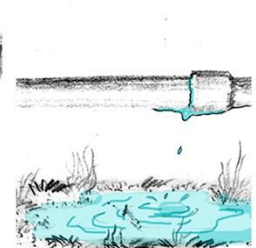
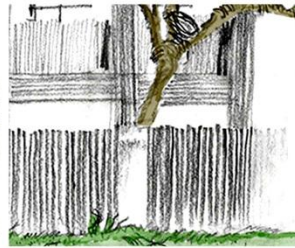
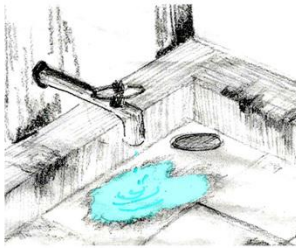


Life of a sparrow

No. 17 ; 2019

Landscape Environment Advancement Foundation, LEAF



Life of a sparrow

Rutuja Badve

May 2019

Landscape Environment Design Foundation (LEAF), 2019

LEAF is engaged in research and publication in the area of landscape design and environmental planning. It supports research programs of varying durations every year. Over the years, LEAF has increased its areas of exploration to developing city management matrices, governance and administration studies, urban generation and open space outreach efforts.

It has also worked on a country wide exhibition on landscape design - Tracing Narratives: an exhibition that explored the various facets of landscape design and its history in India.

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Section 1

Introduction, aim of the study, parameters for selection of the sites, parameters of site study.

INTRODUCTION

*I look out of my window, and they're everywhere:
Hundreds of house sparrows flit around our shrubs,
Hop around the yard, and steal food from our backyard.
Now I look out of my window the sparrows are nowhere.*



House sparrows (*Passer domesticus*) have always been a major part of the human living. These birds are about 15 cm in length and have a grey brown colour. They are defensive by nature and prefer to build nests in the existing cavities of houses, bridges, balconies, etc. They nest in the cozy alcoves of houses, nooks and crannies of the balconies and feed on the grain thrown by people. They have been a common sight, perching and foraging all around. One could always see them flocking and singing on the open grounds of temples, parks and other open spaces.

Sparrows are social and adaptable birds that prefer to live with the human populations. These are sedentary birds and don't travel more than a kilometer or two in search of food. The vicinities that the sparrows inhabit are vastly diverse in terms of location, human population around, character of the urban grain, etc. Their activities vary based on the surrounding conditions of their habitat.

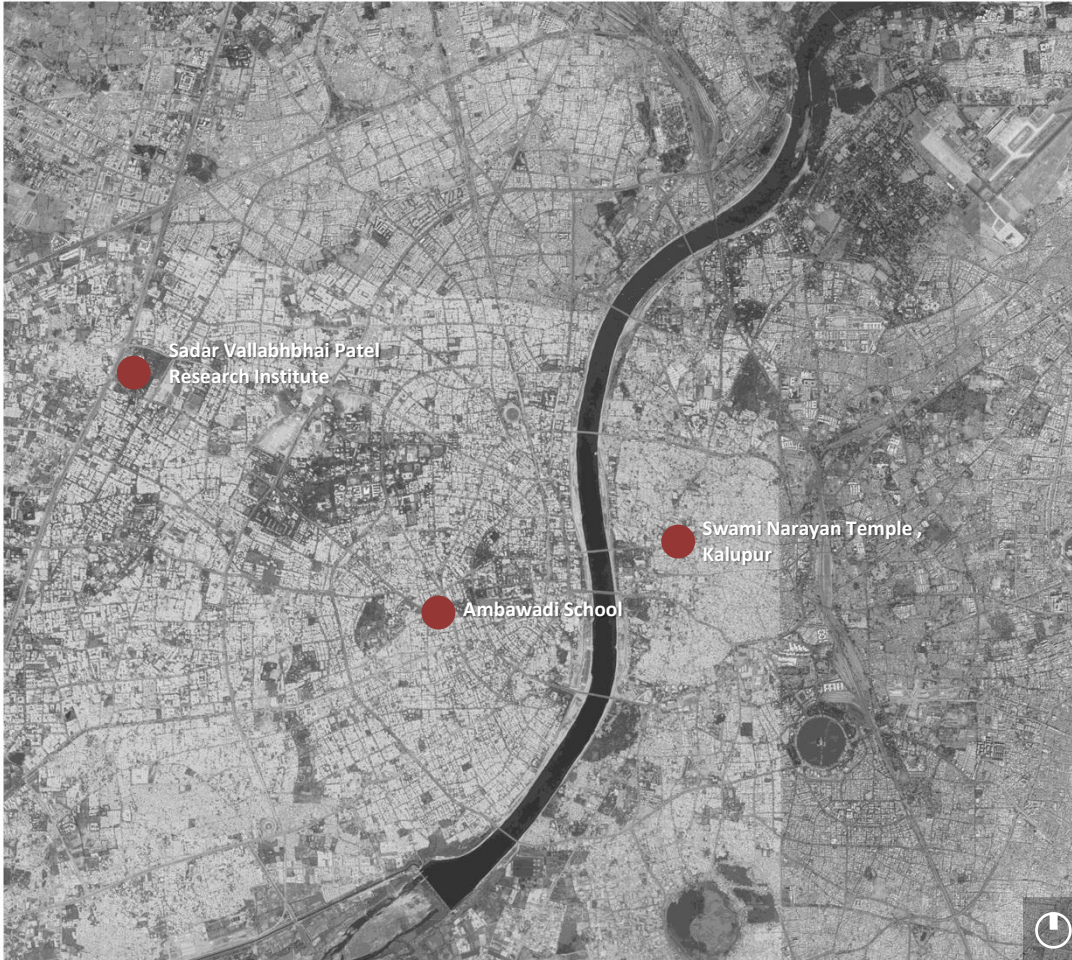
AIM OF THE STUDY

This research aims at studying the following aspects within the city of Ahmedabad:

-Identifying a few sites where sparrows are found in Ahmedabad and categorizing them based on parameters such as density of the built, function and characteristics of place.

-Studying the sites based on conditions which are necessary for a sparrow to thrive in order to analyse and find characteristics of the most ideal habitat for a sparrow in the given area.

-To find the factors for their habitation in a particular area (from a detailed case study of Sardar Vallabhbhai Patel Research Institute)



PARAMETERS FOR SITE SELECTION

Selection of sites is done based on the density of the urban fabric.

One site each is chosen from:

- MODERATELY DENSE URBAN GRAIN
Ambawadi School
Location – Behind Kalyan Jewellers, Ambawadi
- SPARSELY SPACED URBAN GRAIN
Sadar Vallabhbai Patel Research Institute
Location – SG Highway
- DENSELY PACKED URBAN GRAIN
Swami Narayan Temple
Location – Kalupur

The sites are selected to observe sparrow numbers in different contexts having varied percentage of built, trees, open ground, traffic, etc. which became the **study parameters**.

STUDY PARAMETERS

The following parameters define the micro level classification of the site. These parameters are chosen on the basis of background research done on the basic requirements of a sparrow for habitation.



Percentage of trees in the area

(The parameter is measured keeping the total area observed, as 100%.)



Percentage of open ground

(The parameter is measured keeping the total area observed, as 100%.)



Number of feeding places

(The parameter is measured by counting.)



Locations where nest building is observed

(The parameter is measured by counting.)



Level of quietness or loudness

(The parameter is measured using a decibel meter. An average from 5 readings is made and the level of loudness is determined from the standard decibel scale ranging from 0 to 130. 0 being the lowest sound and 130 being the highest sound.)



Average number of sparrows spotted

(The parameter is measured by counting sparrow numbers from 5 readings taken each day over a period of 3 hours for 3 days and an average is made.)



Average number of humans

(The parameter is measured by counting number of people at marked location. An average is made from 5 readings taken each day over a period of 3 hours for 3 days at each location and totalled.)

Section 2

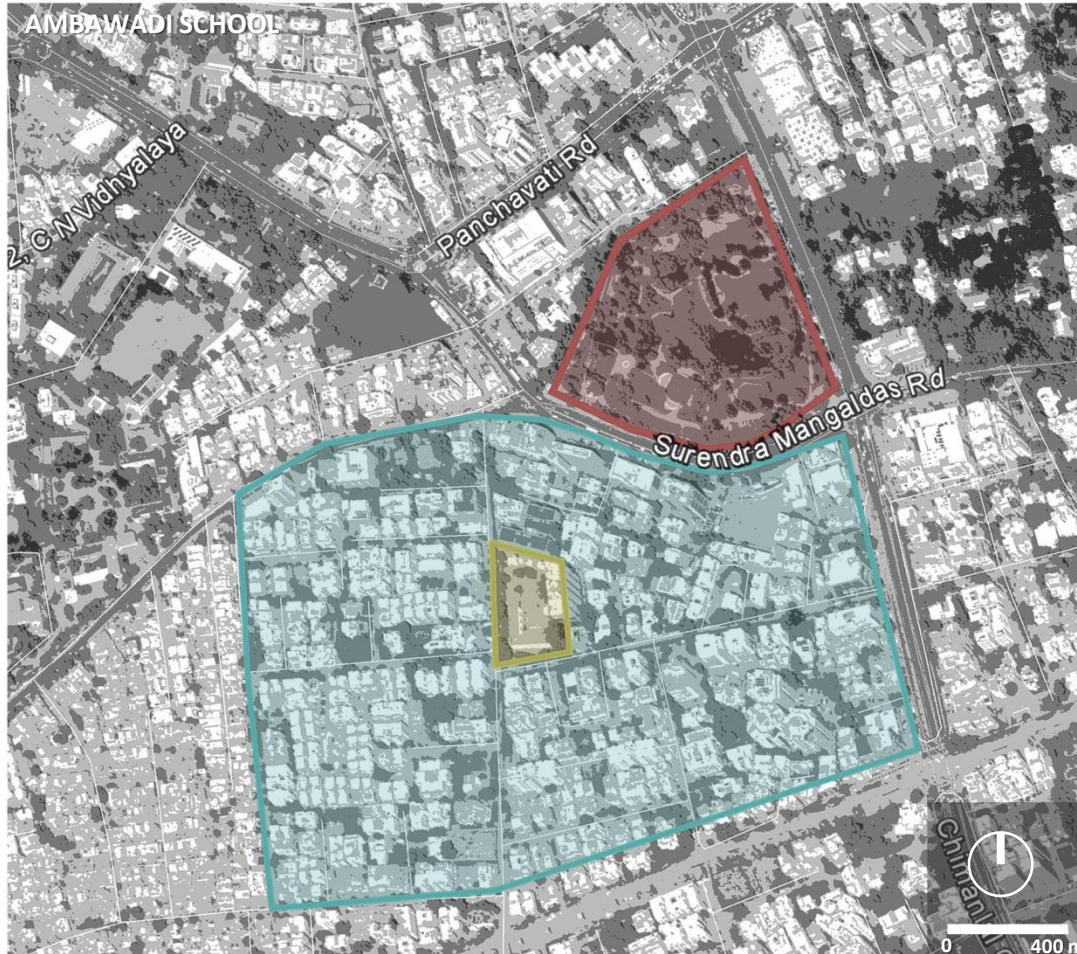
Observations based on the study parameters
for the following sites

Site 1 - Ambawadi School

Site 2 - Swami Narayan Temple Kalupur

Site 3 - Sardar Vallabhbhai Patel Research Institute

Inferences



AMBAWADI SCHOOL

On an early summer morning in the month of May while taking a stroll near the school, I heard the chirping of sparrows on a tree just adjacent to me. The tree had a dense network of branches and no leaves. There was a nest built inside this tree. The area surrounding the tree was a school building and ground with few trees lined up along the front wall. The nesting tree was one of them. Observing the sparrows for a little while, I found that these sparrows drank water and bathed from a small puddle formed due to a leaking water pipe. Knowing my story of sparrow hunting, the watchman of the school took me along to show me their previous nest. It was inside the school, in a classroom ventilator.

The Site is in a moderately dense residential area of Ambawadi. The building heights of the area fall into the range of G+3 to G+7.

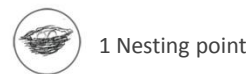
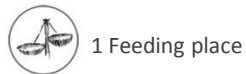
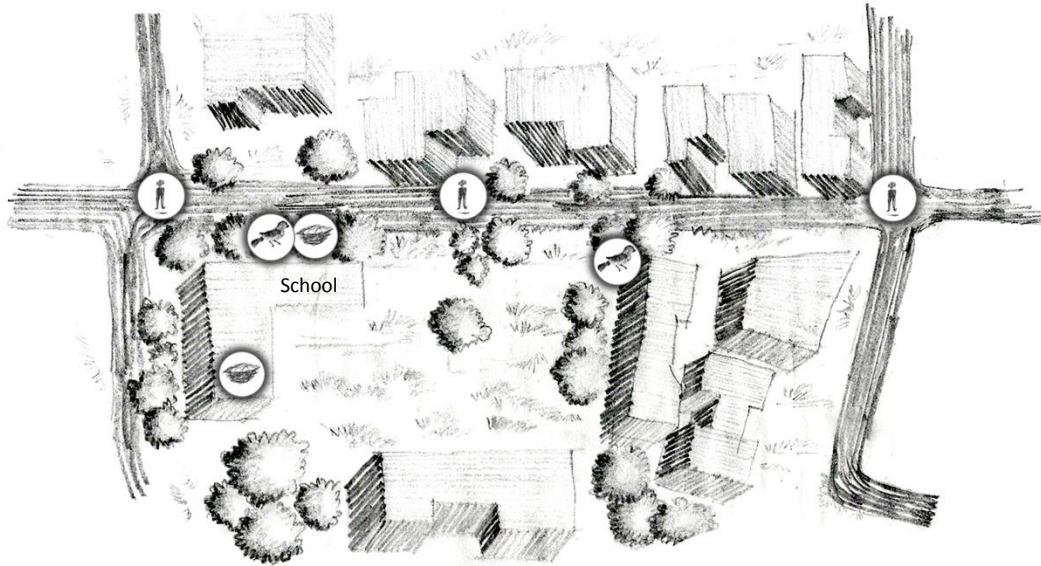
The fairly high percentage of tree cover in the area keeps the ground shaded and hence the temperatures are perceived lower than that of the adjacent heavy traffic road.

- Context
- Primal garden (adjacent site)
- Study Area

AMBAWADI SCHOOL

Location – Ambawadi

Time of Study – 6:30 am to 9:00 am



Percentage of trees in the area



Percentage of open ground



Level of quietness or loudness



Number of feeding places - 0

Number of nest building locations - 2

Average number of sparrows seen - 6

Average number of humans per minute - 15

Though there are no feeding places seen in the vicinity, this location is an abode for three sparrows.

The factors being, presence of high percentage of trees, open ground, and safe and secluded nature of the location.



SWAMINARAYAN TEMPLE, KALUPUR

I was on a hunt to spot sparrows, at the Swaminarayan temple, Kalupur. On entering the temple campus I spotted two sparrows feeding on grain scattered on one corner of the ground in the central open parking area. This seemed to be like a daily spot where the temple staff would scatter some grain for the birds to feed on. After some time three more sparrows joined them. As the number of people in the temple increased, the sparrows shifted their feeding location to a raised feeder (*chabutara*) just outside the temple. Here, they were undisturbed by the traffic and people below.

The site lies amidst the dense grain of the old city. The Building heights of the area fall in the range of G+2 to G+4.

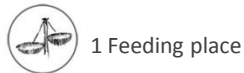
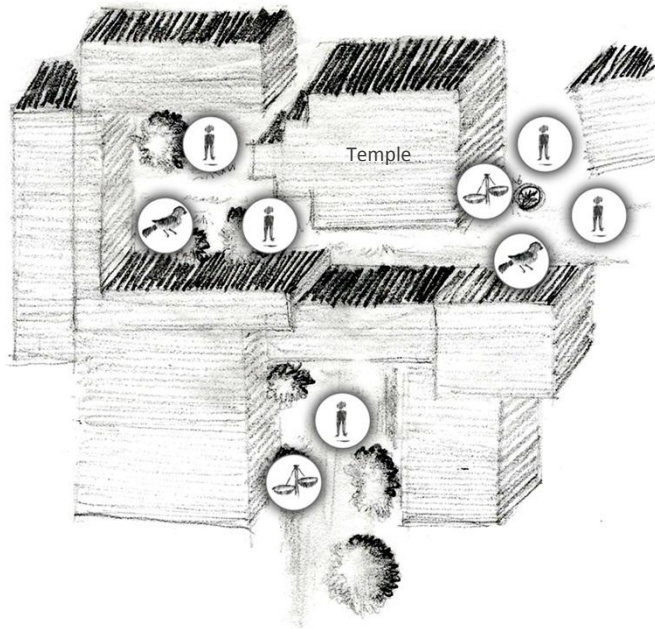
The densely packed nature of the built grain, keeps the narrow roads and small niches in the study area shaded resulting in a drop in temperature.

- Context
- Study Area

SWAMINARAYAN TEMPLE, KALUPUR

Location – Old City, Kalupur

Time of Study – 6:30 am to 9:00 am



Percentage of trees in the area



Percentage of open ground



Level of quietness or loudness



Number of feeding places - 2

Number of nest building locations - 0

Average number of sparrows seen - 10

Average number of humans per minute - 25

The easy availability of food is a major reason that brings the sparrows to this particular site. The birds here are observed only feeding and foraging. No nests are seen.

Inspite of the busy nature of the site, sparrows find their places to hide and escape from the crowd into the niches formed between the intricate carvings of the old houses .






SARDAR VALLABHBHAI PATEL RESEARCH INSTITUTE

As I walked around in search of sparrows, I could see many different kinds of birds within the campus. A couple of feeding places with grain and water for the birds were located at regular intervals. Walking a little further, I could see some sparrows eating at a feeding place. I kept moving forward looking for more. The road led me to a small shrine inside the campus. Now I could clearly hear sparrows chirping. After searching for a while, I found a sparrow nest inside a thicket of babul trees. I sat there observing them chirping in a flock, flying around to eat and come back.

The site lies in an area with low built density. An open ground of Gurukul lies on one side and is covered with a residential buildings on the remaining three sides. The building heights in this area fall within the range of G+4 to G+10.

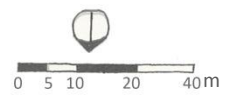
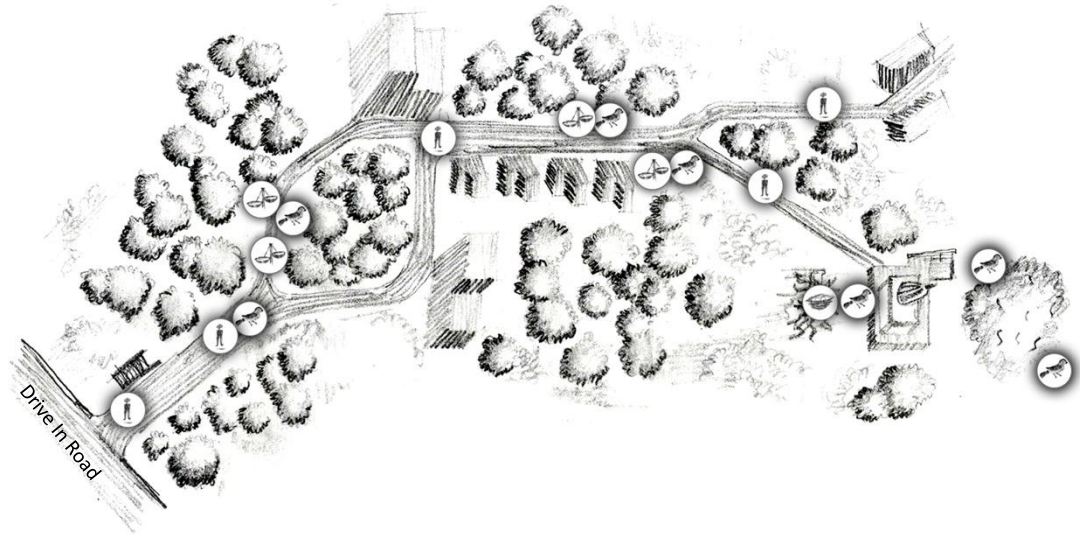
It is a large institutional campus with abundant tree cover and fauna, undisturbed by the chaos and traffic on the outside roads

-  Context
-  Campus
-  Study Area

SARDAR VALLABHBHAI PATEL RESEARCH INSTITUTE

Location – SG highway

Time of Study – 6:30 am to 9:00 am | 6:30 pm to 8:00 pm



-  5 Sparrows
-  5 humans
-  1 Feeding place
-  1 Nesting point

Percentage of Trees in the area



Percentage of open ground



Level of quietness or loudness



- Number of feeding places - 2**
- Number of nest building locations - 1**
- Average number of sparrows seen - 35**
- Average number of humans per minute - 25**

The large percentage of trees, abundant availability of food, safe and secure environment, and large scope for community habitation makes this site the most ideal habitat for sparrows. The birds can carry out all the activities like feeding, bathing, chirping, foraging, mating and nest building with great sense of security.

MAKING A COMPARISON

AMBAWADI SCHOOL

Percentage of trees in the area = 40%



Percentage of open ground = 70%



Level of quietness or loudness = 55 dB (neutral)



Number of feeding places - 0

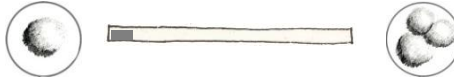
Number of nest building locations - 2

Average number of sparrows seen - 6

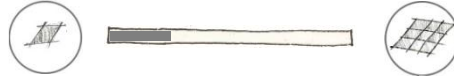
Average number of humans per minute - 15

SWAMINARAYAN TEMPLE, KALUPUR

Percentage of trees in the area = 10%



Percentage of open ground = 30%



Level of quietness or loudness = 75 dB (high)



Number of feeding places - 2

Number of nest building locations - 0

Average number of sparrows seen - 10

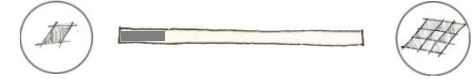
Average number of humans per minute - 25

SARDAR VALLABHBHAI PATEL RESEARCH INSTITUTE

Percentage of trees in the area = 75%



Percentage of open ground = 20%



Level of quietness or loudness = 50 dB (low)



Number of feeding places - 2

Number of nest building locations - 1

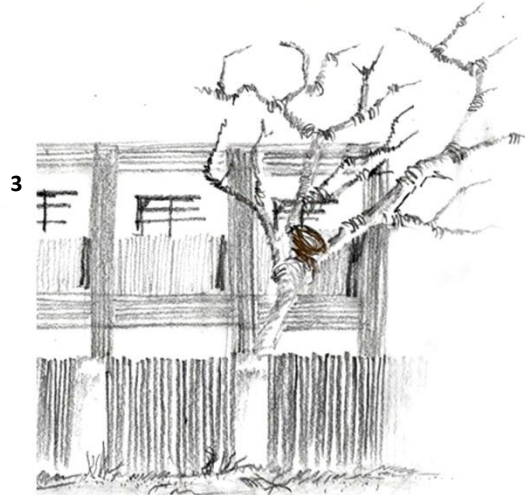
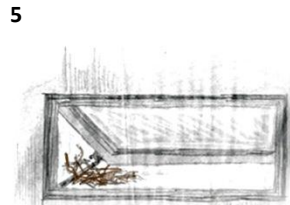
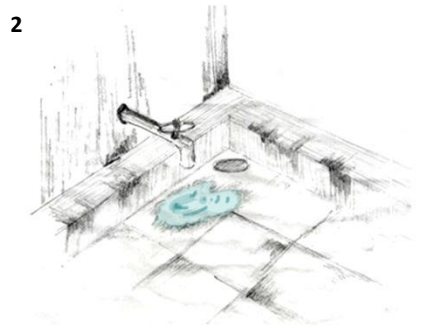
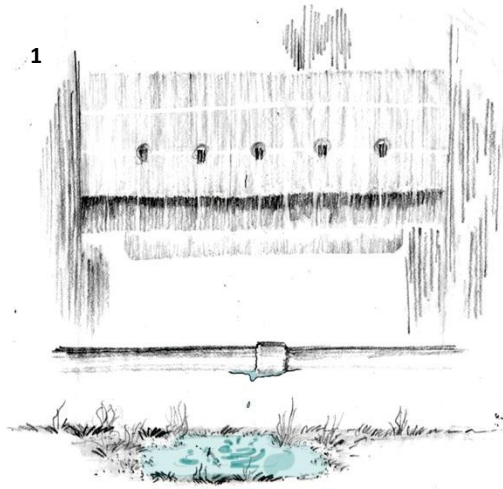
Average number of sparrows seen - 35

Average number of humans per minute - 25

INFERENCES

- More number of sparrows are seen at areas with greater percentage of trees. Nest building is preferred on thickets with a dense branching network where other birds would not prey on them.
- Sparrows make mating calls to conceive. The mating calls fall in the range of 55-60 decibels. Areas where the decibel levels are below 55 dB are preferred for mating. Hence nesting is observed in relatively quieter areas.
- Sparrows prefer areas where community living is possible as this ensures them with a greater sense of safety and security from being preyed upon.

PECULIAR OBSERVATIONS AT THE STUDY SITES

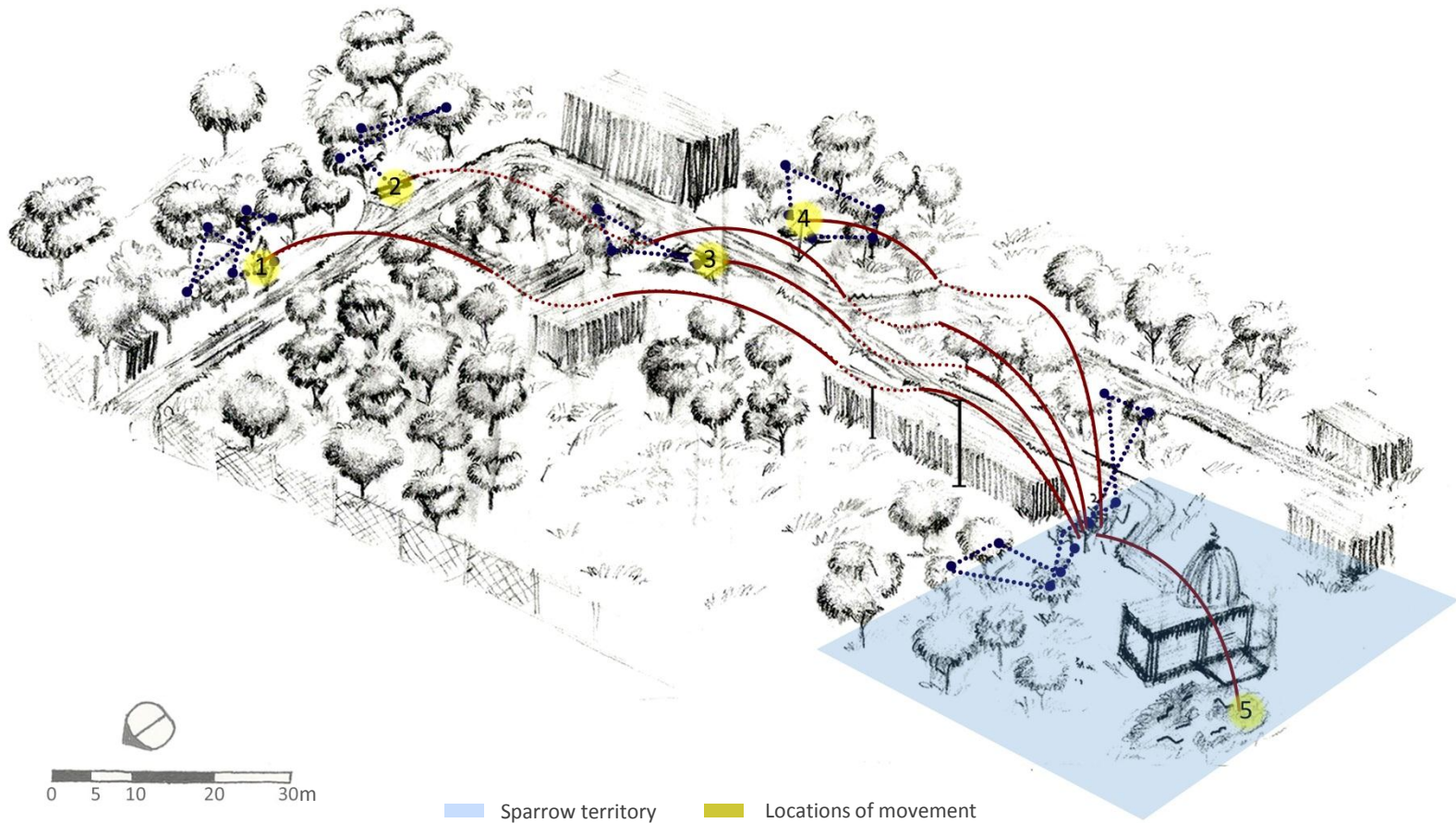


1. Water collected from a leaking pipe at Ambawadi school became a spot for bathing and drinking water for the sparrows
2. Water collected at the washing place at Sardar Vallabhbhai Patel Research Institute became a bathing place for the sparrows.
3. The dry twigs fallen on the ground near Ambawadi school became the source of building matter for their nest.
4. A raised feeder (*chabutara*) outside the Swami Narayan Temple at Kalupur became a safe foraging place for sparrows to escape from the traffic and crowd below.
5. A secluded classroom ventilator at Ambawadi School became a nesting place for the sparrows. It now remains abandoned.

Section 3

Detailed study of site 3
(Sardar Vallabhbhai Patel Research Institute)
based on –
Sparrow movement, activities, nesting
locations, habitat, feeding and bathing habits.

SPARROW MOVEMENT



Flights taken

— Flight line
More speed greater height

..... Flight line
Less speed lesser height

..... Movement within the given location

Location 1,2

Activity – Feeding and foraging

Average time spent by a sparrow in the duration of one hour – 15 minutes

Frequency of displacement in one hour - 5

Location 3,4

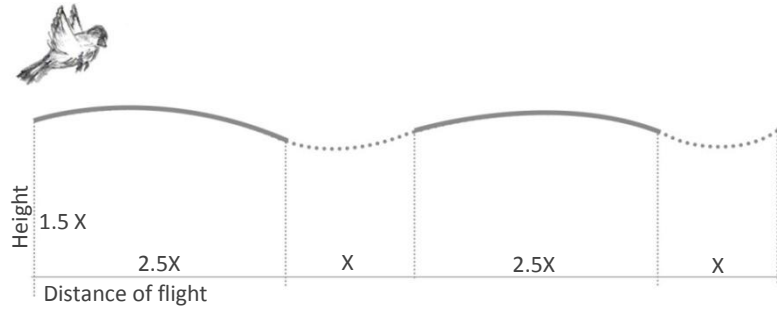
Activity – Feeding, foraging and flock chirping

Average time spent by a sparrow in the duration of one hour –25 minutes

Frequency of displacement in one hour – 5

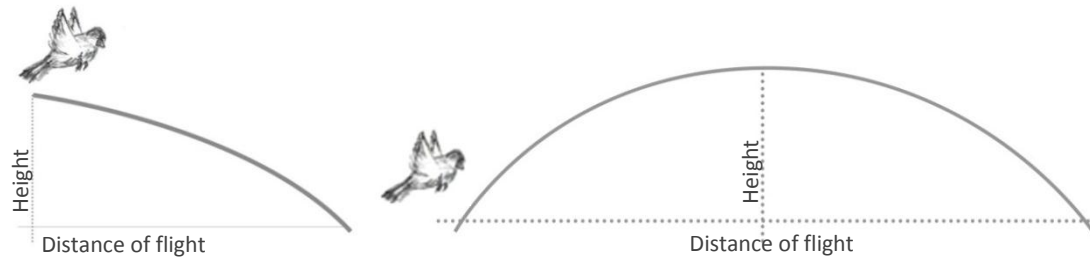
- A peculiar pattern with respect to speed of flying and the height at which the sparrows fly is observed.
- The flight is seen to originate from the residing point in search of food and water feeding places.
- Four feeding places are located where the sparrows fly for food and water.
- The sparrows are seen to only move to the local trees which are within the radius of 20 meter, from the feeding place for chirping.

OBSERVED FLIGHT PATTERN



LONG DISTANCE FLYING PATTERN

- Flying pattern of the sparrow for long distance is linear.
- Since the bird does not see the target it slows down its speed at regular intervals and a flight pattern is observed.
- Along with the speed, the height of the flight is also seen to reduce slightly, creating a wave pattern in elevation.
- This type of flying pattern is observed when the target is not in sight of the bird or for distances more than 7-8 meters.

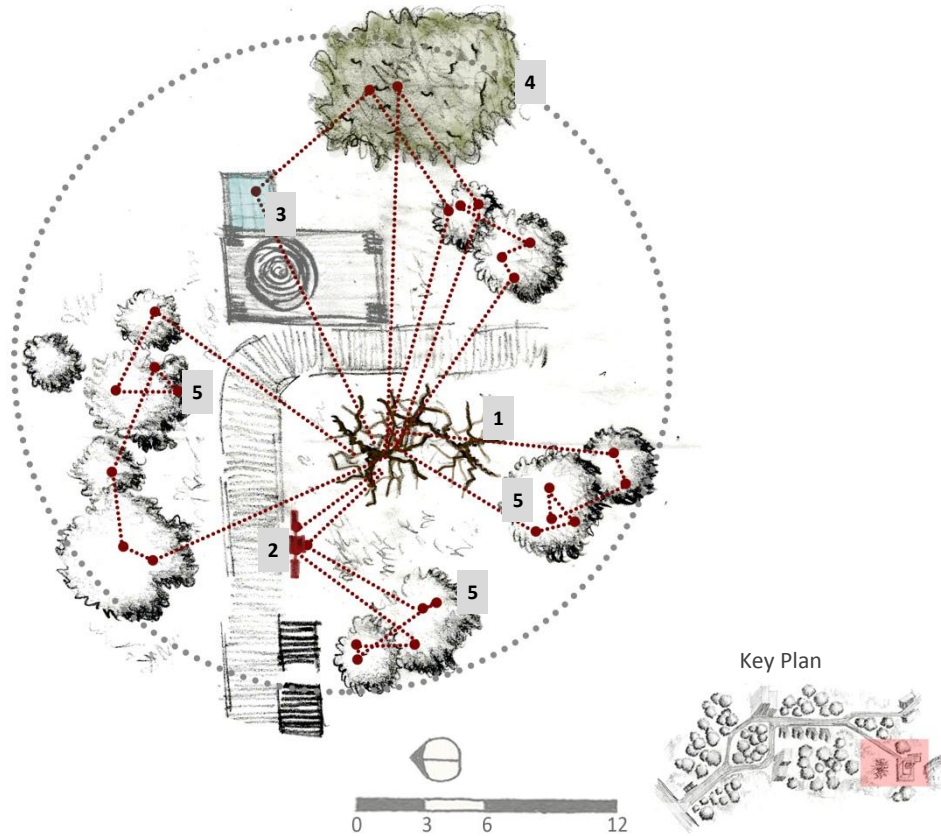


SHORT DISTANCE FLYING

- Short distance flight line resembles a parabolic curve.
- These flights are taken when the target is in sight without hurdles in between.
- The speed here is seen to remain constant and the height keeps on increasing at first and then decreasing.
- Short flight is observed when the flight distance is less than 8 meters.

THE SPARROW TERRITORY UP-CLOSE

Observation time – 6:00 am to 9:00 am | 6:00 pm to 8:00 pm



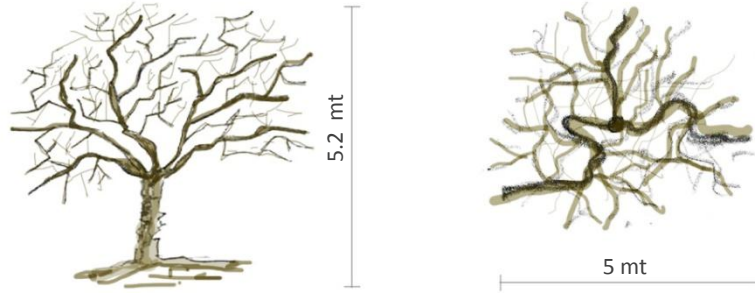
Legend

- Line showing the expanse of Sparrow territory.
Radius = 15 mt
 - Observed flight lines for 1 hour
- 1 A cluster of three *Acacia nilotica* (babul) trees form their place of habitation and nesting.
 - 2 The nearest feeding place is taken up by the sparrows. No other bird comes here to feed.
 - 3 A washing place near the temple is their place for bathing due to abundant availability of sand and water.
 - 4 A stack of cow dung dumped behind the temple serves as a source of insects and worms which is food for their young ones.
 - 5 Surrounding trees that are used for foraging and flock chirping.

Sparrows carry out activities like eating, bathing, foraging, chirping in the vicinity and reside on the babul tree at night. Flight lines for carrying out local activities are observed to be originating and ending at the residing place.

STUDYING THEIR HABITAT

NESTING TREE (ACACIA NILOTICA - *Babul tree*)



NEST UP CLOSE



Acacia nilotica - *Babul tree* (Sparrow habitat at Sardar Vallabhbhai Patel Research Institute)

Form- The babul tree has a distinct bark which spreads radially into branches to form a dense network. **This is ideal for sparrows as they get an existing formwork to rest their nest structure on.**

This dense network of branches and thorns saves them from being preyed upon by larger birds.

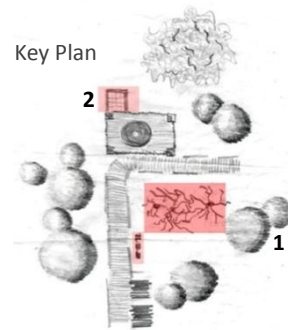
Sunlight- The presence of a dense network of branches helps cutting off the harsh and direct sunrays. **Sparrows do not prefer building their nests below direct sunlight as it can adversely affect their eggs.**

SPARROW NEST

Form- The nest is a cup shaped structure built from the dry twigs, falling from the nearby trees.

Inner lining - The leaves from adjacent trees (1) are used as inner soft lining. Bigger sized leaves are preferred.

Base- The base of the nest is secured to the branches with mud. The sparrows have sourced this mud from the washing place (2) 'chowkdi' used by the temple staff.



STUDYING THE LOCATIONS OF MOVEMENT (feeding and flock chirping)

Observation time – 6:00 am to 9:00 am | 6:00 pm to 8:00 pm

Legend

..... Observed flight lines for 1 hour

■ Feeding places

Location 1 is the farthest spot from their territory and 2% sparrows prefer the location for feeding and flock chirping.

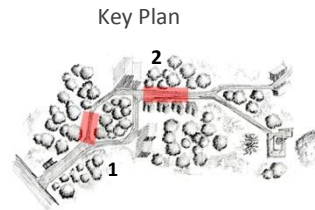
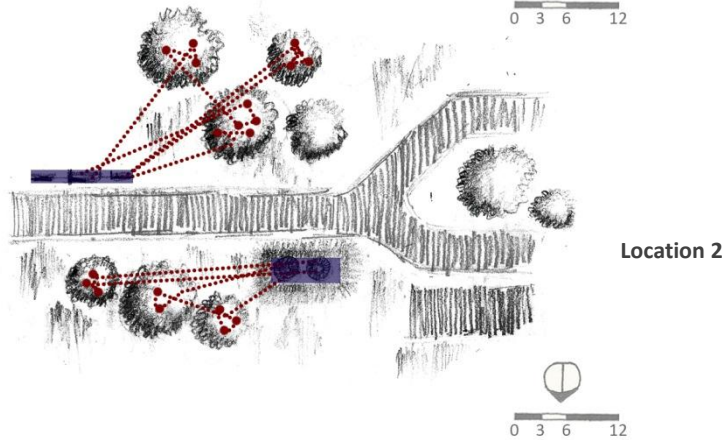
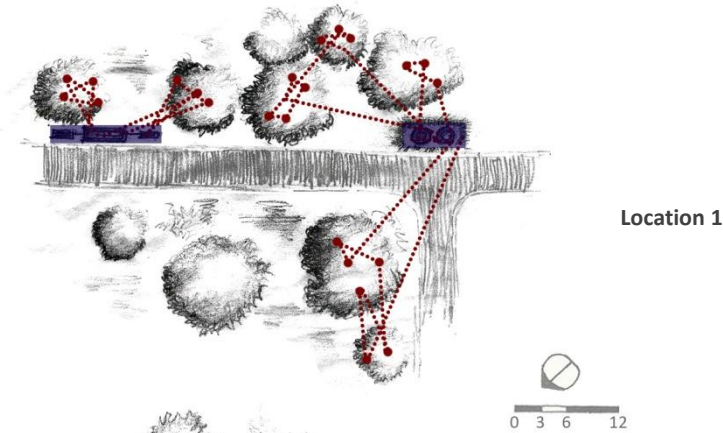
Average number of sparrows observed for the duration of one hour - 5

Location 2 has two feeding places and 10% of the sparrows prefer this location for feeding and flock chirping.

Average number of sparrows observed for the duration of one hour – 10

88% of the total population of sparrows prefer to move within their territory.

- The brim of the feeding vessel plays an important role. The sparrow has three toes in the front and one toe at the back. They use their back toe as a thumb to perch on the vessel brim for a grip.
- Flat, shallow and rimless vessels are inconvenient for the sparrow to drink water.
- The water level should be kept as close to the vessel brim as possible for ease of drinking.
- The sparrow feeds majorly on grain. The Cup shaped beak helps it to scoop grain from the ground easily.
- Insects are preferred to feed their young ones
- For bathing, the depth of water should not be more than 2 inches.



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Satellite images. *Google earth*



Rutuja Badve is a student of architecture from Dr. B. N. College of Architecture, Pune. This study is a part of her 6 months practical training program at M/s Prabhakar B. Bhagwat, Ahmedabad. It was undertaken for a period of 3 weeks.

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