

## EXPLORING THE AVIAN DIVERSITY OF CHAKESAR VALLEY, SHANGLA, KHYBER PAKHTUNKHWA, PAKISTAN

WAQAS AHMAD<sup>1\*</sup>, JALAL HAYAT KHAN<sup>2</sup>, QUDRAT ULLAH<sup>1</sup>, MUHAMMAD QASIM<sup>3</sup>,  
MUHAMMAD ATHER RAFI<sup>4</sup>

<sup>1</sup>Department of Zoology, University of Peshawar, Peshawar, Pakistan.

<sup>2</sup>Rangeland Research Institute, National Agricultural Research Center, Islamabad, Pakistan.

<sup>3</sup>Department of Zoology, Kohsar University Murree, Pakistan.

<sup>4</sup>National Insect Museum, National Agricultural Research Center, Islamabad, Pakistan.

### ARTICLE INFORMATION

#### Article History:

Received: 7<sup>th</sup> August 2023

Revised: 10<sup>th</sup> September 2023

Published online: 30<sup>th</sup> September 2023

#### Author's contribution

WA design study and data collection, JHK Analyzed the data, QU Methodology, WA, MQ wrote the manuscript.

#### Key words:

Birds, Shangla, Chakesar Valley, Pakistan.

### ABSTRACT

The avian fauna of Chakesar Valley, Shangla, was explored from March 2019 to March 2022. The result yielded a total of 38 bird species belonging to 20 families under the orders Passeriformes, Columbiformes, Coraciiformes, and Accipitriformes. Order Passeriformes, representing 34 species in 17 families, are *Acridotheres tristis* (L.), *A. fuscus* (Wagler), *Sturnia pagodarum* (Gmelin), *Passer domesticus*, *P. montanus* (L.), *Pycnonotus leucogenys* (L.), *P. cafer* (Grey), and *Hypsipetes leucocephalus* (Gmelin). *Phylloscopus xanthoschist* (Grey & Grey), *Phylloscopus* sp., *Terpsiphone paradisi* (L.), *Motacilla cinerea* (Tunstall), *M. alba* (L.), *Oriolus kundoo* (Sykes), *Emberiza lathami* (Grey), *Phoenicurus fuliginos* (Vigors), *P. leucocephalus* (Vigors), *Copsychus saularis* (L.), *Eumyias thalassinus* (Swainson), *Saxicola maurus* (Pallas), *Saxicola caprata* (Linnaeus), *Hirundo rustica* (L.), *Cecropis daurica* (Laxmann), *Hirundo smithii* (Leach), *Dicrurus macrocercus* (Vieillot), *Corvus splendens* (Vieillot), *C. macrorhynchos* (Wagler), *Dendrocitta vagabunda* (Latham), *Parus cinereus* (Vieillot), *Lanius schach* (L.), *Chloris spinoides* (Vigors), *Prinia crinigera* (Hodgson), and *Lonchura punctulate* (L.) Two species, *Halcyon smyrnensis* (L.) and *Alcedo atthis* (L.), represented the order Coraciiformes, while *Spilopelia senegalensis* (L.) and *Gyps himalayensis* (Hume) represented the orders Columbiformes and Accipitriformes, respectively. *Emberiza lathami* was rarely sighted. All reported species are new for the area. These preliminary findings will be valuable for further research in the area.

## 1. INTRODUCTION

Avifaunal research is a vital ecological tool that serves as a key indication in evaluating different habitats both qualitatively and quantitatively (Bilgrami, 1995). Birds are excellent markers of the health of an environment because they perform several crucial ecological tasks such as aspect control, pollination, seed propagation, and nutrient dynamics (Wenny et al., 2011). Bird species richness and diversity act as a standard that determines the productivity and health of almost any ecosystem; this is the main reason they have a special place in science and culture that drive us towards deeper scientific inquiries into their varied ways of life (Paruk, 2018). Pakistan has every possible environment for a wide variety of bird species (Khan, 2023).

In Pakistan, there are approximately 660 to 680 bird species belonging to 74 families and 278 genera. (Khan, 2023; Roberts, 1991). However, because of climate changes and increased anthropogenic activity, global bird diversity is quickly declining (Roy et al., 2012). Shangla is a district in Khyber Pakhtunkhwa Province of Pakistan and Located in Hindukash region (Khan et al., 2013). However according to Dong et al. (2010), since the climate and vegetation of the eastern Hindu Kush are increasingly like those of the neighboring Himalayas, most bio-geographers refer to these mountain ranges as the Hindu Kush-Himalaya (HKH) group. Shangla is a high mountain landscape with moist temperate and coniferous vegetation that covers 11,528 acres. (Swati et al., 2002). The Shangla district is made up of tiny valleys wedged between hills and encircled by tall, forested mountains. Thick and open gymnospermy forests can be

\*Corresponding Author: [waqaschakisar@gmail.com](mailto:waqaschakisar@gmail.com)

Copyright 2017 University of Sindh Journal of Animal Sciences

found in the region, which is located at a high elevation above sea level. High mountains and confined valleys make up most of the topography of the Shangla district.

No work has been done on avian diversity of Shangla so the current Preliminary study was conducted in Chakesar Valley, Shangla. The aim of the study was to assess the avian diversity in Chakesar Valley, Shangla, and provide valuable insights into the bird species present in the region. Additionally, the findings of this study can contribute to conservation efforts and help in understanding the ecological importance of Shangla for avian populations.

## 2. MATERIALS AND METHODS

### Study area

The present study performed to explore the avian fauna of Chakesar Valley, District Shangla, for the first time. Chakesar is a tehsil in district Shangla, located between 34° 47' 8" N and 72° 46' 11" E, with an altitude of 3722 feet (Figure 1). Chakesar valley is on a formation of a river delta in a valley of 5 km wide by 11 km long at the elevation of 3722 feet above sea level. The village is on suture zone / collision zone between the Indian continent and Eurasian continent Tehsil Chakesar is enclosed to the north by Alpuri, to the south by tehsil Martung, to the north-west by tehsil Puran, and to the west by tehsil Besham (Ashraf et al., 2012). Chakesar valley is in Sino Japanes region and reaches to the basin of SaharoSindian region (Hussain, 2012). Chakesar Valley is comprised of four union councils: Chakesar, Opal, Sarkool, and Bunerwal. The study area was divided into different localities which are Danakol, Doriband, Khadang, Ona, Gunagar, Shawawoo, Siknai, Gumrash (Figure 1).

### Data collection

The present checklist focused on long-time fieldwork from March 2019 to March 2022. The primary method employed for data collection was randomized direct observation. Observations of avian species were made in their natural habitats in different localities of the study area. To complement direct observations, birds were sighted with aid of binocular (10× 30), As well as photography was also conducted using a mobile device (the Mi A3) equipped with zooming lenses (2×16). Photographs were taken to record visual information, including physical characteristics, plumage patterns, and distinctive features of the observed bird species. Audio recordings of bird songs and calls were made using audio recording devices.

### Identification

All collected data, including observations and photographs, were analyzed for species identification. Authoritative field guides such as Birds of Pakistan: Helm

Field Guides (2008), and expert ornithologists were consulted when necessary to validate species identification. Birds recorded songs were analyzed and compared with the e-Birds. Besides these, various anonymous sources helped in the identification of the species. Identification was also performed by studying the available literature in research papers (Ali et al., 1983; Grimmett et al., 2008; Altaf et al., 2013; Altaf, 2016; Altaf et al., 2018; Zaman et al., 2022).

## 3. RESULTS AND DISCUSSION

The currents work is a preliminary survey, carried out to explore the avian fauna of Chakesar Valley from March 2019 to March 2022. The study resulted in a total of 38 bird species belonging to 20 families and 4 orders in the study area (Table 1). The orders that were reported in the study area are Passeriformes, Columbiformes, Coraciiformes, and Accipitriformes. Passeriformes was the dominant order, representing 85% of families (n = 17) and 91.8% of species (n = 34) (Figure 2). The family Muscicapidae was the dominant, representing the leading number of species (n = 6) (Figure 3) The area's major avifaunal composition consisted of resident birds, which made up 72.7% of the species (n=27) of the total birds (n=37) (Figure 4).

All the species in the study area were first reported. Passeriformes order was the dominant and represented by 34 species which *Acridotheres tristis* (Linnaeus, 1766), *Acridotheres fuscus* (Wagler, 1827), *Sturnia pagodarum* (Gmelin, JF, 1789), *Passer domesticus*, *Passer montanus* (Linnaeus, 1758), *Pycnonotus leucogenys*(Linnaeus, 1766), *Pycnonotus cafer* (Gray, JE, 1835), *Hypsipetes leucocephalus* (Gmelin, JF, 1789), *Phylloscopus xanthoschist* (Gray, JE & Gray, GR, 1847), *Phylloscopus spp*, *Terpsiphone paradisi* (Linnaeus, 1758), *Motacilla cinerea* (Tunstall, 1771), *Motacilla alba* (Linnaeus, 1758), *Oriolus kundoo* (Sykes, 1832), *Emberiza lathami* (Gray, JE, 1831), *Phoenicurus fuliginous* (Vigors, 1831), *Phoenicurus leucocephalus* (Vigors, 1831), *Copsychus saularis* (Linnaeus, 1758), *Eumyias thalassinus* (Swainson, 1838), *Saxicola maurus* (Pallas, 1773), *Saxicola caprata* (Linnaeus, 1766), *Hirundo rustica* (Linnaeus, 1758), *Cecropis daurica* (Laxmann, 1769), *Hirundo smithii* (Leach, 1818), *Dicrurus macrocercus* (Vieillot, 1817), *Corvus splendens* (Vieillot, 1817), *Corvus macrorhynchos* (Wagler, 1827), *Dendrocitta vagabunda* (Latham, 1790), *Parus cinereus* (Vieillot, 1818), *Lanius schach* (Linnaeus, 1758), *Chloris spinoides* (Vigors, 1831), *Prinia crinigera* (Hodgson, 1836), and *Lonchura punctulate* (Linnaeus, 1758). order Coraciiformes was represented by two species viz., *Halcyon smyrnensis* (Linnaeus, 1758), *Alcedo atthis* (Linnaeus, 1758) while the rest two orders were represented by single species in each viz., order

Columbiformes containing *Spilopelia senegalensis* (Linnaeus, 1766), order Accipitriformes by *Gyps himalayensis* (Hume, 1869). During the current study, *Emberiza lathami* was rarely sighted. The findings from this preliminary study will be valuable for researchers, ornithologists, and environmentalists working towards biodiversity conservation and habitat protection in the region. The greatest number of species were reported from Gumrash (34 species), followed by Doriband (32 Species) while the least number of Birds were reported from Siknai (21 Species).

Several Researchers have worked on avian fauna of Pakistan. According to one such study, 456 species have been reported in Khyber Pakhtunkhwa without any digital record (Shah, 2011). Public data reports 371 digitally documented species from the entire province as per (eBird, 2022). Similarly, Raja *et al.* (1999) conducted a comprehensive and long-term ornithological survey in Palas Valley, District Kohistan between May 1987 and December 1996, and reported a total of 157 species belonging to 47 families. According to Altaf *et al.* (2013) 64 bird species were recorded from Head Khanki, water works on Chenab River in District, Gujranwala, Punjab. In our current study we reported 37 species of birds in 20 families from Chakesar Valley for the first time. Sadam *et al.* (2021) reported 35 bird species from district Mardan in two major habitats (i.e., cropland and urban areas). In their another study they reported more species in agricultural areas near urban areas. He also reported bird species were more diverse and abundant in dense forests of Mardan Khyber-Pakhtunkhwa (Sadam *et al.*, 2021)

In a series of studies on the avian diversity of Swat, Pakistan, researchers have contributed valuable insights into the region's birdlife. Firstly, in Kalam Conservancy, Swat, Shah *et al.* (2014) conducted a comprehensive work from April 2012 to April 2013, aiming to study the spatial distribution, nidification records, and vegetation habitats for the pheasants in the study site. Moreover, during an ornithological field trip to Ushu Forest, Kalam, Swat in May 1983, Roberts (1991) reported 12 bird species belonging to six families, further enhancing our understanding of the avifauna in the region. Additionally, a preliminary study on the avian diversity of district Swat, Khyber Pakhtunkhwa, Pakistan was carried out from January to December 2013, resulting in the documentation of 138 species from 48 families (Pathan *et al.*, 2014). In our current study we reported 37 species of birds in 20 families from Chakesar Valley for the first time.

Rehman *et al.* (2016) conducted a survey at various habitats, including riverbanks, roadside trees, agricultural fields, wetlands municipal dumping areas to document bird diversity and the threats they are facing in district

Karak, Khyber Pakhtunkhwa, from June 2014 to July 2015. Their study reported 32 species belonging to 23 families. In a comprehensive survey of avian diversity, different regions of Chitral were explored to gather the data on both passerines and non- passerines, collectively 47 species were documented (Manzoor *et al.*, 2017). In our current study we reported 37 species of Birds in 20 families under 4 orders of Birds ,all the species were recorded for the first time. In another study focusing on Buner, Shahabuddin *et al.* (2016) gathered information about bioecology of Chukar (*Alectoris chukar*) in Totalai Game Reserve during the period of 2013-2014. More recently, (Khan & Gabol, 2023) studied Bioecology, diversity and distribution of birds of District Bajaur and reported ,83 bird species belonging to 40 families and 15 orders.

In the current study we focused on the observation of avian fauna from Chakesar Valley, Shangla for a period of three years from March 2018 to March 2021. The study resulted in 37 species of birds in 20 families under 4 orders. The current study was a preliminary work on the avian fauna of the study area and will help in future for further study.

#### 4. CONCLUSION

In conclusion, the study demonstrates a rich bird species composition in the Chakesar Valley of District Shangla, with 38 species reported. Due to the abundance of vegetation in this location, the bird fauna was spectacular. And therefore, it is suggested that further research in this matter should be in that direction.

#### 5. CONFLICT OF INTEREST

All authors have declared that there is no conflict of interests regarding the publication of this article.

#### 6. ACKNOWLEDGMENT

The authors express their gratitude to Dr. Muhammad Ather Rafi (Ex-Director, National Insect Museum, National Agriculture council, Islamabad) for his invaluable support during the study. We are also thankful to Muhammad Husnain Khan (the first author's cousin) for accompanying them during the data collection process.

#### REFERENCES

- Ali, S., Ripley, S. D., & Dick, J. H. (1983). *A pictorial guide to the birds of the Indian subcontinent*. Oxford University Press.
- Altaf, M., Javid, A., Irfan, M. A., Munir, S. A., Iqbal, K. J., & Umair, M. (2013). Diversity, distribution

- and ecology of birds in summer season flathead Khanki, Punjab, Pakistan. *Biologia (Pakistan)*, 59(1), 131-137.
- Altaf, M. (2016). Assessment of Avian and Mammalian Diversity at Selected Sites along river Chenab University of Veterinary and Animal Sciences, Lahore-Pakistan.
- Altaf, M., Javid, A., Khan, A. M., Khan, M. S. H., Umair, M., & Ali, Z. (2018). Anthropogenic impact on the distribution of the birds in the tropical thorn forest, Punjab, Pakistan. *Journal of Asia-Pacific Biodiversity*, 11(2), 229-236.
- Altaf, M., Khan, A. M., Umair, M., & Irfan, M. A. (2012). Status of wild birds and mammals in urban habitats of Gujranwala, Punjab, Pakistan. *Punjab University Journal of Zoology*, 27, 9-12.
- Ashraf, M., Hussain, M., Ahmad, M. S. A., Al-Qurainy, F., & Hameed, M. (2012). Strategies for conservation of endangered ecosystems. *Pakistan Journal of Botany*, 44, 1-6.
- Bilgrami, K. (1995). Concept and conservation of biodiversity. *Taxonomy and Biodiversity*, 1-8.
- Dong, S., Wen, L. U., Zhu, L., & Li, X. (2010). Implication of coupled natural and human systems in sustainable rangeland ecosystem management in HKH region. *Frontiers of Earth Science in China*, 4, 42-50.
- Grimmett, R., Roberts, T. J., Inskipp, T., & Byers, C. (2008). *Birds of Pakistan*. A & C Black.
- Khan, R. U., & Gabol, K. (2023). Bioecology, Diversity and Distribution of Avian Fauna in Bajaur Valley, Khyber-Pakhtunkhwa, Pakistan. *Pakistan Journal of Zoology*, 1-11.
- Khan, S. M., Page, S. E., Ahmad, H., & Harper, D. M. (2013). Sustainable utilization and conservation of plant biodiversity in montane ecosystems: the western Himalayas as a case study. *Annals of botany*, 112(3), 479-501.
- Manzoor, M., Nazli, A., Shamim, S., & Khan, F. M. (2017). A Study on Avifauna Present in Different Zones of Chitral Districts. *Journal of Bioresource Management*, 4(1), 4.
- Paruk, J. D. (2018). *The Cornell Lab of Ornithology Handbook of Bird Biology*. Oxford University Press.
- Raja, N., Davidson, P., Bean, N., Drijvers, R., Showler, D., & Barker, C. (1999). The birds of Palas, North-West Frontier Province, Pakistan. *Forktail*, 77-86.
- Rehman, H. U., Rehman, J. U., Sajad, S., Wahab, A., & Zarin, K. (2016). Ornithological survey of District Karak, KPK, Pakistan. *Journal of Entomology and Zoology Studies*, 4(2), 326-328.
- Roberts, T. (1991). The Birds of Pakistan. Non-Passeriformes. *Oxford University Press. Karachi*, 1, 598.
- Roy, U. S., Banerjee, P., & Mukhopadhyay, S. (2012). Study on avifaunal diversity from three different regions of North Bengal, India. *Asian Journal of Conservation Biology*, 1(2), 120-129.
- Sadam, A., Khan, R. U., & Mahmood, S. (2021). Identifying bird traits that enable them to become urban exploiters in an urban area of Mardan, Pakistan. *Pakistan Journal of Zoology*, 53(5), 1813-1822.
- Sadam, A., Khan, R. U., Mahmood, S., & Gul, J. (2021). Spatial distribution and diversity of bird communities in District Mardan, Khyber Pakhtunkhwa, Pakistan. *Pakistan J. Zool.*, 1-6.
- Hussain, F. (2012). Conservation assessment of plant resources of Chakesar valley, district Shangla, KPK, Pakistan. *Pakistan Journal of Botany*, 44 (Special issue), 179-186.
- Shah, S. (2011). Conservation of endangered species in Khyber Pakhtunkhwa. *Journal of Animal and Plant Sciences*, 21(2), 400-404.
- Shahabuddin, S., Naveed, A., Adil, K., Waheed, A., & Basit, A. (2016). Exploring the population status of family Phasianidae in Totalai Game Reserve, District Buner, Khyber Pukhtunkhwa, Pakistan. *Brazilian Journal of Poultry Science*, 5, 13-20.
- Swati, F., Bacha, M. N., & Mulk, J. (2002). Note on the Exploration in the Shangla District and the Swat Valley. *Ancient Pakistan*, 217-252.
- Wenny, D. G., Devault, T. L., Johnson, M. D., Kelly, D., Sekercioglu, C. H., Tomback, D. F., & Whelan, C. J. (2011). The need to quantify ecosystem services provided by birds. *The auk*, 128(1), 1-14.
- Zaman, A., Rafique, A., Jabeen, F., Sultana, T., Sultana, S., Ai, S., & Mahmood, M. S. (2022). Diversity, Abundance and Distribution of Avifauna in District Jhang, Pakistan. (ResearchSquare).



|    |  |              |                                  |                            |                |
|----|--|--------------|----------------------------------|----------------------------|----------------|
| 11 |  |              | <i>Phylloscopus spp</i>          | Leaf warbler               |                |
| 12 |  | Monarchidae  | <i>Terpsiphone paradisi</i>      | Indian Paradise Flycatcher | Resident       |
| 13 |  | Motacillidae | <i>Motacilla cinerea</i>         | Gray Wagtail               | Resident       |
| 14 |  |              | <i>Motacilla alba</i>            | White Wagtail              | Resident       |
| 15 |  | Oriolidae    | <i>Oriolus kundoo</i>            | Indian Golden Oriole       | Summer Migrant |
| 16 |  | Emberizidae  | <i>Emberiza lathami</i>          | Crested Bunting            | Summer Migrant |
| 17 |  | Muscicapidae | <i>Phoenicurus fuliginous</i>    | Plumbeous Redstart         | Resident       |
| 18 |  |              | <i>Phoenicurus leucocephalus</i> | White-capped Redstart      | Resident       |
| 19 |  |              | <i>Copsychus saularis</i>        | Oriental Magpie Robin      | Resident       |
| 20 |  |              | <i>Eumyias thalassinus</i>       | verditer flycatcher        | Summer Migrant |
| 21 |  |              | <i>Saxicola maurus</i>           | Siberian Stonechat         | Summer Migrant |
| 22 |  |              | <i>Saxicola caprata</i>          | Pied Bush chat             | Summer Migrant |
| 23 |  | Hirundinidae | <i>Hirundo rustica</i>           | Barn Swallow               | Summer Migrant |
| 24 |  |              | <i>Cecropis daurica</i>          | Red-Rumped swallow         | Summer Migrant |
| 25 |  |              | <i>Hirundo smithii</i>           | Wire Tailed Swallow        | Summer Migrant |
| 26 |  | Dicruridae   | <i>Dicrurus macrocerus</i>       | Black drongo               | Summer Migrant |
| 27 |  | Corvidae     | <i>Corvus splendens</i>          | House crow                 | Resident       |
| 28 |  |              | <i>Corvus macrorhynchos</i>      | Large-billed Crow          | Resident       |
| 29 |  |              | <i>Dendrocitta vagabunda</i>     | Rufous treepie             | Resident       |
| 30 |  | Paridae      | <i>Parus cinereus</i>            | Cinereous Tit              | Resident       |
| 31 |  | Laniidae     | <i>Lanius schach</i>             | Long-tailed Shrike         | Resident       |

|    |                 |              |                                |                            |          |
|----|-----------------|--------------|--------------------------------|----------------------------|----------|
| 32 |                 | Fringillidae | <i>Chloris spinoidea</i>       | Yellow-breasted Greenfinch | Resident |
| 33 |                 | Cisticolidae | <i>Prinia crinigera</i>        | Himalayan Prinia           | Resident |
| 34 |                 | Estrildidae  | <i>Lonchura punctulate</i>     | Scaly-breasted Munia       | Resident |
| 35 | Columbiformes   | Columbidae   | <i>Spilopelia senegalensis</i> | Laughing dove              | Resident |
| 36 | Coraciiformes   | Alcedinidae  | <i>Halcyon smyrnensis</i>      | White-Throated Kingfisher  | Resident |
| 37 |                 |              | <i>Alcedo atthis</i>           | Common Kingfisher          | Resident |
| 38 | Accipitriformes | Accipitridae | <i>Gyps himalayensis</i>       | Himalayan vulture          | Resident |

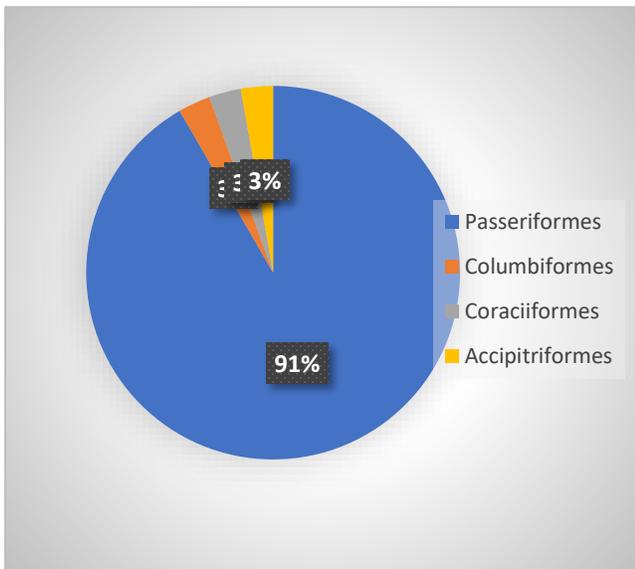


Figure 2. Percentage of Birds species in each order of the Chakesar Valley, Shangla

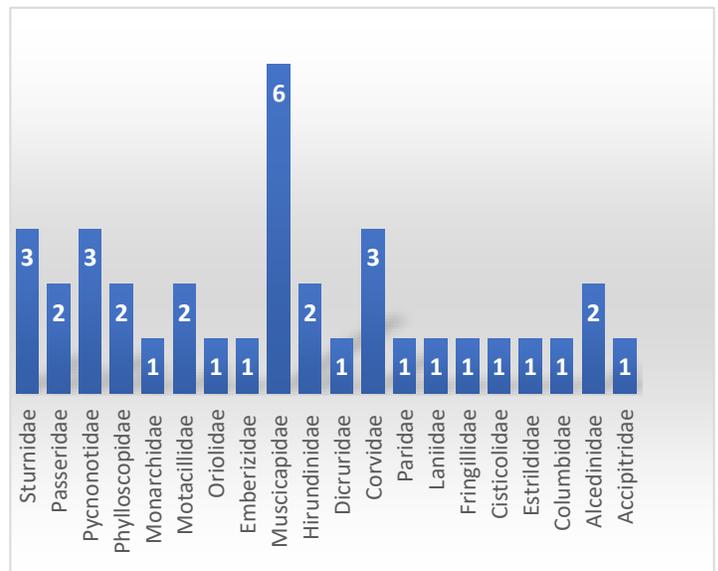


Figure 3. Number of Birds species in each family of the study area, Chakesar Valley, Shangla

**Table 2** Birds sighted in different localities of Chakesar Valley, Shangla

| S.No | Species                          | Dori band | Dana kol | Gunanger | Khadang | On a | Shawa woo | Siknai | Gumr ash |
|------|----------------------------------|-----------|----------|----------|---------|------|-----------|--------|----------|
| 1    | <i>Acridotheres tristis</i>      | +         | +        | +        | +       | +    | +         | +      | +        |
| 2    | <i>Acridotheres fuscus</i>       | +         | +        | +        | +       | +    | +         | +      | +        |
| 3    | <i>Sturnia pagodarum</i>         | +         | -        | +        | -       | -    | +         | -      | +        |
| 5    | <i>Passer domesticus</i>         | +         | -        | -        | -       | +    | +         | -      | +        |
| 6    | <i>Passer montanus</i>           | +         | +        | -        | +       | +    | -         | -      | +        |
| 7    | <i>Pycnonotus leucogenys</i>     | +         | -        | +        | -       | -    | +         | -      | +        |
| 8    | <i>Pycnonotus cafer</i>          | +         | +        | +        | +       | +    | +         | +      | +        |
| 9    | <i>Hypsipetes leucocephalus</i>  | +         | +        | +        | +       | +    | +         | +      | +        |
| 10   | <i>Phylloscopus xanthoschist</i> | +         | +        | +        | -       | -    | -         | +      | +        |
| 11   | <i>Phylloscopus spp</i>          | +         | +        | +        | +       | +    | +         | +      | +        |
| 12   | <i>Terpsiphone paradisi</i>      | +         | +        | +        | +       | +    | +         | -      | +        |
| 13   | <i>Motacilla cinerea</i>         | -         | -        | +        | -       | +    | +         | +      | +        |
| 14   | <i>Motacilla alba</i>            | +         | +        | -        | +       | -    | +         | +      | +        |
| 15   | <i>Oriolus kundoo</i>            | +         | -        | +        | +       | +    | +         | +      | +        |
| 16   | <i>Emberiza lathami</i>          | +         | -        | -        | -       | -    | -         | -      | -        |
| 17   | <i>Phoenicurus fuliginous</i>    | +         | +        | +        | +       | +    | +         | +      | +        |
| 18   | <i>Phoenicurus leucocephalus</i> | +         | +        | +        | +       | +    | +         | +      | +        |
| 19   | <i>Copsychus saularis</i>        | +         | +        | +        | +       | +    | +         | +      | +        |
| 20   | <i>Eumyias thalassinus</i>       | +         | +        | +        | +       | -    | +         | +      | +        |
| 21   | <i>Saxicola maurus</i>           | +         | -        | +        | -       | +    | +         | +      | +        |
| 22   | <i>Saxicola caprata</i>          | +         | +        | -        | +       | +    | -         | +      | +        |
| 23   | <i>Hirundo rustica</i>           | +         | +        | +        | +       | +    | +         | -      | +        |
| 24   | <i>Cecropis daurica</i>          |           |          |          | +       | +    | -         | -      | -        |

*Avian Diversity in Chakesar Valley, Khyber Pakhtunkhwa, Pakistan*

|    |                                |           |           |           |           |           |           |           |           |
|----|--------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 25 | <i>Hirundo smithii</i>         | +         | -         | +         | -         | +         | +         | -         | +         |
| 26 | <i>Dicrurus macrocercus</i>    | +         | -         | -         | -         | +         | +         | -         | +         |
| 27 | <i>Corvus splendens</i>        | +         | +         | +         | +         | -         | +         | +         | +         |
| 28 | <i>Corvus macrorhynchos</i>    | +         | -         | -         | +         | -         | +         | -         | +         |
| 29 | <i>Dendrocitta vagabunda</i>   | -         | -         | -         | -         | -         | -         | -         | +         |
| 30 | <i>Parus cinereus</i>          | +         | +         | +         | +         | +         | +         | +         | +         |
| 31 | <i>Lanius schach</i>           | +         | -         | +         | -         | -         | +         | -         | +         |
| 32 | <i>Chloris spinoides</i>       | +         | -         | -         | -         | +         | +         | -         | +         |
| 33 | <i>Prinia crinigera</i>        | +         | +         | -         | +         | +         | -         | -         | +         |
| 34 | <i>Lonchura punctulate</i>     | +         | +         | +         | +         | +         | +         | +         | +         |
| 35 | <i>Spilopelia senegalensis</i> | +         | +         | -         | +         | -         | -         | +         | +         |
| 36 | <i>Halcyon smyrnensis</i>      | -         | -         | +         | +         | -         | -         | -         | -         |
| 37 | <i>Alcedo atthis</i>           | -         | -         | -         | -         | +         | +         | +         | -         |
| 38 | <i>Gyps himalayensis</i>       | -         | -         | -         | -         | -         | -         | -         | +         |
|    | <b>Total reported Birds</b>    | <b>32</b> | <b>22</b> | <b>25</b> | <b>23</b> | <b>25</b> | <b>27</b> | <b>21</b> | <b>34</b> |

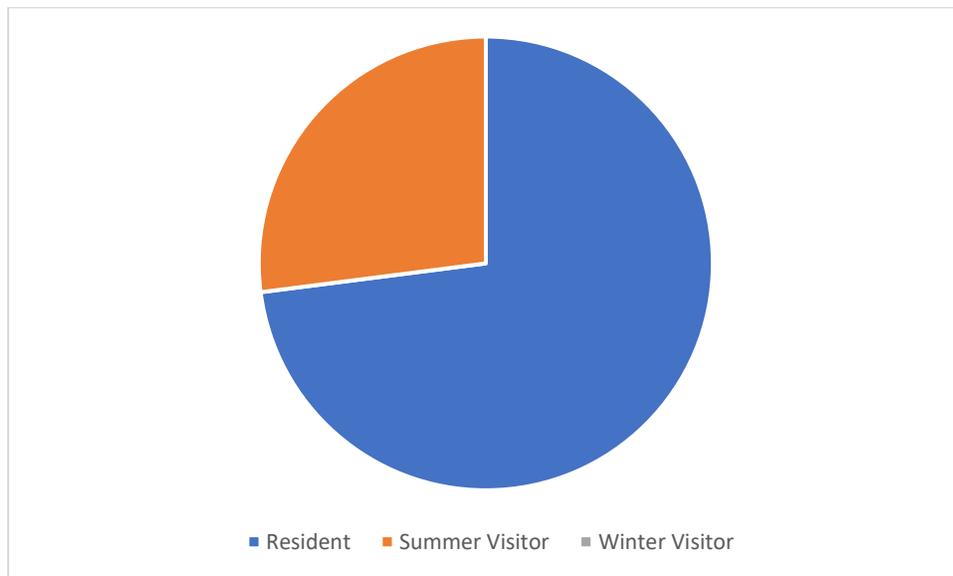


Figure 4. status of the birds in Chakesar valley Shangla



Figure 5. A, *Acridotheres tristis* ; B, *Acridotheres fuscus* ; C *Sturnia pagodarum* ; D, *Passer domesticus* ; E, *Passer montanus* ; F, *Pycnonotus leucogenys* ; G, *Pycnonotus cafer* ; H, *Hypsipetes leucocephalus* ; I, *Phylloscopus xanthoschist*.

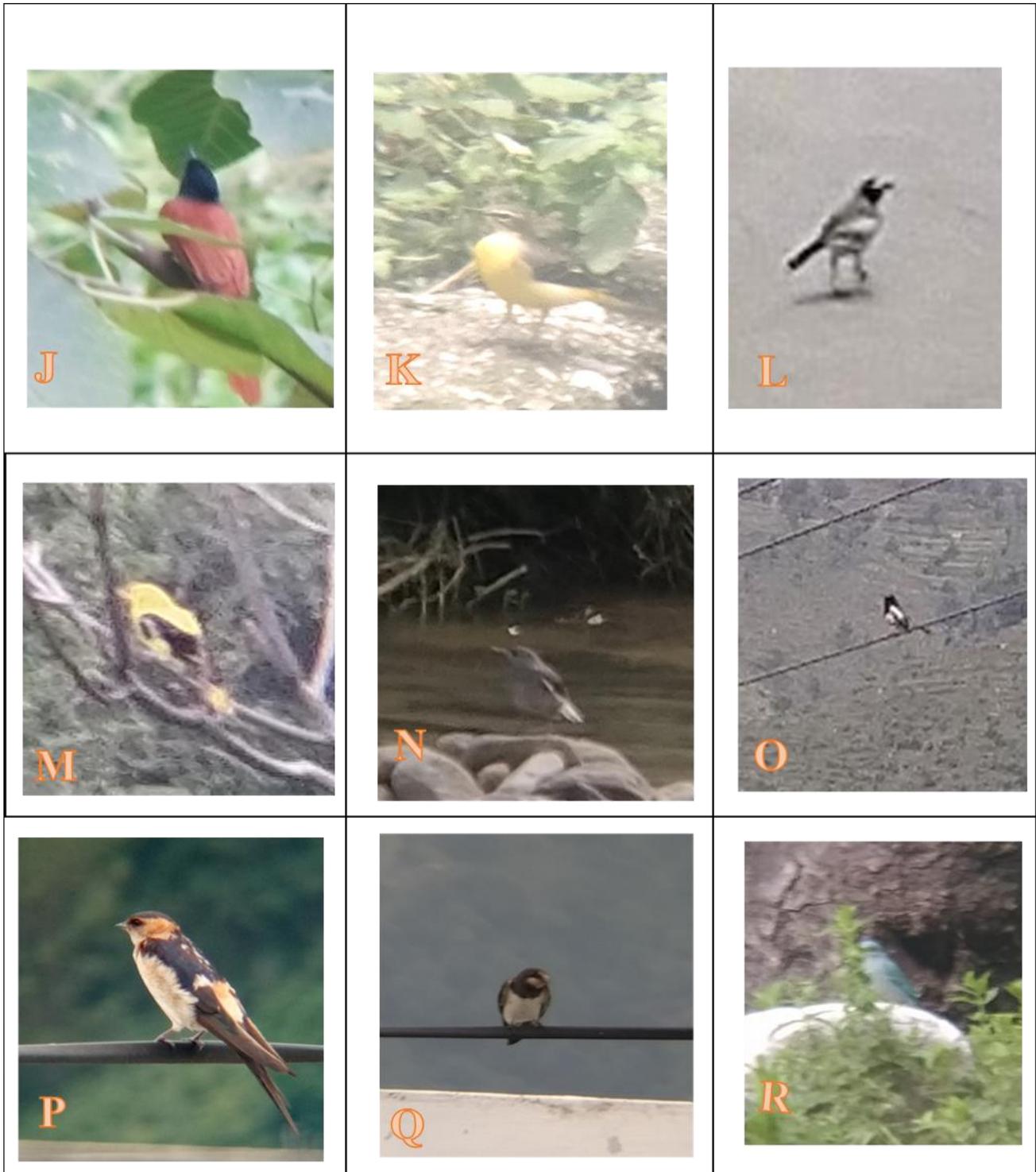


Figure 6. J, *Terpsiphone paradisi*; K, *Motacilla cinerea*; L, *Motacilla alba* ; M, *Oriolus kundoo* ; N, *Phoenicurus fuliginous* ; O, *Copsychus saularis* ; P, *Cecropis daurica* ; Q, *Hirundo rustica* ; R, *Eumyias thalassinus*



Figure 7. S, *Corvus splendens*; T, *Saxicola maurus*; U, *Saxicola caprata*; V, *Alcedo atthis* ; W, *Halcyon smyrnensis* ; X, *Lanius schach* ; Y, *Dicrurus macrocercus* ; Z, *Lonchura punctulate* ; XY, *Emberiza lathami*