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Short Communication

Behavioral ecology of Blue tailed Bee eaters (*Merops philippinus*) in Hooghly and Burdwan District of West Bengal, India

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Abstract

A study was conducted on Blue tailed Bee eaters (Merops philippinus) (Figure-1) during the period of March 2015 to July 2017. In some Area of Hooghly and Burdwan district of West Bengal, India. In this study we observed on feeding behavior, food preference, and also found which type of habitat is preferred by the birds for breeding and nesting. For the study we mainly selected four areas which are Somra Bazar, Dainhat, HabasPur, Muidipur.

Keywords: Habitat, Feeding, Nesting, Courtship, Breeding, Ecology.

Introduction

Out of 8650 species of birds in the world, India has only 1200, out of which 142 are endemic species[1]. In today's context, when bird populations are declining because of their habitats are being destroyed, polluted, and reduced on a large scale, a proper understanding about habitats and current diversity status would be quintessential.

Community ecology is the study of the manner in which groupings of species are formed and distributed in nature and the ways in which these can be influenced by interactions between and among the species and the physical and biological factors of their environment[2]. Birds occupy a wide range of ecological positions and in many respects biodiversity. Both present and past, is better understood for birds than for any other major group of organisms[3]. The avian populations have a direct relationship with the structure and nature of habitat. Measuring diversity through time and in changing habitats could be a good approach in generating an indicator where species gain or loss could be used to gauge the trends in biodiversity[4-6].

Being ecologically diverse and very much sensitive to various kinds of perturbation, bird community always acts as a better predictor of the quality and health of the habitat than a single species[7]. Traditionally, the population studies have been used to monitor large scale, long term changes in avian population and to assess both habitat quality and the responses of bird to both natural and human caused environmental changes[8]. Recently the climatic and anthropogenic changes of nature showed adverse effects in bird life and ecological balance. So it is necessary at this hour, to save the bird species from the threats in order to maintain the biodiversity. Progressive urbanization often leads to biotic homogenization whereby a few widespread and successful species replace a diverse avifauna[9,10].

Blue tailed Bee eaters (Merops philippinus) are also an important species for our environment. This is migratory species in West Bengal. Commonly found in summer (March – June). It is known as summer visitor. The study is mainly conducted by followed colony of this species in the river bank. For the study we mainly selected four areas which are Somra Bazar, Dainhat, HabasPur, Muidipur.

Scientific classification

Kingdom	:	Animalia
Phylum	:	Chordata
Class	:	Aves
Order	:	Coraciiformes
Family	:	Meropidae
Genus	:	Merops
Species	:	M. *philippinus*
Binomial name	:	*Merops philippinus* (Linnaeus, 1766)

Figure-1: Blue tailed Bee eaters (Merops philippinus).

Materials and methods

Study area: Geographically the study region is located at the west bank of Ganga (Hooghly River) and East bank of River Damodar. Latitude and longitude:
Somra Bazar: 23°08'07.0"N and 88°26'52.6"E.
Dainhat: 23.613401"N and 88.202470"E.
Habas Pur: 23°07'33.3"N and 87°59'48.0"E.
Muidipur: 23°00'09.9"N and 87°57'28.8"E.

Study summary: The Study in conducted during the period of March 2015 to July 2017. Field works were carried out on foot at an average speed of 1.5 to 2 km/hour. The visiting hours were from 6 a.m. to 7.30 a.m. and from 5 p.m. to 6 p.m. For this purpose two pairs of binoculars (PORO Prism) (8X40 and 10X50 magnification) made by Olympus, and one digital camera Model Nikon L110, NikonD5100, Canon EOS 600D and 300mm lens, and other relevant materials were used. The birds flying from behind were also noted. In Forest the more emphasis were given to birds call rather than their sight. The recorded bird species were identified, followed nomenclature using the books of 'The Birds of Indian Subcontinent, By Grimit et al[11] and 'The book of Indian birds' by Salim Ali and Ripley[12].

Line transect method: Line transect survey method were used following Johnsing and Gregory R.D.[13,14] for the density estimation of avian species. This method is increasingly preferred for the formal population estimation method based on visual detection of birds[15]. For the density estimation in a difficult terrain like wetlands the traditional method was slightly modified in this present study. All the data were accumulated and analyzed following standard methods through various computer models.

Results and discussion

The study in conducted during the period of March 2015 to July 2017. But it is found that the Blue tailed Bee eaters are summer visitor migratory birds they mostly start to come in these location in the month of February to March and breeding season of these birds are April to June.

Feeding behavior: This bird is mainly insectivorous they prefer to eat various types of insects such as Dragon flies, damselflies, butterflies, bees, wasps, hornets etc. As there predating ground the mainly choose open farm land and water bodies. Call of the birds when they are flying and hunting is be-rekbe-rek which is also heard as re-liprelip. In our study all selected locations are sandy river bank.

They catch their prey in the air and return to anperch or Rocky platform. In this study we found a typical behavior of their feeding technique. That is – "They catch their prey in the open air then they return to a perch or Rocky platform with the prey but they do not eat it directly. Before eat their food they toss the death prey on the air then they swallow this" (Figure-2).

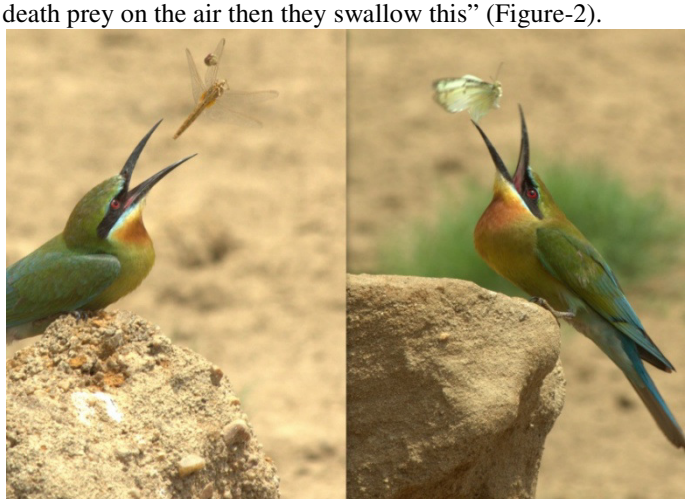

Figure-2: Food tossing technique of Blue tailed Bee eaters.

Habitat and breeding ground: In this study we found that this species lead a colonial life style. They prefer to stay near water bodies and river. This migratory birds when reach in this area at first the stay on the branches of the tree (Figure-3) but after some days they select a dry and sandy area on the river bank for nesting. Then generally male birds start to dig tunnel like nest (Figure-4) on the river bank. In our study we found those nesting colony on the bank of River Ganga and River Damodar. Water level of those areas became decreased in the month of March to May because of summer. And the river bank became dry and sandy.

Figure-3: Resting on branches.

Courtship and breeding behavior: Courtship and breeding behavior of Blue tailed Bee eaters is complicated than other common birds. In the time of breeding the produce a greeting signal this can be described as "beririk-beririk…beririk-beririk". For getting the chance of the mating the males have appear in two types of test to the female.

No.1 Female takes a long distance high speed flight and the males have to catch the female. In this process female decide who the fittest male is. No.2 this is the most vital process. The male have to satisfy the female by a beautiful gift (nuptial gift) this gift is a good quality insect (Figure-4). In this process female decide who can bring good quality food for the chicks. After that if Female satisfied on the male's performance she give him chance for the mating. Then the male climb on the females back for mating (Figure-5). Duration of mating process in these birds is 8-10 second but they perform the act many times in a day.

Figure-4: Tunnel likes nests on the Dry River bank.

The female Blue tailed Bee eater generally laid 4-6 spherical eggs. And Male-Female both takes care of the eggs and chicks. But one more thing we observed in the study that the breeding pair intentionally removed some eggs form the nest (Figure-6). By collecting the removed egg we understand that they also laid some unfertilized egg later they recognize and removed those unfertilized eggs from the nest. By examine the removed we know that size of the egg is 21.7 mm x 19.6 mm color is white.

In this study we observe that these birds are very careful to their offspring's. They protect them without any fear. If any predator species like Snake or Mongoose came near to their nest at first they produce a sound bik-bikbik-bik…….bik-bik-bik-bik for danger alert. Then they attack the predator form the air like an air-craft (Figure-7).

Discussion: After this study we understand that this species of bird has a complicated behavior pattern which is very much sensitive to the nature. They choose their food very carefully. They choose their breeding ground very carefully. For their breeding ground they prefer a peaceful and calm area where human activity is not too much. But now a day because of various types of pollution they can't get good quality of foods. And urbanization is a cause for the loss of their habitat. Day by day human activity is increasing in the river bank for Legal /Illegal sands business or agriculture purpose. So, don't know how many year this migratory species will visualize in this area.

Figure-5: Male is offering a nuptial gift to the Female.

Figure-6: mating act of Blue tailed Bee eaters.

Figure-7: Unfertilized eggs removed from the nest.

Figure-8: Attack on Russell's viper for protects the offspring.

Table-1: Number of individuals count in the each colony.

Study area	No. of individual in the colony		
	Year 2015	Year 2016	Year 2017
SomraBazar	47	53	38
Dainhat	92	117	88
HabasPur	34	49	31
Muidipur	53	74	47

Conclusion

In this study we observed that Blue tailed Bee eaters (*Merops philippinus*) are a summer visitor migratory species in our study region. This bird is mainly insectivorous they prefer to eat various types of insects. This species lead a colonial life style. They prefer to stay near water bodies and river. And they have a complicated breeding behavior. Actually behavior pattern of this species is very much complicated and sensitive. But now a day they are facing big pressure by human activities. But as a human being it is our duty to protect this species. So, have to proper step on conservation.

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