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Assessment of behavioral study, human-interaction and impacts on Streak laughingthrush (*Trochalopteron lineatum*) in district Bagh, Azad Jammu and Kashmir-Pakistan

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ABSTRACT

Introduction: The streak laughingthrush is an endemic in the Himalayan range; is well adapted to more barren treeless habitation; and also has ability to spread its range. This study was designed to know the ecology, behavior, human-interaction and impacts on this bird.

Materials and Methods: In the surveys linear count survey method was applied. Both direct method and indirect method were applied for observation of ecology, behavior, Human-interaction and impacts on the distribution of *T. lineatum*.

Results: Streak laughingthrush (*T. lineatum*) time budget was recorded in natural habitat. During the research noted that this bird used greater time in sitting (35.56%) followed by Jumping (28.82%), stand (13.41%), flying (9.66%), Feeding (4.78%), invigilation time (4.57%), preening (3.21%), walking (0.0%) and aggressive time (0.0%). *T. lineatum* prefers to live in rural areas and slightly disturbed areas. This bird parts are also used for different purposes viz. paralysis, flue and fever.

Conclusion: It is concluded from this study that the Streak laughingthrush (*T.lineatum)* spent greater time in sitting (35.56%) followed by jumping (28.82%), stand (13.41%), flying (9.66%). Further, intensive urbanization has negative impact while agriculture has positive impact on the richness and abundance of this species in the study areas.

Key words: Agriculture, Urban, walk, preening

INTRODUCTION

Trochalopteron lineatum has average tail's length. Its body is darkish brown on the head and nape but rufous brown on the breast and lesser wing coverts. Each feather on the head and nape has slightly dark brown shaft streak while the lesser wing coverts and median posterior part have white shaft streak. The upper-tail coverts and rump are light grey. Its tail is rufous brown, individually feather tipped grey and with dark brown cross-waves. The ear's coverts of *T. lineatum* are somewhat bright rusty colors. It has white shaft streak on the breast's feathers and under portion is mostly a chestnut brown with whitish-grey streak because of feather's borders. The external tail feathers of this laughing thrush have sub-terminal spots, which is blackish. The gender's feathers are similar with the beak which is darkish brown. It has reddish brown iris and the leg and feet are fleshy brown. The dark brown and white shaft streak is only obvious at close range (Roberts, 1992).

The Streak laughingthrush is the Himalayan species which is an endemic species; well adapted to treeless habitation and distributed in Khyber Pakhtunkhwa, Baluchistan, Karakoram, Himalayan mountains ranges (Flint *et al.*, 1984), Ziarat and Baltistan (Roberts, 1992; Del Hoyo *et al.*, 2014), Chitral (Fulton, 1904; Roberts, 1992), Swat, Dir, Kaghan, Indus Kohistan and Gilgit valley. In winter season it descends to the inferior valleys and also recorded from Gilgit (Roberts, 1992; Del Hoyo *et al.*, 2014; BirdLife, 2016). It is most abundant in the Murree hills. A few species can be found down to the hills nearby Islamabad, particularly around the Saidpur, Nurpur and Shahanin the Margalla's hills in winter season (Roberts, 1992).

In the summer season, it is found in pairs. However, in the early spring and the winter it is found in small parties of 4-6 bird. It usually feed from the earth and trees. When they are creeping almost in a mouse-like mode, then these are difficult to observed, working thoroughly

inside the basement of bushes and grasses. Rarely flying more than a hundred meters (Roberts, 1992).

When these birds searching and foraging food, they keep up continuous calls, and they prepared to give threatening or alarming calls. Similar to all the babblers, they are noisy, indulging in short time of calling in early morning and late afternoon. Pair can often be faced in the same areas, or area of undergrowth throughout the autumn and summer months. It has the pattern of striking their tails upward and sometime also shaking their tail and seemed to tense in personality, continuously jogging and dropping their bodies throughout gaps among searching for food (Roberts, 1992). Osmoton (1927) reports found a nest in a dense grassland on a steep bank. A classical nest is approximately 25cm, across with the inside of cup which is 6.2cm. In the Baluchistan nests are woven with Bulbous plants and lined using juniper bark fiber (Roberts, 1992). This study was designed to know the ecology, behavior, human-interaction and impacts on this bird.

MATERIALS AND METHODS

Study area*:* The district Bagh is falls in lesser Himalayas region. The elevation is between 1500 to 2500m. The area consists of coniferous forests. Two main streams are present in district Bagh i.e. Mahl Nala and Betar Nala. While, many other rivulets flow present in district Bagh (DRU, 2007).

Methodology: The data were collected November 2016 to February 2017. Linear count survey (LCS) was used; which consists of six transect lines, while each transect line consists of 1 km long selected (Figure 1 and Table 1). Both direct (i.e. physical count and sounds of bird) and indirect methods (i.e. nests, carcasses and body parts) were used for the observation of ecology,

behavior, Human-interaction and impacts on the distribution of *T. lineatum*. Roberts, 1992; Mirza &Wasiq, 2007; were used for identification of *T. lineatum.*

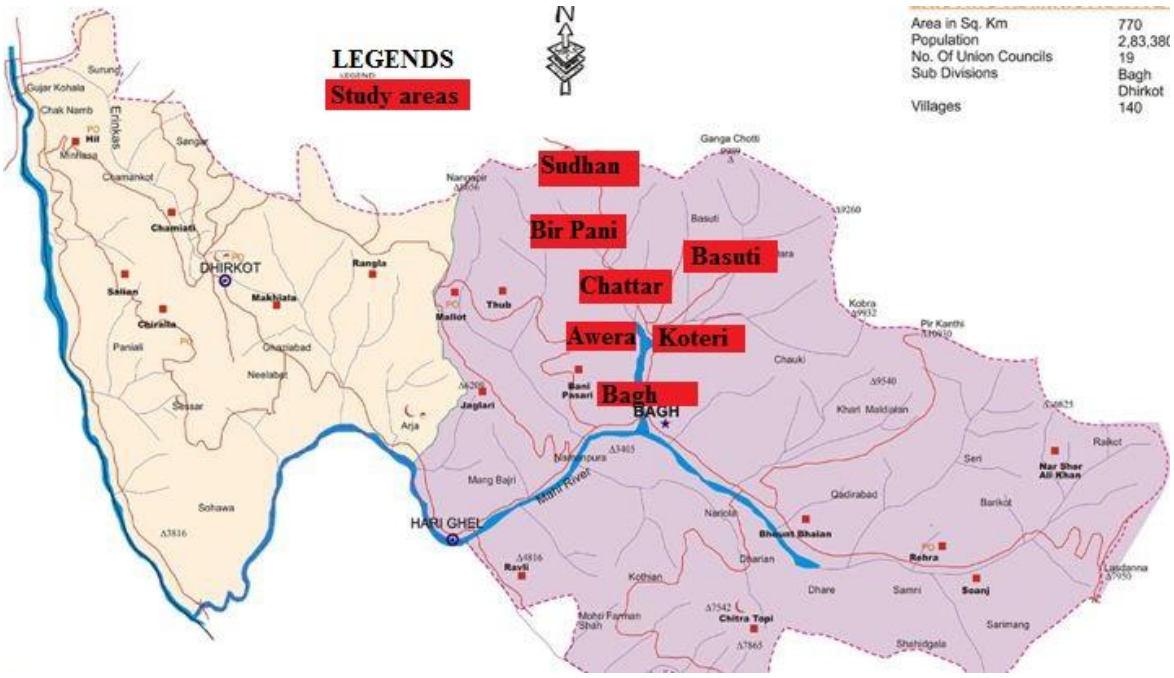

Figure 1: Map of the study area.

For the behavioral study following characteristics were noted for one hour for hundred times i.e. invigilation, feeding, flaying time, sitting time, stand time, preening, fight time, aggressive time and walking. Random of *T. lineatum* selected each time. Anthropogenic impacts i.e. deforestation and urbanization impacts are noted. For the ecological study following points are noted as; nesting, breeding period, clutch size and broad size. Ethnozoology study consists of following points which were noted; hunting, food, product use and entertainment.

Statistical Analysis: For the statistical analysis PAST version 2.17C was used to find out the Dominance, Evenness (E), Margalef (R), Shannon diversity (H) and Simpson diversity (Hammert *et al.*, 2001).

RESULTS AND DISCUSSION

Time budget of Streak laughingthrush (*T. lineatum*) in natural habitat was recorded. Throughout the study period Streak laughingthrush (*T. lineatum*) used greater time in sitting (35.56%) followed by jumping (28.82%), standing (13.41%), flying (9.66%), feeding (4.78%), invigilation time (4.57%), and preening time (3.21%) (Table 1).

Table 1. Behavioral study of Streak laughingthrush (*T. lineatum*) from six selected sub areas of district Bagh.

Behavior	**Percentage**
Invigilation Time	4.57
Feeding Time	4.78
Flying Time	9.66
Sitting Time	35.56
Stand Time	13.41
Preening Time	3.21
Aggressive Time	0.00
Jumping Time	28.82
Fight time	0.00

The clutch size (2 to 4) of the laughing thrush was noted in April; and brood size (2 to 3) was recorded from April to July (Table 2). The findings are similar with the Roberts (1992). Both sexes share growth responsibilities and nourishing the young.

Table 2: Ecology of Streak laughingthrush (*T. lineatum*) from six selected sub areas of district Bagh.

Ecology	**Description**
Nesting	The nesting period of this species in April.
Breeding season	The breeding season of streak laughing thrush is April to July.
Clutch size	The clutch of streak laughing thrush is 2, 3 or 4 eggs.
Brood size	The brood size of this bird is 2 to 3.

During the survey noted that *T. lineatum* is hunted for food, taxidermy and feather collection; which is used in Pillow as well as used for medicinal purposes i.e. paralysis, flue and fever as shown in table 3.

Table 3: Human-interaction with streak laughingthrush (*T. lineatum*) from six selected sub areas of district Bagh.

Cultural uses	**Description**
Product use	Its feather is used in Pillow. Its body is used for food and also used in taxidermy.
Hunting	Hunting is done for food and taxidermy.
Medicinal	This species is used for medicinal purposes as; paralysis, flue and fever.

This species is most abundant in the rural areas; while absent from the urban areas of the district Bagh (Table 4). By Roberts (1992) this species is most abundant in the Murree hills. A few species can be found down to the hills nearby Islamabad, particularly around the Saidpur, Nurpur and shahan in the Margalla's hills in winter season.

Table 4: Distribution of streak laughingthrush (*T. lineatum*) from six selected sub areas of district Bagh.

Study areas	Sub areas	Population
1	Forest	10
	Rural	50
	Urban	0
2	Forest	12
	Rural	100
	Urban	0

Conclusion: It is concluded from this study that the Streak laughingthrush spent greater time in sitting (35.56%) followed by jumping (28.82%), stand (13.41%), flying (9.66%). Further, agriculture has positive impact on the richness and abundance; while intensive urbanization has negative impact on this species in the study areas.

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Availability of data: Authors have included all relevant data in the manuscript that were collected during the field survey.

Authors' contributions: Hakeem designed this study and also performed this research; Altaf helped in data write up; Manzoor, Rauf, Mumtaz, Bashir, Haider, Farooq, Safdar and Altaf analysis article and approved as final manuscript.

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