diversity of both vertebrates and invertebrates. The water of this dam is of good quality, government should pay attention to this dam for making this dam excellent for life and irrigation.

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