Research Paper Zoology

Basking And Dusting Behavior of House Sparrow (Passer Domesticus) in & Around Sikar (Rajasthan), India

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ABSTRACT

House sparrow (P. domesticus) is non-migratory bird and often closely associated with human habitats and found in highest abundance in agricultural, suburban, and urban areas. According to McGillivray, W. Bruce (1980) the House Sparrow is closely associated with human habitats and cultivation areas. It is gregarious bird and mostly feeding in groups on the ground and forming flocks with other birds. Small trees Acacia nilotica (Kikar), Acacia jacquemontii (Kheri), Carissa carandas (Karonda) and Tecomella undulata (Rohida) are most preferred by the House Sparrow as four of five trees were selected as site for its activities and roosting. The maximum population was recorded during the rainy season i.e. the months of July, August and September. Maximum activities performed by the House sparrow in the early morning to late morning (5.00 AM to 11.00 AM). P. domesticus performs basking behavior only in the winter season and dusting behavior only in the summer season

Keywords : Sikar, Passer domesticus, Basking, Dusting

Introduction:

The present research article is based on the field observation and data. The present study has been under taken in the North-Eastern part of Rajasthan in and around the Sikar city. House sparrow is non-migratory bird and often closely associated with human habitats and found in highest abundance in agricultural, suburban, and urban areas. The bird avoids woodlands, forests, grasslands, and deserts. The House sparrow is closely associated with human habitats and cultivation areas. It is well adapted to living around humans, it can frequently live and breed also in indoors, buildings etc. It is most abundant in wheat growing areas. House sparrow is a very social bird. It is gregarious bird. Summers-Smith (1988) observed that the House Sparrow feeds mostly on the ground, but it flocks in trees and bushes. It is roosts communally on dense leafy trees. The House sparrow takes frequent soil and water baths. It throws soil and water over the body feathers, sometime sparrow make a small depression in the ground and sometime defends this spot against other sparrows. In urban area it feeds largely on food provided by humans, like that bread, seeds, chapatti etc. Although it forages mostly on the ground in open areas and also feeds on cultivated grains, fruits and vegetables. Mostly in summer, House sparrow eats insects (Beetles, caterpillars, dipteran flies, and aphids) and feed them to their young. It is feeds in flocks but some time one or two birds are feeds on open fields. Breeding season of House sparrow is rainy season (July-August). It is monogamous, and typically mates for life. House sparrow prefer of sites for nesting are as building holes, crevices of houses, eaves of building, branches of leafy or evergreen trees, thick bushes etc. The nests are made of thin dried vegetation, finer material including feathers and string. Male and female both are seen to build the nest.

Materials and Methods:

Sikar is located between 27°37'N to 27.62°N latitude and 75°09'E to 75°15'E longitude. The average elevation from mean sea level is 427 meters (1400 feet). The district boundaries of Sikar are close with Jhunjhunu district in the north, Jaipur district in the east and southeast, Haryana state in the northeast, Churu district in the west and northwest and Nagaur district in the southwest. The climate of Sikar is characterized with hot summers, extremely cold winters, scanty rainfall and a general dryness of the air except in the brief monsoon season. The study area is considered as semi-desert area. The average rainfall of Sikar in last twenty year (1991 to Aug.2010) is 216.23 mm. (Meteorological Department Sikar (Rajasthan) India. The average maximum and minimum temperature of Sikar in summer season is around 40.0º C and 27.0 º C respectively whereas average maximum and minimum temperature during winter season is 30.0 º C and 10.0 º C respectively. The minimum temperature sometimes may fall up to -2º C or more during the winters.

Equipment's:

Following equipment's was used for bird surveys and observation:

(1) Binocular (Nikon, 10x50)

(2) Photographic Camera

Plan of field work:

The study was conducted over a period of 24 months (September, 2008 to August, 2010). Regular weekly field trips were made throughout the period. Observations for behavior were taken in two sessions in a day - Morning session of four hour duration (5-9 AM) and evening session of three hour duration (3:30-6:30 PM). The counting was done by Stationary point count method. Stationary point counts have special value in studies of bird–habitat associations, when habitat variables are measured at the counting points. Monthly observations were taken for the behavior study. The maximum numbers of birds will be recorded by using a binocular (Nikon, 10x50) and they were photographed by using Nikon (SLR) camera. The birds available in these zones were counted. The flock size was determined according to their assemblage in the air or at the ground. A total of 240 observations were made at study area (96 observations at three sites; 144 observations at two sites) during two years period. The population of House Sparrow was performed at every weekly field visit and counted directly. Thus, eight counts of population generated every month. Average of the eight counts calculated as monthly average population. This monthly average population is tabulated during the study period.

Determination of observation sites:

Taking into consideration of the above facts, the study area was divided into two categories - Non-Human Habitat (NHH) and the Human Habitat (HH), both having a total of five obser-

vation sites marked therein. The Non-Human Habitat included two observation sites, (I) Dasa Ki Dhani and (II) Nani Field whereas the Human Habitat included three observation sites, (III) Kurli Field, (IV) Gokulpura Field and (V) Kissan colony. The study site I, II, III and IV are situated 3-4 km. far from the Sikar town. Site I and II are the open fields and site III and IV are irrigated area where site V is urban area. At every field visit, selection of trees for various activities by House sparrow was recorded and monthly average was tabulated. There are three types of trees are present in the study area i.e. large trees, Medium trees and Small trees. In each group five most commonly found tree species in the area were identified and selected for study of spatial arrangement of these bird species. Large trees included Aadu (Ailanthus excelsa), Khejri (Prosopis cineraria), Shisham (Dalbergia sissoo), Neem (Azadiracta indica) and Kikar (Acacia nilotica), which were having big canopy in general, whereas Medium trees were Beel (Aegle marmelos), Kikar (Acacia nilotica), Neem (Azadiracta indica), Amla (Emblica officinalis) and Shisham (Dalbergia sissoo) having comparatively intermediate sized canopy. Small trees included Kikar (Acacia nilotica), Rohida (Tecomella undulata), Khejri (Prosopis cineraria), Karonda (Carissa carandas) and Kheri (Acacia jacquemontii) having small canopy. Less spatial arrangement has been observed during winter season November to February. It is due to the environmental factors along with socio-economic importance of tree, that time people used such tree foliage as a fodder for cattle's and wood for fuel. So high disturbance, least foliage and low temperature lower down their spatial arrangement population in study area. House Sparrow (P. domesticus) preferred the small trees for perching and roosting. House Sparrow (P. domesticus) was seen to perch at the lower middle and lower canopy and was always observed to roost in lower and lateral branches.

Results and Discussions:

Monthly observations were taken to study the behavior. Observations were taken from dawn to dusk for their interactive activities and roosting behavior was studied in full moon nights. Data thus generated was recorded. Data then classified into three seasons namely summer (April-June), Rainy (July-September) and winter (November-February). Thakur et al. (2010) reported that, the peak activity in most birds lasts for 1 or 2 hours after sunrise or before sunset.

Basking Behavior:

The House sparrow wakes up for about 22 to 27 minutes before the sunrise. This period was preceded by a call. The first call of the House sparrow was given at about 8 to 13 minutes before waking up. Having awoken, the entire flock scans around for a moment. Then end of call indicates complete wake up and readiness to start daily activity. During winters the bird exposes itself to the sun to get its warmth; this activity is called Baking Behavior. Basking, also called sunning or sunbathing. Simmons. E. L. (1986) and Terres, J. K. (1980) reported that many birds deliberately expose themselves to direct sunlight to accumulate heat for thermoregulation. Flocks of birds are seen on a rooftop, the buildings or at the station or at the top of canopy of the tree. Basking mostly occurred in the morning in winter season. Kennedy (1969) and Storer et al. (1975) listed several possible functions of avian basking: absorption of heat for thermoregulation, increased vitamin D production or oil gland secretion, drying the wet plumage, moulting and removal of ectoparasites. It is the most common behavior performed by almost all the bird species. Result of basking behavior of Passer domesticus is shown in "Table 1 about here". On analyzing table 1, it is observed that Passer domesticus performs basking behavior only in the winter season. Basking was observed in early morning (8:00 to 9:00 AM), late morning (9:00 to 12:00 AM) and noon (12:00 to 2:00 PM). Basking behavior percentage was recorded maximum 40% during noon (12:00 to 1:00 PM) and minimum 10% during late morning (11:00 to 12:00 AM). No birds were found basking in early morning i.e. before sunrise and evening i.e. after sunset. Graphical representation of the results is shown in "Figure1 about here".

Dusting Behavior:

Dusting behavior of birds helps them maintaining their plumage. Birds use dust bath and other activities as a part of feather care strategies. Frequent dusting helps to maintain an optimum amount of oil on the feathers. Excess plumage lipids, including preen oil, are absorbed by the dust and expelled along with dry skin and other debris. Dusting may also help to discourage bird lice, but no experimental evidence exists. House sparrow frequently follows a dust bath. Some species that live in areas where standing water is not available, dusting appears to substitute for water bathing. House sparrow frequently follows a soil bath. The House sparrow creates dust wallows by scraping the ground. They throw dust over their bodies and rub their heads in the wallow. The dust is first worked through the feathers and then shaken out. The House sparrow takes the soil bath in flocks (10-15). They cower close to the ground while taking a dust bath and vigorously wriggling their bodies and flapping their wings. This disperses loose substrate into the air. House sparrow spread one or both wings, which allow the falling substrate to fall between the feathers and reach the skin. They seem to prefer sunny places in which to create these dust baths. Result of dusting behavior of Passer domesticus is shown in "Table 2 about here". On analyzing table 2, it is observed that Passer domesticus performs dusting behavior only in the summer season. Birds were observed dusting in late morning (9:00 AM to10:00 AM) and afternoon (3:00 PM to 4:00 PM) hours in summer season. Dusting behavior of the Passer domesticus was recorded 13.64% and 11.36% in late morning and afternoon, respectively. Dusting activity was never observed in rainy and winter seasons. Graphical representation of the results is shown in "Figure 2 about here". Vestergaard (1982) studied dusting behavior of domestic fowl for its rhythm and duration and found the behavior was showed a marked peak in the noon and duration of average 27 minutes. Healy and Thomas (1973) found dusting not only help bird to control ectoparasites but also maintain plumage to be in good condition. Orsag et al. (2011) write the notes on effect of preliminary housing on dusting behavior of hens. The Indian folk-tails also confirms the P. domesticus dust bathing as a sign of rains in near future.

Acknowledgement:

This study would not have been possible without the financial support of the University Grant Commission, Bhopal, letter no. F.No.:MS-124/304035/09-10/CRO dated 31 March, 2010. I am grateful to UGC, Bhopal (India).

Table 1:- Passer domesticus: Showing Basking Behavior during winter season.

Season	Early Morning				Late Morning			Noon			Afternoon			
	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7
Summer	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rainy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter	-	-	-	25%	37.50%	12.50%	10%	40%	37.50%	-	-	-	-	-

Table 2:- Passer domesticus: Showing Dusting Behavior during summer season.

Season	Early Morning				Late Morning			Noon			Afternoon			
	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to11	11 to 12	12 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7
Summer	-	-	-	-	13.64%	-	-	-	-	-	11.36%	-	-	-
Rainy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter	-	-	-	-	-	-	-	-	-	-	-	-	-	-

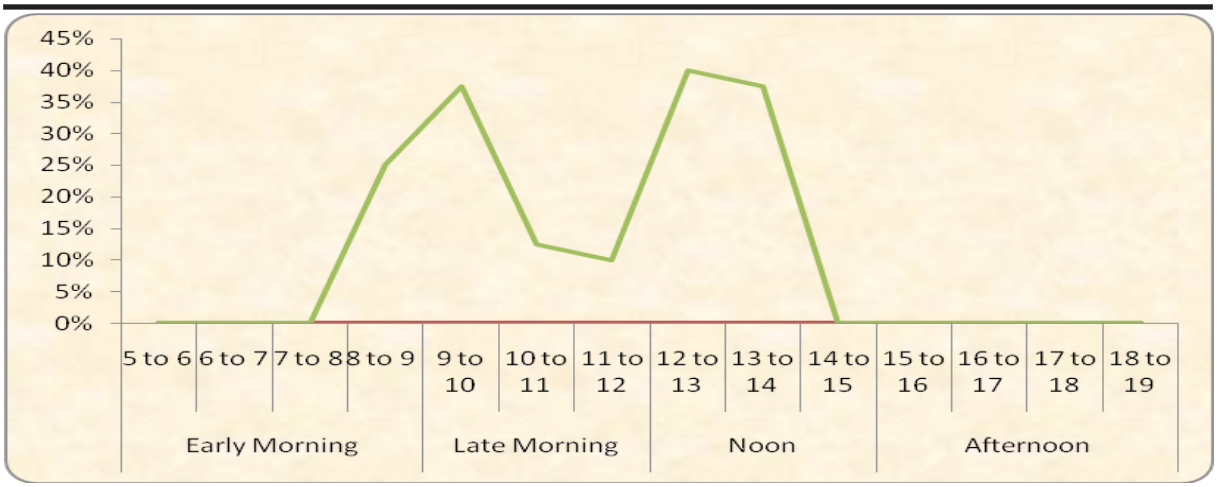

Fig.1 Passer domesticus:- Showing Basking behavior during winter season.

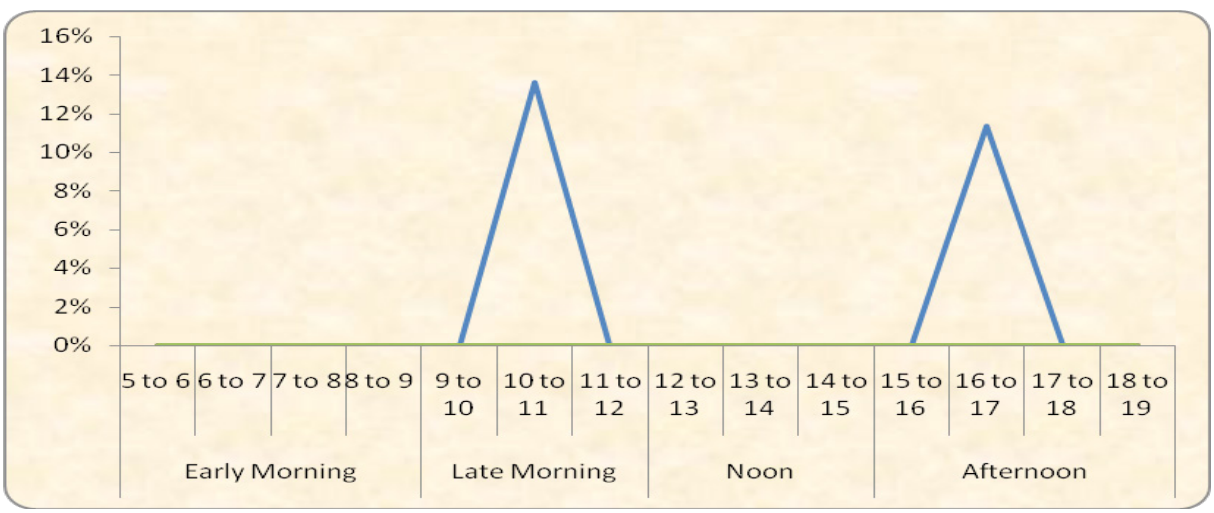

Fig. 2. Passer domesticus: -Showing Dusting behavior during summer season.

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