



Study on Behavioral Performance of Ring Dove in a Tropical Urban Habitat

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ABSTRACT

The special branch of Biology that deals with the study of animal behaviour is called the ethology. It is a relatively new area of scientific investigation. Animal behaviour is an extremely interesting subject. During the past years considerable work has emerged on various aspects of the reproductive biology. It has been tried to study the natural behaviour of Ring dove. In this study author preferred natural study for the ring dove instead of experimental and natural behavior simultaneously.

Keywords: Behaviour, Habitat, Terrestrial, Arrival, Departure

Introduction:

Birds create beautiful poetic picture on the planet earth. More certainly, advancement in ecology, physiology, reproductive biology and other aspect of biology continue to unfold through ongoing research. Understanding the physiological process of animals, as well as their reproductive strategies helps in pest control methods and this holistic approach contributes to the overall improvement and efficiency of agriculture system. The way an urban area merges with its natural habitat can have a significant impact on avian population and communities (Chace and Walsh 2006; Marzluff 2001).

India ranks sixth among twelve mega diverse countries in the world. Avifaunal wealth of India consists of 9702 birds, in the same way the avian fauna of Gujarat is unique and is represented by more than 480+ resident and migratory birds. Since 1950, there have been more studies on how urban areas affect bird population (Marzluff et al 2001).

It is essential to study living birds in their natural environments to gain understanding of their behavior, ecology, and conservation requirements. Through fieldwork, scientists may see and record how birds interact with their surroundings, supplying important data for efficient conservation initiatives and comprehending how environmental changes affect bird population. Studies generally showed that increased urbanization resulted in a decrease in species diversity and an increase in avian biomass(Chance and Walsh 2006). In Ring dove, Arrival and Departure time coincided closely with Sunset and Sunrise.

Exploring the ecology and biodiversity of North Gujarat could uncover valuable information about the region's avian species and their habitats. Conducting field studies in this virgin area could contribute significantly to our understanding of bird's diversity and ecological factors shaping their populations. Such research is vital for conservation, planning and promoting biodiversity in this area. During study three types of Ring dove were recorded (1) Ring dove (*Streptopeliadecaocto*) (2) Spotted dove (*Streptopelia chinensis*) (3) Red Turtle dove (*Streptopelia tranquebarica*). We have selected Ring dove for study due to more abundance and easily available in the field.

Character of Ring Dove:

Local name of Ring Dove is Dhorfakhata, Parki, Pandukgugi(Hindi), Kukil (Kashmir), *Gero* (Sind) Janglikapath(Baluchi), Daolo, Doula (Bihar), Dhol (Gujarati), Peddabellaguwa (Telugu), Set kopu(Assam) (Ali, 1996).

Size is same as pigeon. Its character is a pale vinous gray and brown pigeon with a prominent narrow black half collar or ring on the hindneck (Figure-6). It has distribution throughout the drier portion of the Indian union, ascending locally and seasonally to 3000m. (10,000ft) in Himalayas, Bangladesh, Pakistan, Sri Lanka. Its habits affect open, cultivated through essentially dry country, abounding in groves eg. Babool(*Acacia*), Dhak(*Butca*) trees in which to retire during the middle heat locally abundant in the neighbourhood of human habitation and freely enters gardens and bungalow verandas.



Its call deeply, trisyllabic KUK-KOO-KOOK repeated several times in succession has pretty courtship display, rising vertically a few feet on noisily flapping wing and fanned out tail and volplaning down in a graceful spiral or arc to the accompaniment of an aggressive sounding prolonged Koon KoonKoon.

Ring dove make nest all the year with typical scanty twig platform in bush or small tree, rarely in a human dwelling (Figure-7). It also preferred neem tree for preparation of nest (Figure-8). It lays two eggs, it is white, both sexes share all the domestic duties (Figure-9). Two days age of chick shows some specific character (Figure-10).

Study area:

The study on Ring dove was conducted at Visnagar town (23°42'N, 71°34'E, about 127 m above m.s.l.) of Gujarat state, Western India (Figure-1). Visnagar is one of the taluka places of the Mehsana district. It is situated 20 km east of Mehsana and 90 km from Ahmedabad. The sites which we have selected were near the temple surrounded mainly of societies having silent and peaceful area. In this area all types of common trees and shrubs are present. Common terrestrial birds can be easily seen. The interference of people is very less. The habitat which we have selected is best for roosting birds. Even feeding source is maximum. The frequency of vehicles is less due to society area. Climate of Visnagar area is arid or semi-arid type. It is strongly periodic and seasonal. Late monsoon and Post monsoon seasons were selected for the purpose of study. Study was carried out from August 2015 to October 2015 and was repeated between August 2016 to October 2016 and there were no notable changes observed.

Methodology:

Ring dove (*Streptopelia decaocto*) for the study of behavioural pattern in urban population during monsoon season was chosen at two sites (A) Visnagar area and (B) Mehsana area. Seven bird nests were taken under observation. Daily observation was taken within a fixed time schedule. Their roosting behaviour was observed and recorded. Feeding behaviour, drinking behaviour, sun-bathing, preening behaviour, territory behaviour and reproductive behaviour were observed for the study. Nest material was identified. Binocular (20*50) was used for observations.

Results and discussion:

Behavioural study:

The special branch of biology that deals with the study of animal behaviour is called the ethology Yadav (2001). It is a relatively new area of scientific investigation. The efforts were made to study only natural behaviour of Ring dove, It was not possible to study natural and experimental behaviour for all species at a time. Three types of behaviour were selected for the study. (A) Self maintenance behaviour (B) Terrestrial behaviour (C) Reproductive behaviour

(A) Self maintenance behaviour

It is very common and natural behaviour for all birds to maintain their life, Nagraj (2002). It is maintained by feeding, drinking, sun-bathing, preening and roosting.

Feeding behaviour

Feeding behaviour is incredibly complex throughout the animal kingdom. Time span for feeding varies from animal to animal, food selection also depends upon the species and their habitat. Ring dove visit their feeding grounds and search for food singly, in pairs or in small flocks, generally it was observed that a single dove in a large flock of pigeons on a different feeding station. It was minutely observed that if there was any short of noise; these birds flew away when they were in flock. Ring dove is primarily seed eater. It prefers jowar, millet, chino, rice, maize etc. Early morning and afternoon period is more favorable for feeding in Ring doves.

Drinking behaviour

The dove drinks by inserting the bill and sucking continuously drought of liquid. Immediately after its feathers fluffs. This was a significant behaviour after drinking which was monitored time to time. Ring doves usually drink after feeding, before flying back to roost or to feed their young ones, they may, however drink before they finish searching for food, if water is easily available at the feeding area. The same behaviour was observed in pigeon by Goodwin(1983).

Roosting behaviour

Ring dove has its complete roosting period from 18 00 to 06 30hrs. It shows the same behaviour as in pigeon (Goodwin,1983), (Patel, 1986). During roosting (particularly with in incubation period),it was observed that they open and close their eye leads continuously (i.e., 125 frequencies within 5 minutes).

In Ring dove the arrival time follows sunset period for roosting place. Table-1; Figure-2 shows that the sunset period in August was 19.01hrs and the arrival time for roosting of the bird was 19.12hrs in same way in October sunset period was 18.07hrs and arrival period was 18.00hrs There was a significant correlation between their arrival time and sunset period($r=0.871$). Table -2 and Figure-3 show that the maximum number of birds (n-21) arrived to the nest at 18.30hrs. no bird was observed to the roosting place. All birds secure their roost at 19.40 hrs. It was observed that mainly female enter first to the roosting place (particularly for incubation purpose). During arrival time they do not display their call.

Ring dove showed a fixed time for departure after roosting with the time of sunrise. Table-3 and Figure- 4show that during August sunrise time was 06.21hrs and birds departure time was also 06.20 hrs, where as in October sunrise time was 06.40 hrs and birds departure time was 06.43 hrs. There was a significant correlation between there sunrise time and departure time($r= 0.9474$). Table- 2 and Figure-5 showthat maximum number of birds($n=40$) departed at 18.20 hrsbut not before 18.00 hrsand not after 19.00hrs.

There was a significant behaviour between male and female to departed from the roosting place. It was monitored that male and female takes roost in separate place within short distance. Male display its call to female and female follows it. They left trees which is a roosting place and sit on a wire. In the morning they display more and more call.

Generally, the member of family *Columbidae* such as pigeon and doves are very shy and timid birds Suthar (1977). They are diurnal birds Ali (1996). They always try to protect themselves against predators and other external factors so they try to reach their roosting place before sunset. The arrival time was between 18.00hrs to 19.40hrsand departure time was



06.00hrsto 07.00hrs. The peak period for arrival and departurewas 18.30hrs and 06.20 hrs respectively.

(B) Terrestrialbehaviour

The area used habitually by an animal or group and in which the animal spends most of its time, is the home range. The area of territory defended by a pair depends upon the location, abundance of food, natural barriers etc. Most of the organism spend their lives in a relatively restricted part of the available habitat and learn the location of food, water and shelter in this area. Bird do not leave their selected places for other activities for long distance. Generally male takes visit to the nest time to time,when female was sharing its parental duty. It does not happen for female when male was sharing its parental duty. It was observed that Ring dove do not leave its locality, once it selected it. They prefer to feed themselves in this locality where they nest.

(C) Reproductive behaviour

Darwin puts forward his theory of sexual selection to explain the apparently deter mental sexualcharacter possessed by many species. Reproductive behaviour is an important behaviour for alliving creature to maintain their race Moreau (1950). The main reproductive behaviouris pair formation,selection of nest site, nesting, egg laying and incubation and care of youngones.

Summary

Animal behaviouris an interesting subject. It was tried to study the behaviourof Ring doves. It showed a common behaviour; Self maintenance, Territorybehaviour, sexual and reproductive behaviour. The Ring doves take food in a single pair or alone in a flock of pigeons. It drinks water after fed and before flying back to roost or to feed the youngones. It prefers sun-bath because it is diurnal bird. It has its complete roosting period from 18.00 to 06.30 hrs.

Arrival time for roosting place follows the sunset period, while departure time follows the sunset period.Area of territory defended by the pair in reproductive behaviour. Pair formation proceeds quickly. They select trees as well as shrubs for nest preparation. Female sit more time in the nest for incubation then the male. Female takes more care of the young ones.



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Table:1 Relation of time on arrival before roosting with timing of sunset in Ringdove.

MONTH	TIME OF ARRIVAL (P.M.)	TIME OF SUNSET (P.M.)
Aug.(16 to 31)	7.12	7.01
Sep.(1 to 15)	7.8	6.50
Sep.(16 to 30)	6.33	6.35
Oct.(1 to 15)	6.20	6.20
Oct.(16 to 30)	6.00	6.07

Table:2 Relation of time of arrival and departure in Ring dove population.

ARRIVAL TIME (P.M.)	NO. OF BIRDS	DEPARTURE TIME(A.M.)	NO. OF BIRDS
6.00	08	6.00	00
6.80	00	6.80	11
6.20	03	6.20	40
6.30	21	6.30	18
6.40	11	6.40	07
6.50	11	6.50	05
7.00	05	7.00	00
7.80	07	7.80	00
7.20	15	7.20	00
7.30	02	7.30	00
7.40	00	7.40	00
7.50	00	7.50	00
8.00	00	8.00	00

Table:3 Relation of time on departure after roosting with timing of sunrise in Ring dove.

MONTH	TIME OF DEPARTURE (A.M.)	TIME OF SUNRISE (A.M.)
Aug.(16 to 31)	6.20	6.21
Sep.(1 to 15)	6.20	6.25
Sep.(16 to 30)	6.22	6.28
Oct.(1 to 15)	6.35	6.34
Oct.(16 to 30)	6.43	6.40

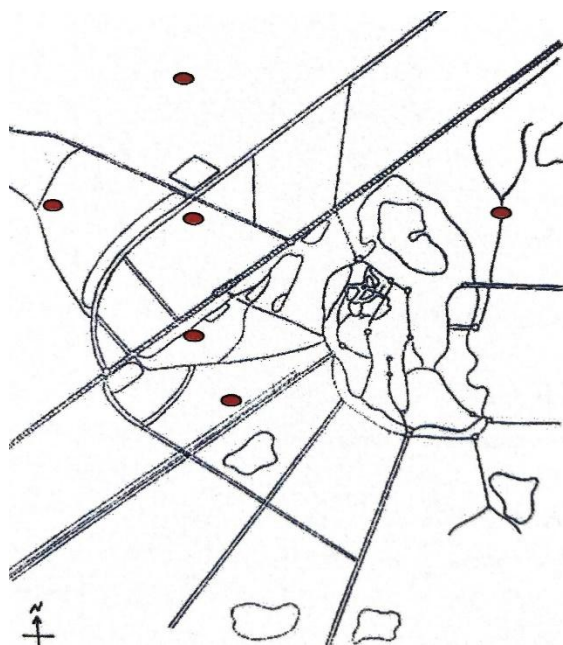


Figure 1:Map shows the location of study sites in visnagar city area.

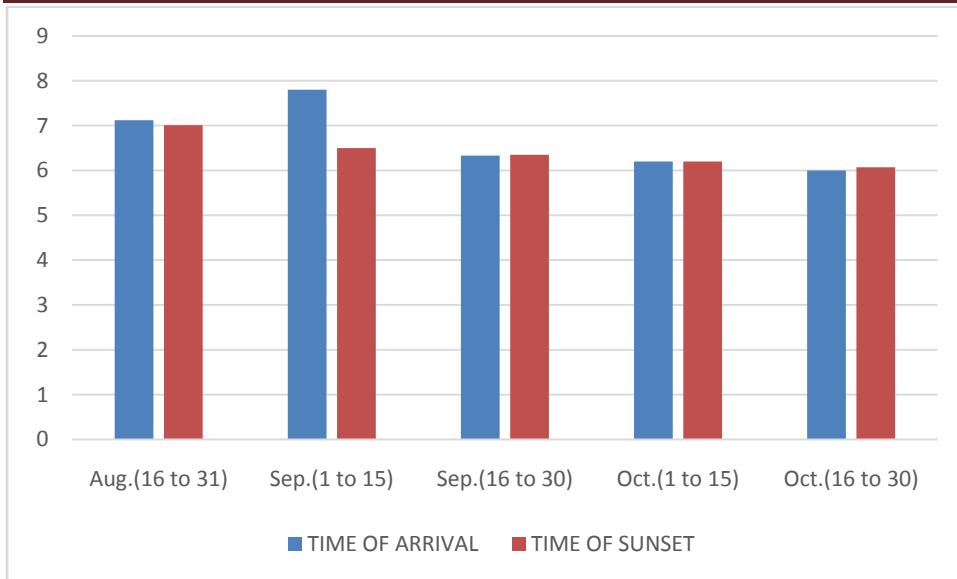


Figure2: Relation of time on arrival before roosting with timing of sunset in Ring dove.

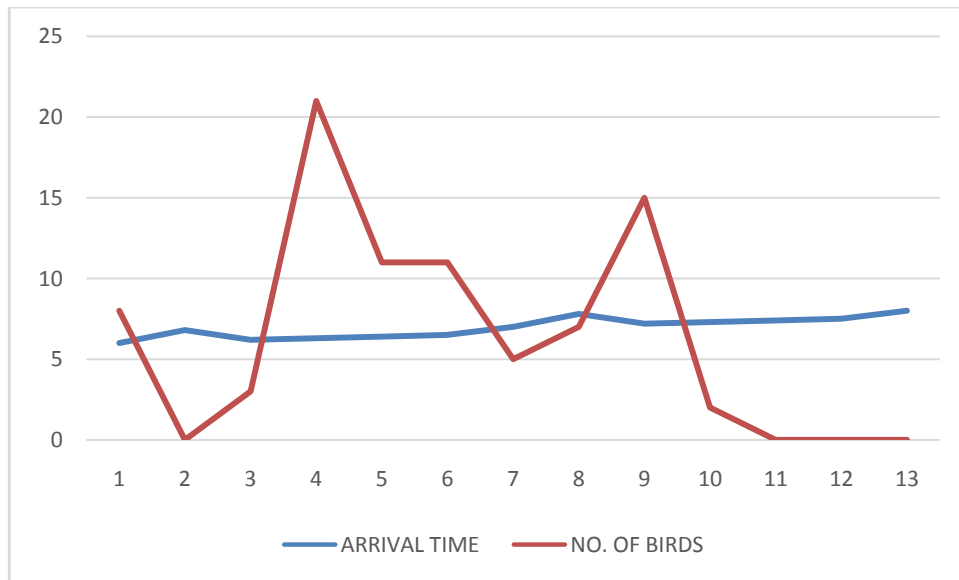


Figure 3: Relation of arrival time and number of Ring dove.

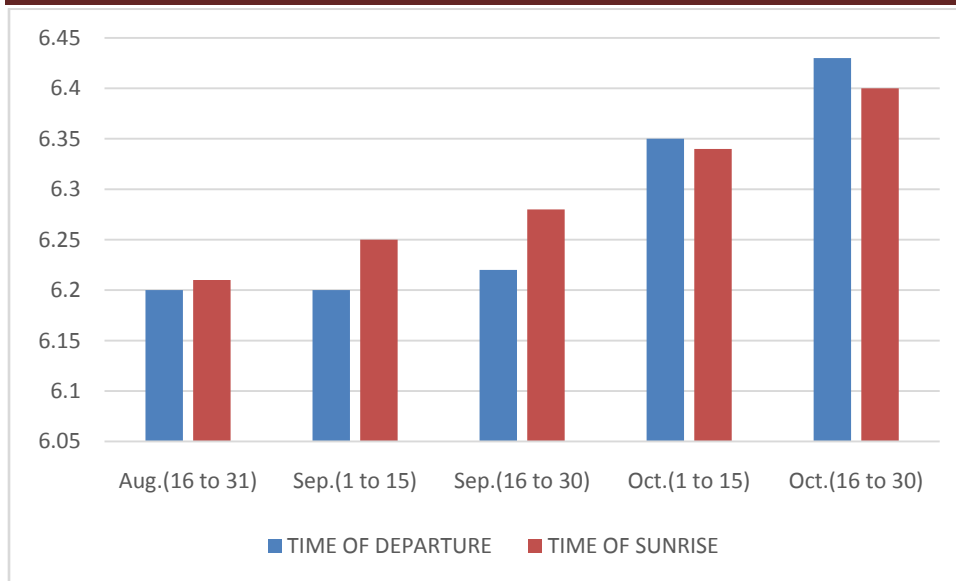


Figure 4: Relation of time on departure after roosting with timing of sunrise in Ring Dove.

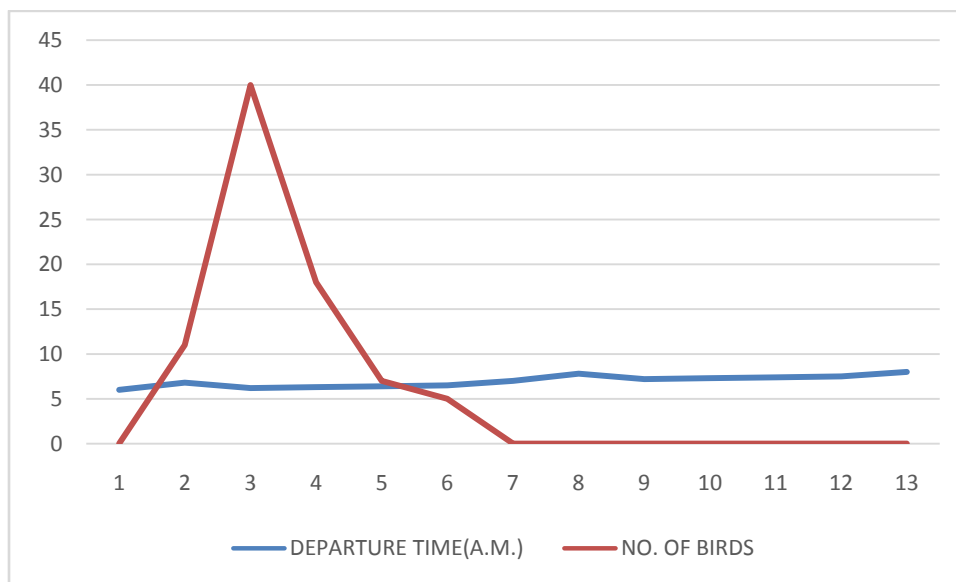


Figure 5: Relation of departure time and number of Ring Dove.



Figure 6: Ring Dove (*Streptopelia decaocto*).



Figure 7: Nest prepared by Ring Dove.



Figure 8: Nest prepared by Ring Dove in Neem tree.



Figure 9: Clutch size (2-eggs) in the nest of Ring Dove.



Figure 10: External features of a chick (2 days age) of Ring Dove.