

# ALTITUDINAL RANGE AND RELATIVE ABUNDANCE OF FIVE SPECIES OF TITS IN MACHIARA NATIONAL PARK, MUZAFFARABAD, AZAD KASHMIR, PAKISTAN

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**Abstract.** The Machiara National Park is an Endemic Bird Area (128) of Western Himalayas, located at 34° 40' N, 73° 10' E. It has the area 13,532 ha (33,437 acres). Elevation of MNP ranges between 1200–3880 m a.s.l. Surveys were conducted in alternate months i.e. January, March, May, July, September and November 2007 to gather information on the five species of Tits i.e. Great Tit (*Parus major*), Black-crested Tit (*P. rufonuchalis*), Crested Black Tit (*P. melanolophus*), Green-backed Tit (*P. monticolus*) and Yellow-checked Tit (*P. xanthogenys*) and their altitudinal range in Machiara National Park. All the five species were found between the range of 1180–3080 m. Great Tit is found to be the most abundant species with a relative abundance of 37.7 % among the five. Habitat destruction, use of the Park for summer pastures, continuously increasing collection of fodder, fuel wood and timber were found to be the major threats to wildlife of the Park especially the avian diversity.

**Key words:** Tits, Western Himalayas, distribution, altitude, abundance, threats.

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**Высотное распространение и относительное обилие пяти видов синиц в национальном парке Мачиара, Кашмир, Пакистан. - М.Н. Аван, М.С. Аван. - Беркут. 16 (2). 2007. - Национальный парк Мачиара расположен в Западных Гималаях (34° 40' N, 73° 10' E). Его площадь 13 532 га. Высоты колеблются от 1200 до 3880 м н.у.м. Исследования проводились с января по ноябрь 2007 г. Изучались 5 видов рода *Parus*: *P. major*, *P. rufonuchalis*, *P. melanolophus*, *P. monticolus*, *P. xanthogenys*. Все виды обнаружены на высотах от 1180 до 3080 м н.у.м. Наиболее многочисленной была *P. major*, относительное обилие ее составляло 37,7 % среди 5 изучаемых видов. Наиболее редкие виды – *P. xanthogenys* и *P. monticolus*. Основными угрозами для природы, прежде всего диких животных, в парке являются: разрушение местобитаний, использование территории под летние пастбища, заготовка корма для скота, дров и деловой древесины во все увеличивающихся объемах.**

## Introduction

Azad Jammu and Kashmir (AJK) is located in foothills of the Himalayas. AJK has a wide range of climatic conditions depending upon altitude, which ranges from 275 m in the south to 3800 m in the north. The dry subtropical climate in the south changes to moist temperate in the north (IUCN, 1996). Different climatic conditions resulting in diverse vegetation, harbour a variety of wild mammal and bird species.

The Machiara National Park (MNP) is an Endemic Bird Area (128) of Western Himalayas (BirdLife International, 2004), located at a distance of 35 km from Muzaffarabad, the capital city of AJK, on the right bank of river Neelum at 34° 40' N, 73° 10' E. Spreading over 13,532 ha (33,437 acres), the Park is

bounded from the east by Salkhala, from the west by Mansehra District of North West Frontier Province, from the north by Karen forest division of Neelum Valley and from the south by Muzaffarabad (Fig.1). Originally it was planned to be a Trans-boundary National Park as a joint venture with North West Frontier Province Government. It was declared a National Park in 1996 by the AJK Government.

Machiara National Park falls in the Monsoon belt and receives sufficient precipitation in the form of snow and rainfall. It has also got permanent snow on the top of Ganja Mountain. Major vegetation of MNP consists Blue Pine (*Pinus wallichiana*), Fir (*Abies pindrow*), Deodar (*Cedrus deodara*), Spruce (*Picea smithiana*) in the tree layer. The shrub layer comprises *Viburnum foetens*, *Berberis lycium*, *Rosa burnonii*, *Salix acmophylla*, *S. denticulata*,



*Juniperus communis* etc. The herb layer consists of different families, the most important genera are *Bistorta*, *Polygonum*, *Senecio*, *Erigeron*, *Nepeeta*, *Orangium* etc. Elevation of MNP ranges between 1200–3880 m. Due to diverse vegetation type and altitudinal range variety of avian species are found in MNP.

Great Tit (*Parus major*) occurs through out the lower valleys of Gilgit and Baltistan and in A.J.K. It is plentiful below about 2400 m (8000 f) in horse chestnut (*Aesculus indicus*) forest (Roberts, 1992). According to Awan and Mir (2007), Great Tit is found in Pattika Recreational Park with a percentage frequency of about 1.74. Great Tit is more probably to be considered a hill than a plain bird and each race breeds throughout the more wooded ranges of its area from a height of about 3500 f to their summit even to 9000 to 10000 f when it is possible, but above 6000 f it is rather scarce (Whistler, 1986)

Green-backed tit (*P. monticolus*) is a Sino-Himalayan endemic species which is largely sedentary with only limited altitudinal migration in winter months (Roberts, 1992). Its normal breeding zone lies between 5000 to 8000 f but few may met up to 10000 f and even to 12000 f. During the winter numbers descend to foothills below 4000 f (Whistler, 1986). According to Ali & Ripley (1973), Green-backed Tit breeds between 1600 to 2800 m in Kahsmir.

Yellow-checked Tit (*P. xanthogenys*) is resident of lower elevation in the outer foothills of Himalayas mainly between 1500 to 2300 m (5000 to 7500 f) (Inskipp, Inskipp, 1985) and breeds between 1500 and 2100 m, in Nepal up to 2400 m occasionally descending to 1200 m in winter (Ali, Ripley, 1973).

Roberts (1992) reported Black-crested Tit (*P. rufonuchalis*) in dry scrub forests of Mar-

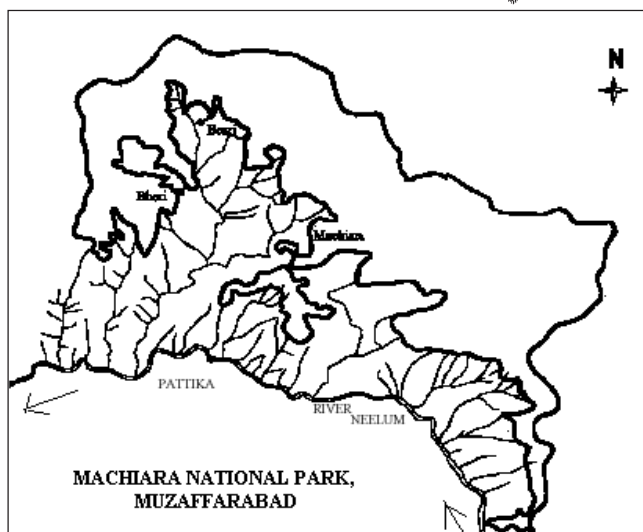


Fig. 1. Study area.

Рис. 1. Район исследований.

galla hills down to 760 m (2500 f) in October. According to Mirza (1998), Black-crested Tit, Crested Black Tit (*Parus melanolphus*), Great Tit and Green-backed Tit are beautiful and melodious birds of moist temperate forest and they are constantly busy in picking up small insects from branches. Crested Black Tit is truly a bird of conifer forms and is found usually at high altitude between 1800 to 3000 m (6000 to 10000 f) in Pakistan (Roberts 1992). It breeds in somewhat high zone between 6000 to 12000 f but in winter descends down to 4000 f and even occasionally lower though it never reaches the plains (Whistler, 1986).

### Material and methods

The data were collected by using direct as well as indirect methods in order to find out the altitudinal range of five species of tits in Machiara National Park. For comprehensive and seasonal data collection, surveys were conducted in alternate months i.e. January, March May, July, September and November in 2007. In view of difficult terrain, the Line Transect Method which involves recording the number of birds encountered along a definite length of



the habitat was used. Observations were made using naked eye as well as binocular ( $12\times$ – $50\times$ ) and species were identified using keys of Woodcock (1980), Ali and Ripley (1983) and Kazmierczak (2000). Wildlife staff and locals were interviewed for the data on altitudinal range, presence or absence of the species in MNP. Finally the collected data was tabulated and analysed using standard statistical methods to calculate relative abundance.

### Results and discussion

During present survey 5 species of tits have been recorded in the Park.

**Great Tit** is found in almost all the parts of Machiara National Park. Its relative abundance is calculated as 37.7 % (Table, Fig 2). Great Tit breeds between 1000 to 1800 m in Chitral and in Ladakh up to 3600 meter (Ali, Ripley, 1973). According to Awan et al. (2004), Great Tit is a common winter visitor in the city area of Muzaffarabad. During the survey it was recorded in almost all the months and its altitudinal range is calculated between 1240 to 2655 m (Table, Fig. 3). Choudhury (2003) recorded Great Tit at an altitude of 2000 m in India.

**Black-crested Tit** was found through out the survey and in all parts of the park. It is the

Relative abundance and altitudinal range of tits in Machiara National Park

Относительное обилие и высотное распространение синиц в национальном парке Мачиара

Species	Relative abundance, %	Altitudinal range, m
<i>P. major</i>	37.7	1240–2655
<i>P. rufonuchalis</i>	26.4	1760–2760
<i>P. melanolophus</i>	19.6	2120–2210
<i>P. monticolus</i>	7.0	2710–3080
<i>P. xanthogenys</i>	9.4	1180–3000

second highest populated species among the five tits in MNP. The relative abundance is calculated as 26.4 % (Table, Fig. 2). Altitudinal range of this species in MNP is recorded between 1760 to 2760 m (Table, Fig. 3). Black-crested Tit breeds between 2200 to 3600 m occasionally descending up to 1500 m, in winter exceptionally to the foothills (Ali, Ripley, 1973).

**Crested Black Tit** is recorded only in summer. Its relative abundance in MNP is calculated as 19.6 % (Table, Fig. 2). The species is found in an altitudinal range of 2120–2210 m (Table, Fig. 3). It breeds from 2000 m to timber line 3300 m in Kashmir and in winter occurs down to the foothills 600 m (Ali, Ripley, 1973). According to Kazmierczak (2000), this species is resident to Pakistan with an altitudinal migration between 2000 to 3700 m in summer and comes down to foothills in winter.

**Green-backed Tit** is the least populated species among the five species of tits in MNP with the relative abundance of 7.0 % (Table, Fig. 2). It is met within summer usually above 1500 m and normally up to about 2700 m (Roberts, 1992). Altitudinal range of Green-backed Tit is recorded from 2710 to 3080 m (Table, Fig. 3) in MNP. The species is reported at an

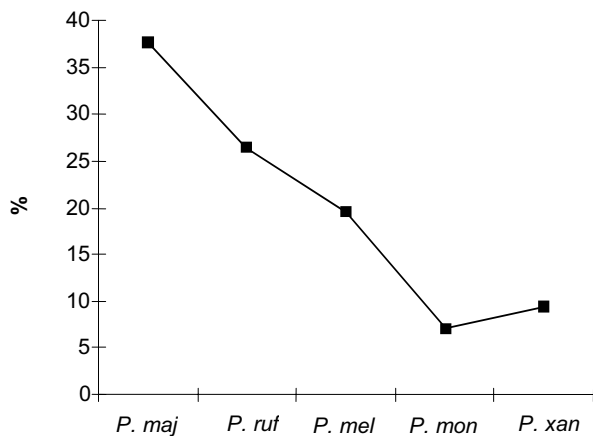


Fig. 2. Dynamics of relative abundance of tits.

Рис. 2. Динамика относительного обилия синиц.



altitude of about 1800 m in Eagle-nest Wildlife Sanctuary, India by Choudhury (2003).

**Yellow-checked Tit** is recorded as a summer visitor to the Park area with the relative abundance of 9.4 % (Table, Fig. 2). According to Kazmierczak (2000), there is a small isolated population of this tit in Pakistan which is found below 2400 m. During the survey the altitudinal range of this species is recorded between 1840–3000 m (Table, Fig. 3). Choudhury (2003) recorded Yellow-checked Tit at altitudinal range of 1800 to 2600 m in India.

Human population increase within the National Park as well as in the surrounding area has negatively impacted the resources of the Park, degraded the habitats and created species imbalance. The survival of bird species is threatened by loss of habitat stemming from human activities in this National Park such as wood thefts, browsing of under-story shrubs by livestock, tree lopping for animal fodder and fuelwood collection, disturbance and hunting. This trend is most evident in the remaining moist temperate forests as well. Territory of the Park is used for summer pastures. Collection of fodder, fuel wood and timber are continuously increasing. Fuel wood collection has been so excessive that forest periphery has been reduced severely and is leading to erosion of the forest's overall biodiversity and habitat quality. Trails through the core areas to the summer pasture lead to habitat degradation, soil erosion, gullyng and land slippage.

### Acknowledgement

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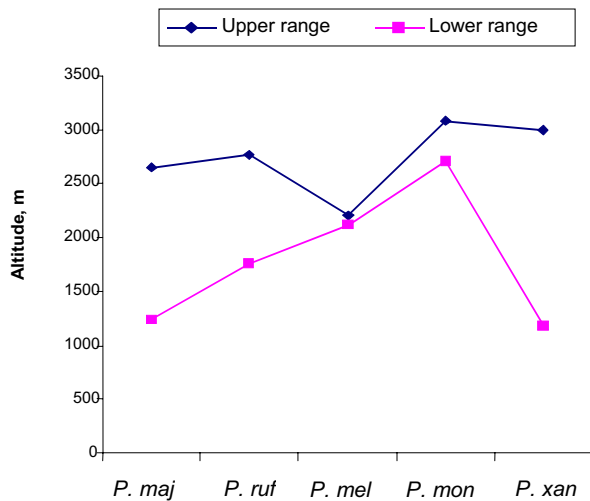


Fig. 3. Dynamics of altitudinal range of tits.

Рис. 3. Динамика высотного распространения синиц.

### REFERENCES

- Ali S., Ripley S.D. (1973): Handbook of Bird of India and Pakistan. Oxford University Press. 9: 162-189.
- Awan M.N., Awan M.S., Ahmad K.B., Khan A.A., Dar N.I. (2004): A preliminary study on distribution of Avian Fauna of Muzaffarabad, Azad Jammu & Kashmir. - Int. J. Agri. Biol. 6 (2): 300-302.
- Awan M.N., Mir M.S. (2007): Avifaunal Diversity of Pattika Recreational Park, Muzaffarabad, Azad Jammu & Kashmir. - Zoores. 28 (6): 634-639.
- BirdLife International (2004): Important Bird Areas in Asia: Key sites for conservation. Cambridge, UK. (Conservation series No 13).
- Choudhury A. (2003): Birds of Eagle-nest Wildlife Sanctuary and Sessa Orchid Sanctuary, Arunachal Pradesh, India. - Forktail. 19: 1-13.
- Inskipp C., Inskipp T. (1985): A Guide to the Birds of Nepal. London: Croom Helm.
- IUCN (1996): Natural resources and environmental survey of Azad Jammu and Kashmir. The world conservation union. Karachi. 1-77.
- Kazmierczak K. (2000): A field Guide of the birds of the Indian subcontinent. Yale university press, USA. 1-352.
- Mirza Z.B. (1998): Illustrated handbook of Biodiversity of Pakistan. Oxford university press.
- Roberts T.J. (1992): The Birds of Pakistan. Vol. 2 (Passeriformes). Oxford University Press. 40-541.
- Whistler H. (1986): Handbook of Indian Birds. Delhi: Seema Offset Press. 14-19
- Woodcock M.W. (1980): Collins Hand Guide to the Birds of Indian Subcontinent. Harper Collins Publishers. 30-123.