

Bird Biodiversity and Ringing Data Analysis at Shakpak Pass in the Tanirtau (2017-2022)

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Abstract

The Shakpak Pass, located in the foothills of the Western Tien Shan, is a significant migration route for birds. This work presents the ringing data collected between 2017 and 2022, providing insights into the diversity, abundance, and seasonal occurrence of bird species at the pass. The study reveals several key findings, including the identification of rare species, the documentation of migration patterns for both passerine and non-passerine species, and the notable reappearance of a species that had been absent for an extended period. These results deepen our understanding of avian ecology and biodiversity and underscore the importance of long-term monitoring efforts for effective conservation strategies.

Keywords: Passerine species; Passeriformes; Columbiformes; Nocturnal raptors; Shakpak Pass

Introduction

The Shakpak Pass (formerly Chokpak), located in the foothills of the (Tanirtau) Western Tien Shan at an altitude of 1200 meters above sea level, serves as a significant migration route for birds Borodikhin [1]. Over 269 species have been recorded at the pass, making it an important site for bird migration [2]. For the period 1966 - 1981, a total of 266 bird species from 17 orders were collected using a stationary trap Gavrilov, Gistsov [3]. From 1982 to 2016, records were obtained regarding the migration dates and population dynamics of 133 non-passerine bird species Gavrilov [4], alongside 152 passerine species Gavrilov [5], culminating in a total documented species count of 285.

Methods

Between 2017 and 2022, researchers from the Institute of Zoology of the Republic of Kazakhstan conducted annual bird ringing activities at the Shakpak Pass. The study focused on capturing and documenting ringed birds during the autumn (mid-August to the end of November) and spring (late March to the end of May) migration periods. Stationary "Heligoland" type traps and strategically placed mist nets were used to capture birds along their migratory route. Detailed data, including species, capture date, location, and individual characteristics, were recorded in a database according to ethical guidelines and permits.

Results

A total of 25,162 migratory birds belonging to 141 species across 12 taxonomic orders were recorded and ringed at Shakpak Pass between 2017 and 2022. Out of these, 1,461 individuals were captured during the spring migration, while 23,701 individuals were captured during the autumn migration. The order Passeriformes was the most abundant, consisting of 92 species and 22,430 individuals. The Rook (*Corvus frugilegus*) was the most frequently ringed species, with a total of 5,302 individuals recorded. The Barn Swallow (*Hirundo rustica*) followed closely with 4,109 individuals captured and ringed. The Common Chaffinch (*Fringilla coelebs*) exhibited a substantial presence, with 3,535 individuals recorded. Other notable species included the Western Yellow Wagtail (*Motacilla flava*) and Pale Sand Martin (*Riparia diluta*), with 1,467 and 1,202 individuals ringed, respectively. The Eurasian Jackdaw (*Corvus monedula*) was also well-represented, with 1,169 individuals ringed during the study period. The European Bee-eater (*Merops apiaster*) was a numerous non-passerine species, with a total of 1,144 ringed individuals. A total of 428 diurnal raptors from 16 species and 31 nocturnal raptors from 4 species were ringed during the study. The Eurasian Sparrowhawk (*Accipiter nisus*) was the most abundant

diurnal raptor species, with 277 individuals recorded. Noteworthy raptors included the Eurasian Hobby (*Falco subbuteo*) with 28 individuals, the Black Kite (*Milvus migrans*) with 18 individuals, and the Common Buzzard (*Buteo buteo*) and Common Kestrel (*Falco tinnunculus*) with 16 individuals each.

Among the nocturnal raptors, the Eurasian Scops-Owl (*Otus scops*), Long-eared Owl (*Asio otus*), Pallid Scops-Owl (*Otus brucei*), and Eurasian Eagle-Owl (*Bubo bubo*) were observed during the study. An exceptional finding in 2022 was the reappearance of the Eurasian Eagle-Owl after a gap of 27 years. Among the five observed species of Columbiformes, the Oriental Turtle Dove (*Streptopelia orientalis*) stood out with 214 individuals captured, representing approximately 80% of all pigeon and dove individuals recorded. An exciting discovery during the study was the capture of a Red-listed species, three Yellow-eyed Pigeons (*Columba eversmanni*), in September 2020 after a 17-year absence. This finding highlights the importance of long-term monitoring efforts in understanding the population dynamics and conservation needs of rare avian species. In addition to the commonly observed species, several rare non-passerine species were recorded at the Shakpak Pass. These included the White-winged Woodpecker (*Dendrocopos leucopterus*), Oriental Honey Buzzard (*Pernis ptilorhynchus*), Greater Flamingo (*Phoenicopterus roseus*), Grey Partridge (*Perdix perdix*), and Common Quail (*Coturnix coturnix*). The Oriental Skylark (*Alauda gulgula*) was first recorded at Shakpak Pass during the autumn season of 2019, marking its inaugural sighting in our database. Previously, the species had exclusively been observed during the spring season. These rare sightings underscore the significance of the Shakpak Pass as a habitat for diverse avifauna, attracting species with specific ecological requirements.

i. Furthermore, the data revealed that certain species were exclusively recorded during the spring migration period. These species include the Brun-headed Bunting (*Emberiza bruniceps*), Common Kingfisher (*Alcedo atthis*), Common Myna (*Acridotheres tristis*), Common Redstart (*Phoenicurus phoenicurus*), and Lesser

Grey Shrike (*Lanius minor*). It is worth noting that the absence of data for specific periods, such as the autumn of 2018 and the spring periods of 2017, 2018, 2019, and 2020, may limit a comprehensive understanding of migratory patterns and population dynamics during those specific times. Additionally, variations in trap working days and weather conditions could introduce biases into the data. However, despite these limitations, the long-term and systematic data collection at the Shakpak Ornithological Station provides valuable insights into the richness and dynamics of bird species within the region. In conclusion, the Shakpak Pass has played an important role in the study of bird populations and migration patterns for about six decades. The data collected between 2017 and 2022 demonstrate the diverse range of bird species using the pass during their migrations. The findings include substantial numbers of ringed individuals, rare species occurrences, and exclusive sightings during the spring migration. These results significantly enhance our understanding of avian ecology, migration patterns, and emphasize the importance of ongoing monitoring efforts for bird conservation in the Western Tien Shan region.

References

1. Borodikhin IF, Gavrilo EI, Kovshar AF (1974) From the experience of the Chokpak Ornithological Station (West Tien Shan) /Communication of Baltic Commission for the Study of Bird Migration 8: 81-97.
2. Birdlife International (2023) Important Bird Areas factsheet: Chokpak Pass.
3. Gavrilo EI, Gistsov AP (1985) Seasonal bird flights in the foothills of the Western Tien Shan. Alma-Ata pp: 1-222.
4. Gavrilo AE, Abaev AZH, Zaripova SKH (2016) Materials on the dates of migration and number of birds on Chokpak pass (West Tien Shan foothills) in 1982-2016. Part 1. Non-passerines (Podicipediformes - Piciformes) // Selevinia pp: 243-250.
5. Gavrilo AE, Abaev AZH, Zaripova SKH (2017) Materials on the dates of migration and population of the migrants at Chokpak pass (West Tien Shan foothills) in 1982- 2016. Part 2. Passerines (Passeriformes) // Ornithological Bulletin of Kazakhstan and Central Asia 4: 76-84.



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