Birds in the City
Summer observations
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Birds in the City
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Introduction: The urban life of birds

As humans we imagine ourselves as the prime inhabitants of cities. However, small patches within and at the edges of dense human population support a rich biodiversity of nature.

Birds are the most visible of this range of life around us.

All of us see pigeons and sparrows near, or in our houses. We can occasionally even spot a flash of colour of a sunbird whizzing past. Summer evenings would be incomplete if we did not hear the koel’s scng; and the monsoon deficient without the peacock.

Birds offer an immediate connect to the larger world of nature around us. While we may know a little of their original habitat, we have really no clue about how they actually move and live within cities.

What are all the bird species in the city?
Where exactly do they live in the city? What are their foraging habits? How do they move within a city? Are there different species of birds living in different parts of the city?

These are a few simple questions which Jobin, a landscape architecture student was trying to answer when he set out to observe the urban life of birds.

He has taken three different transects across Ahmedabad city, and has observed birds and their habits within them. His observations are recorded as two dimensional maps and photographs.

He has recorded about fifty species of birds in the city of Ahmedabad in the months of May, June and July. Nocturnal birds have not been included.

While he asked straightforward questions; his observations provoke us to think a little deeper.

How have birds changed in behaviour in adapting to city life? It might not be a simple question of living in a smaller slice of their original habitat (scrubland, woodland etc.); but a whole new way of living. A case in point, the Common Myna; which nests in holes in walls.

How has a host of other bird species adapted to living in dense urban conditions?

Does noise level affect bird calls? Are urban birds different from rural birds?
Jobin’s studies begin to indicate how we can provide for a number of bird species in the city. To my mind, it also begins to make a case for informed design, which can allow for a richer experience of nature within the city. Dimensions and habitat typologies are clearly documented throwing up interesting comparisons. Juxtaposing his documentation of Kankaria lake, and the railway track, one is forced to reflect on the nature of the making of the edges of the lake; indeed the design of a lot of public parks and open spaces.

While the value of urban biodiversity is indisputable; a study of this nature allows us to think anew programmatically and pragmatically, the making of spaces within the urban environment which not only accommodate a range of species but also make it possible to experience the same in a more fulfilling manner.

Anjali
July 2011
Birds in the city

Birds are a reminder of nature to every city-dweller. Because of their ability to fly, even a multi-storeyed apartment resident is familiar with their presence and their connection to nature. In spite of being a densely packed city, various birds seem to have found suitable habitats within Ahmedabad. Some of the habitats include:

- Agricultural lands on the fringes of the city or along the Chandrabhaga nalah in the north-western part of the city – the food-grains available in large quantity, nesting areas in hedges surrounding the fields, fellow lands with insects tilled out from the soil, are some reasons for the presence of birds in this area.
- Industrial area on the eastern end of the city – some closed industries lying in the core of the industrial areas left untended have become a good habitat for many birds.
- Riverside vegetations on the northern and southern ends of the city – with the banks of the river covered with reeds or kikar bushes, birds get sufficient food and many hidden spaces to nest successfully.
- Riverfront development cutting through the city – even with the river banks developed over, groves of trees in certain areas and river islets formed with the water level going down form perfect feeding spots for some water birds.
- Wooded institutional areas – the provision of shelter and food throughout summer brings in a lot of birds in this area.
- Infrequently used railway tracks turned scrublands – with minimal human intervention along these tracks, the scrubs have provided food and nesting spots for smaller birds.
- Different lakes of the city, seasonal or with fronts developed – groves of trees along the lakes or small puddles of water yet to dry are the reasons for the presence of some water birds around these lakes.
- Huge open grounds surrounded with trees – open grounds give ample space and vision for birds which depend on their flying manoeuvres to catch their prey.
- Dumping ground in the south of the city – The city dump invites birds to feed on various human leftovers and insects brought in with it.

The bird community in all these areas is rich and varied. If observed closely, each of these habitats would have further divisions in terms of bird habitats. The reasons for such differences between various habitats of the city have been the basic intent of this study.

During the summer months in Ahmedabad, migratory bird species leave the city for their home countries. The ones that we see during these months are generally resident birds, that breed and stay in their respective areas. Local migrations happen for some birds which leave for other parts of the country. Some migratory ones that are left behind are called vagrants.

There are three main ways of finding out the variety of animals and plants in a study area: area searches; transect searches; and point searches. Animals that move around a lot or which might be easily disturbed, such as birds, can be studied with point searches. To do this, each searcher is given a place in the study site where they sit still. They then record the animals that they can see or hear during a set period of time.

Initially to locate the sites for study, I went around the city on a particular road or along the river with promising differences in the habitats
flanking it. After stopping at various sites along these transects and studying them, I came up with three transects and their thirteen sites for the following reasons:

- For the presence of a high bio-diversity or variety of bird species (as compared to all the sites I studied)
- For the presence of a high number of a particular population of bird species either because of their roosting, nesting or feeding preferences.

For example: Kalupur railway station happens to invite a high number of Rose-ringed parakeets (*Psittacula krameri*) on its old trees to roost in the evening. On the contrary, Vasna barrage having a high biodiversity caters to Bank mynas (*Acridotheres ginghamianus*) to nest along the slopes of dug ditches in a very high number. The river bed around Sabarmati Bridge in the northern part of the city brings in a huge flock of Asian open-billed storks (*Anastomus episcopus*) that feed along the banks of the river.

Different point transects in the site were considered after it was studied and the one with the maximum apparent bird movements (for various reasons like the presence of water body, food availability, point transect falling on the edge of two or more habitats) was chosen for further study.

The study for the site involved the following:

**Neighbourhood map** - The intent was to map out various habitats in and around the site selected. Different habitats cater to birds in different ways. Some prefer open grounds to just forage for food, while some would even nest in open. Birds nesting and roosting on trees might spend their predominant time foraging on the ground. Various birds spotted in the site and surroundings have been mapped with their activities in various habitats at their respective heights from the ground.

**Sightings along a section** - In a bird watcher's diary, the location of bird, the activity of the bird while it was sighted etc are jotted down. Similarly the next part of study involved looking at a particular section of the site and plotting various locations where the birds were sighted for most part of the study time. The activity of the bird is listed. This gives us an idea of the niche where the bird is most active.

**Bird map** - Sitting at a particular point transect, the movements and activities of the birds were recorded at following times:

- **Morning:** 0600-0800 hrs.
- **Afternoon:** 1100-1300 hrs.
- **Evening:** 1730-1930 hrs.

Their activities have been outlined to four activities - foraging (searching for food), nesting (building and inhabiting a nest), roosting (perching to rest or sleep) and perching (sitting, as on a branch). A perching point has been added to involve other activities like calling for possible mates, looking out for prey, seeking shelter from hot summer sun etc.

**Inferences** - The bird population has been approximately listed down. The various reasons for the presence and flourishing of birds in the particular site are also listed down based on the studies carried out.

Crepuscular (twilight) activities of nocturnal birds have been studied and mapped but study focuses mainly on the diurnal (active during day) birds.

Roosting and nesting points represented in the map are the ones observed on the site. They might not be exhaustive for the site.
The study for birds of Ahmedabad was started initially by dividing the city into transects. A transect is a strip of ground in which a systematic study is carried out. In this case, transects were either taken along a road or the river. Three such transects were etched out in the city:

a. Western urban fringe to eastern industrial area
b. Along river Sabarmati
c. Pockets in the south of the city

Source: Google Earth
Transects observed in the city
This transect contains six varied habitats all within a dense fabric. It starts from the western fringes of the city with a small but densely wooded pocket surrounded by high-rise buildings. The road goes on to reach the center of the city to Parimal garden which has high tree canopies above and heavy human traffic below. As the road cuts across a railway track, the adjacent residential buildings and the neglected strip of land creates yet another environment for the birds. Across the Nehru Bridge, and beyond the Old city, amongst heavy traffic zone lies Kalupur railway station that invites a huge flock of Rose-ringed Parakeets daily to roost on its old Ficus trees. The road runs further beside a tract of unused land with groves of peepal trees. The industrial area starts as you go further on the road and amidst all the noise is a dilapidated and silent cotton mill, quietude broken occasionally by a peacock cawing or koels cooing.
UNTENDED WOODLAND, SUnderVAN

NEIGHBORHOOD HABITAT MAP
Interlocked tree canopies
Common Babbler foraging among the fallen litter
Green Bee-eaters catch insects on trees around a glade

Open ground across the boundary wall
Peacock dances among the leaf litter on the ground
Green Bee-eater nests in earth banks

Young trees and shrubs form the undergrowth
White-browed Fantail feeding on insects flitting across shrubs
Oriental Magpie-robin flying between fallen bamboos

Water body among the trees
White-breasted Waterhen feeding among the fallen leaves
Little Egret foraging in the water body
Rose-ringed Parakeet
(Psittacula krameri)
nesting in a hollowed bole of Azadirachta indica

Oriental Magpie-robin
(Copsychus saularis)
foraging in the litter

Jungle Babbler
(Ixodia striatus)
flock to feed in leaf litter

SIGHTINGS ALONG A SECTION
Peacock (*Pavo cristatus*) displays courship dance in an open area between fallen branches.

White-browed Fantail (*Rhipidura aureola*) catches insects between the fallen branches.

White-breasted Watermen (*Amaurornis phoenicurus*) feeds among the litter near water body.

Green Bee-eaters (*Merops orientalis*) visit their nest built in a burrow in an earth bank.

Asian Koel (*Eudynamus scolopaceus*) sings on *Azadirachta indica*.

White-breasted Kingfisher (*Halcyon smyrnensis*) flies across the grove of *Azadirachta indica*.

Green Bee-eater (*Merops orientalis*) swoops and catches insects mid-air.
Rose-ringed Parakeets fly north-west from the site where they find more trees. They come back in the evening to roost. White-breasted Kingfisher shuttles between Sundervan and a scrubland to the south-east. The Green Bee-eaters forage at the southern edge of the site perching on branches of neem tree and catching insects mid-air. They have their nests in the earthbanks formed during construction work. The White-breasted Waterhen forages throughout the site specially areas near the water body. Peafowl's walk on the leaf litter under the trees displacing insects and feeding on them.
Groves of Azadirachta indica and Alantthus excelsa
Golden-backed Wood-pecker pecking insects from the bark
Fruiting Ficus religiosa attracts Rose-ringed Parakeet
Yellow-footed Green Pigeon basking on Colvillea racemosa

Central water body with water lilies on the surface.
Black Ibis basking in the sun
White-breasted Waterhen feeding near water
Little Egret searching for food among water vegetation

Oriental Magpie-robin searching for nesting materials
Eurasian Collared-Dove foraging on pathways
Indian Mynas searching for food on lawns

Shrubbery of Caesalpinia pulcherrima
Eurasian Collared Dove (Streptopelia decaocto) perching on the branches of Azadirachta indica.

White-breasted Waterhen (Amaurornis phoenicurus) feeds walking on the leaves.

Jungle Babbler (Turdoides striatus) feeding on the lawn grass.

Asian Koel (Eudynamus scolopacea) perching on Polyalthia longifolia tree.

Little Cormorant (Phalacrocorax niger) basking on the branches of Thespesia populnea tree.
Black Ibis (*Pseudibis papillosa*) flock to roost on *Ficus benghalensis*.

Indian Myna (*Acridotheres tristis*) roosting between the leafy branches of *Ficus benghalensis*.

Indian Pond Heron (*Ardeola grayii*) feeding on the reedy banks of the water body.

Black Ibis (*Pseudibis papillosa*) feeding on the reedy edges of the water body.

Black Kite (*Milvus migrans*) perching among the branches of *Azadirachta indica*.

**SIGHTINGS ALONG A SECTION**
Black Ibis fly onto the central *Ficus benghalensis* by the day fall and roost there. They fly in small groups in the morning. In the afternoon, a horde of birds take protection from the summer sun near the pond under trees. Birds like Little Egrets, White-breasted Waterhen, Pond Heron, Black Ibis continue feeding at various parts of the ponds, the former two near the centre of the ponds and the latter two at the edges. The Little cormorants dive and feed in the pond and start roosting much earlier that the other birds, initiating with an evening sun bask.
GENERAL SITE SECTIONS
Black Kite (*Milvus migrans*) roosting on building parapet.

House Crow (*Corvus splendens*) sitting on the window ledge looking out for food.

Rock Pigeon (*Columba livia*) roosting on parapets.

Oriental Magpie-robin (*Copsychus saularis*) perching on electric cable.

Red-vented Bulbul (*Pycnonotus cafer*) perching on a twig of *Cordia myxa*.

Indian Myna (*Acridotheres tristis*) foraging in garbage thrown over the wall.

Jungle Babbler (*Turdoides striatus*) feeding on a skink caught in litter.

Pair of Shikra (*Accipiter badius*) nesting on *Albizia excelsa* with two chicks.

SIGHTINGS ALONG A SECTION
Little Brown Dove (*Streptopelia senegalensis*) foraging on the foot-path along the railway track.

House Sparrow (*Passer domesticus*) foraging on the ground.

Rose-ringed Parakeet (*Psittacula krameri*) flocking on *Azadirachta indica*.

Ashy Prinia (*Prinia socialis*) flitting between the *Zyzyphus nummularia* shrubs.

Asian Koel (*Eudynamus colopaceus*) singing from *Ailanthus excelsa* tree.
Black Kites roost together on the same tree, but in the morning they fly out in different directions individually or in small numbers. In the evening, small birds like Ashy Prinias, Red-vented Bulbuls, Oriental Magpie-robin roost communally on a small Zyzyphus shrub. The House Sparrows make frequent up and down flights from the site to an apartment nearby, where they have nested. The site is used as dumping yard, and the birds get food from the dump and scrub, cover by the scrub and protection by the trees.
House Crow (*Corvus splendens*) sitting on building parapet

Rock Pigeon (*Columba livia*) roosting on the building window ledges

Rose-ringed Parakeets (*Psittacula krameri*) flocking on *Ficus religiosa* tree

Rose-ringed Parakeets (*Psittacula krameri*) flocking on *Ficus infectoria* tree

SIGHTINGS ALONG A SECTION
Rock Pigeons (Columba livia) feeding on streets on bird seeds thrown by people

Black Kites (Milvus migrans) roosting on Ficus infectoria tree
Flocks of Rose-ringed Parakeets start every evening from the groves of trees in the eastern part of the city, flying across the Railway station towards the Old City to roost. Some come down and roost on the trees near the Station. A couple of Yellow-footed Green Pigeon also follow the same pathway. The Rock Pigeons of the station always prefer the coves built into the facade of the building to roost and rest. They fly towards the Old City for feeding and come back every evening.
UNUSED PATCH, NARODA OVERBRIDGE

NEIGHBORHOOD HABITAT MAP
GENERAL SITE SECTIONS
Rock Pigeon (*Columba livia*) feeding on bird seeds thrown by people

Rose-ringed Parakeet (*Psitacula krameri*) feeding on bird seeds thrown by people

House Crow (*Corvus splendens*) flocking on *Ficus religiosa* tree

Black Kite (*Milvus migrans*) roosting on *Ficus religiosa* tree

SIGHTINGS ALONG A SECTION
Rose-ringed Parakeets fly in flocks towards the groves to the south. The Asian Koels also trace the same path, but Parakeets go further to the north. The House Crow that roost on the trees of the site group together near the overbridge next to the residential buildings. They forage there in the morning and leave further into the city later. Indian Mynas, Bank Mynas, Rock pigeons that nest in the weep-holes of the over-bridge follow the same routine during the early hours of the day.
DILAPIDATED MILL, SARASPUR

NEIGHBORHOOD HABITAT MAP
Indian Myna foraging along pedestrian paths
Eurasian Collared-Dove foraging on the ground

Groves of Azadirachta indica and Ailanthus excelsa
Rose-ringed Parakeets flocking on Azadirachta indica
Indian Myna nests in the bole of Ficus religiosa
Black Kites prepare to roost on Ailanthus excelsa

Shrubs of Calotropis procera and Zyzzyphus nummularia

Peacock walks across the roof of the dilapidated mill
Rock Pigeons nest in ruined walls of the building

GENERAL SITE SECTIONS
Common Tailorbird (Orthotomus sutorius) flitting between Zizyphus nummularia shrubs

Rose-ringed Parakeet (Psitacula krameri) flocking on Azadirachta indica

Oriental Magpie-robin (Copsychus saularis) calling from Allanthus excelsa tree

Indian Myna (Acridotheres tristis) nesting in bole of Ficus religiosa

Peacock (Pavo cristatus) walking on the dilapidated roof feeding among fallen leaves

SIGHTINGS ALONG A SECTION
Rock Pigeon (*Columba livia*) nesting in the niches of the wall

Eurasian Collared-Dove (*Streptopelia senegalensis*) feeding on the ground

Asian Koel (*Eudynamys scolopacea*) calling from the branches of *Ficus religiosa*

Black Kite (*Milvus migrans*) roosting in the groves of *Ficus religiosa*
The groves have become a roosting place for Black Kites and as the night approaches they start circling over the site to later settle together on an open-branched tree. A very similar scrub vegetation to the south also bring in a number of small birds like Common Tailor Bird, Purple Sunbird, Red-vented Bulbul etc and ground feeding birds like Grey Francolins and Peafowls. The Jungle Babblers, Eurasian Collared Doves prefer being in the proximity to the residential buildings to south-west. People also place food for birds in feeders and on the ground across the site.
The transect runs along the river Sabarmati beginning with the suburbs of Sabarmati near the bank. Narmada canal brings in water to the river at this point. Agricultural fields along one of the nalas joining the river in Ranip presents a completely different set of bird species. Sabarmati Ashram with old groves of Neem (Azadirachta indica) and Bakul (Mimusops elengi) happen to be a very popular roosting site for many water birds in summer. The end of this transect with Vasna barrage where the river from the city is allowed to trickle further south bring in hordes of birds, both in diversity and number.
Open ground beside water body teems with birds
Earth banks nested in by Bank Mynas
Birds feed on waste flown in with river on its banks

Water released through barrage attracts hordes of birds
Egrets, Stilts, Heron and Doves feeding near water
Black-headed White Ibises and Rock Pigeons flock and feed
White-breasted Kingfisher feeds over a stream

Groves of neem have Rose-ringed Parakeets flying through
Black Drongo on an *Terminalia* agra tree

Hedges of *Prosopis juliflora* around the agricultural fields
Indian Robin frequenting the hedges
Rose-ringed Parakeet feeding on the fruit of *Prosopis juliflora*

Cattle Egret foraging close to a cow that managed into a field

GENERAL SITE SECTIONS
SIGHTINGS ALONG A SECTION

- **Indian Pond Heron (Ardeola grayii)**: soles the edge of the water body.
- **Pair of Little Grebes (Tachybaptus ruficollis)**: glide over the water surface undisturbed.
- **Black-winged Stilt (Himantopus himantopus)**: feeding near the edge of the water body.
- **Black-headed Stilt (Himantopus himantopus)**: leading their flock near the water.
- **Black Kite (Milvus migrans)**: feeding on the ground.
- **Black Kite (Milvus migrans)**: hovering on the ground.
- **Rock Pigeons (Columba livia)**: feeding on waste particles brought by the water released from the barrage.
- **Black-crested Button Quail (Turnix tumbulus)**: feeding on the grass.
- **Gray Heron (Ardea cinerea)**: standing by the edge of the water body.
- **Painted Stork (Mycteria leucocephala)**: feeding on the grass.
Green Bee-eater (*Merops orientalis*) catches flies mid-air near water bodies.

Red-wattled Lapwings (*Vanellus indicus*) shriek at intruders to protect their young ones.

Median Egret (*Mesophoyx intermedia*) flocking with herons and other egrets.

White-breasted Kingfisher (*Halcyon smyrnensis*) perches on an overhanging branch over the water.

Bank Myna (*Acridotheres gingenianus*) nesting communally on the earth banks.

Cattle Egret (*Bubulcus ibis*) feeding in close proximity to cattle grazing.

Indian Myna (*Acridotheres tristis*) foraging on the pathway.

Rose-ringed Parakeet (*Psittacula krameri*) feeding on fruits of *Prosopis juliflora*.

Indian Robin (*Saxicola fulicata*) nesting in the hedges of *Prosopis juliflora*.
Black-headed White Ibises start their morning by flocking near the barrage where the river spews water with all types of waste. Similarly Rock Pigeons feed near the barrage. As the day progresses, they move southwards. They are joined later by Black Kites in the afternoon. The Kites flock and sit on the ground. The Little Grebes skim in the water surface throughout the day feeding from it. The Red-wattled lapwings shuttle from the adjacent scrubland to the banks of the river. Later in the evening, all water birds fly southwards.
GROVE, SABARMATI ASHRAM

NEIGHBORHOOD HABITAT MAP
Grey Heron (Ardea cinerea) patiently waiting while fishing

Bank Myna (Acridotheres griseus) flock on the banks to feed on the banks

Little Cormorant (Phalacrocorax niger) roosting on the branches of Azadirachta indica tree

Spot-billed Duck (Anas poecilorhyncha) feeding among reedy sand banks

Indian Myna (Acridotheres tristis) nesting in weepholes

Cattle Egret (Bubulcus ibis) preparing to roost on Azadirachta indica

Black-winged Stilt (Himantopus himantopus) feeding near the banks

Rose-ringed Parakeet (Psittacula krameri) nesting in the weep holes of the retaining wall

House Sparrow (Passer domesticus) feeding on bird seed placed on copings
Black-headed White Ibis (Threskiornis melanocephalus) roosting on Azadirachta Indica

Asian Koel (Eudynamus scolopacea) singing between the branches of Azadirachta indica

Indian Pond Heron (Ardeola grayii) nesting in Polyalthia longifolia tree
Black-headed White Ibises, Little Cormorants, Cattle Egrets fly in to roost on the trees of the Ashram as the night falls. They fly to the south of the river in the morning. By the afternoon, they start flocking on the river islets to feed till the dusk. White-rumped Vultures move west towards the open grounds and fields flanking the Chandrabhaga nalah. They spend most of the morning on a bare tree opposite the entrance of the Ashram. The same tree is used by House Crows to roost. Rose-ringed Parakeets shuttle between the fields and the retaining wall.
Red-vented Bulbul (Pycnonotus cafer) perching on the cable going over the road.

Red-wattled Lapwing (Vanellus indicus) foraging among the refuse thrown in the open ground.

House Sparrow (Passer domesticus) foraging among the refuse blown near the shrubs of Calotropis procera.

Greater Coucal (Centropus sinensis) walking across the open ground.
Purple Sunbird (Nectarinia asiatica) sipping on the flowers of Calotropis procera

Cattle Egret (Bubulcus ibis) foraging among the fields

Green Bee-eater (Merops orientalis) perching on the branches of Pongamia pinnata overhanging

House Crow (Corvus splendens) foraging on Allanthus excelsa
The House Crows and the House Sparrows shuttle between the residential area and the scrub land that is also used as dumping area. The Purple Sunbirds flit between flowering shrubs of Calotropis procera. The Cattle Egrets come to the site from the nearby water bodies and feed in the fields in the afternoon and evening. The trees near the nalah (water channel) act as perches for Green Bee-eaters that prey on the insects rising from the mucky water.
BEGINNING OF RIVER IN CITY, SABARMATI BRIDGE

NEIGHBORHOOD HABITAT MAP
Purple Sunbird
(Nectarinia asiatica)
flitting between
Calotropis procera

Green Bee-eater
(Merops orientalis)
preying on a branch of
Frosopis juliflora
Asian Openbill-stork (Anastomus oscitans) flocking and feeding near the water

White-breasted Kingfisher (Halcyon smyrnensis) sits on top of an earth bank

Little Cormorant (Phalacrocorax niger) swimming and diving in water near the reeds

Red-wattled Lapwing (Vanellus indicus) forages near river beds

Asian Koel (Eudynamus scolopaceus) singing from the groves nearby
Asian Open-billed Storks feed on the shallow river banks and islets and fly towards the south by the evening. The water from the Narmada canal ensures water in the river at this end where these birds roost while the upper reaches remain dry. The Egrets follow the same path. The Prosopis thicket to the west is an abode for many birds like the White-breasted Kingfishers, Shikras that come on the banks to feed. The Green-bee Eaters get plenty of food in those thickets and adjacent river banks. The Spot-billed Ducks, and Little Cormorants also feed with the Open-bills but roost nearby.
The transect begins with Sarkhej roza in South-west of the city. Sans its lake, the structure happens to shelter many avian species. Across the river, the transect brings a seasonal lake, Chandola. Its proximity to industries, has not spared whatever little water stagnant in it. Yet some birds feed and breed in areas around the lake. The transect ends with Kankaria lake, the city zoo, where mature *neem*, *imli*, *kanju* trees, provide nesting spaces for hundreds of water birds.
Sarkhej lake dries up and leaves an open ground

Rock Pigeon feeds on refuse blown to the edge of wall

Grove of *Azadirachta indica* near the seasonal lake

Spotted Owlet on *Azadirachta indica* tree

Puddles of water spread across the dry lake

Indian Pond Heron feeding near a puddle

Black Kite comes down on ground to quench its thirst

Bank Myna feeds on frog caught in a water puddle

Sarkhej roza facing the dried lake

Bank Mynas nesting in weepholes of retaining wall

Spotted Owlet perches on the cove of one of the structures

House Sparrow feeds among the people visiting Sarkhej

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**GENERAL SITE SECTIONS**

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Nesting point  Foraging point
Roosting point  Perching point
SIGHTINGS ALONG A SECTION

House Swift (Apus affinis) flying close to the building catching insects mid-air.

Rock Pigeon (Columba livia) roosting on the sun-shade.

Black Kite (Milvus migrans) drinking water from a puddle not yet dried from summer heat.
House Crow (Corvus splendens) roosting on Azadirachta indica

Indian Myna (Acridotheres tristis) trying to fend off spotted owl from their nest in the cove of the building

Spotted Owlet (Athene brama) resting from afternoon sun in the building
Red-wattled Lapwings and Pond Herons move to the site from the north where there are drying lakes. They shuttle in between the two places to feed. House Swifts have nested inside the Jami mosque. They fly across the dried lake throughout the afternoon and evening staying close to the buildings. The Spotted Owlets roost in one of the buildings or adjacent trees in the afternoons. The Bank Mynas have nested in the weep-holes of the retaining walls of the lake and feed near the water puddles.
SEASONAL LAKE, CHANDOLA LAKE

NEIGHBORHOOD HABITAT MAP
Open ground

Dry Chandola lake in summer

Black Kites on the ground intermittently feeding from the soil

House Crow foraging in the refuse people throw in the lake

Cattle Egret feeding on insects unearthed by buffalo hooves

Water body

Median Egret feeding near a drying puddle

Eurasian Spoonbill feeding on insects in puddle

Nesting point  Foraging point
Roosting point  Perching point

GENERAL SITE SECTIONS

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House Crow (Corvus splendens) nesting on Prospis juliflora trees at the edge of the lake

House Crow (Corvus splendens) feeding from the refuse dumped in the lake

Black Kite (Milvus migrans) on the ground feeding from the soil

SIGHTINGS ALONG A SECTION
Eurasian Spoonbill (Platalea leucorodia) feeding at the edges of the water puddles.

Cattle Egret (Bubulcus ibis) foraging near the buffaloes.

Painted Stork (Mycteria leucocephala) feeding on the banks of the puddles.

Intermediate Egret (Mesophoyx intermedia) foraging at the sloping edge of the central mound.
Water Birds like Median Egrets, Painted Stork fly from the south of the lake and fly back probably to Lambha lake where these birds roost. Black Kites forage around the residential areas to the west of the lake and fly over the lake to roost around the scrub vegetation falling to the north west of the lake. Some also swoop down to the dry lake and sit on the ground probably 'anting', a process where ants are encouraged to climb on their body to secrete chemicals that act as miticide or fungicide.
Great Egret (Casmerodius albus) flocking on Tamarindus Indicus

Black-crowned Night Heron (Nycticorax nycticorax) nesting communally on Polyalthia longifolia

Little Cormorant (Phalacrocorax niger) flocking with Greater Egret

House Crow (Corvus splendens) feeding on refuse in service lane behind the eatery

SIGHTINGS ALONG A SECTION
White-Breasted Waterhen (*Amaurornis phoenicurus*) feeding near the waterfront edges.

Median Egret (*Mesophoyx intermedia*) feeding near the waterfront.
Little Cormorants fly towards the West in flocks, probably towards the river to feed. Their flights back to the Zoo in the evening coincides with the flights of Night Herons leaving their nests for foraging. Greater Egrets prefer feeding on the peninsular center of the lake but in the dusk they help themselves with what they find in the animal enclosures of the zoo. Black-headed White Ibises follow the same path as Greater Egrets. Peafowls apparently do not leave the site. They live feeding on small creatures hiding among the leaf litter in unused enclosures of the zoo.
FEEDING HEIGHTS OF BIRDS
05. Unused patch
Naroda Overbridge

06. Dilapidated mill
Saraspur

09. Agriculture along nalai
Ranip

10. Beginning of river in city
Sabarmati Bridge

12. Seasonal lake
Chandola

13. City zoo
Kankaria

Upper storey foraging birds
Middle storey foraging birds
Lower storey foraging birds
Ground storey foraging birds

N.T.S.

Birds not to scale
1. Untended woodland
Sundervan
Size: 160 X 180 Sq. M

2. Public park
Parimal Garden
Size: 275 X 200 Sq. M

3. Railway track
Mithakhali
Size: 35 X 350 Sq. M

4. Railway station
Kalupur
Size: 80 X 350 Sq. M

5. Unused patch
Naroda overbridge
Size: 100 X 200 Sq. M

6. Dilapidated mill
Saraspur
Size: 600 X 250 Sq. M

BIRD POPULATION
H: High (above 10), M: Medium (5-10), L: Low (below 5) (number of birds observed on site during study)
7. End of river in city
Vasna Barrage
Size: 250 X 350 Sq. M

8. Grove
Sabarmati Ashram
Size: 150 X 200 Sq. M

9. Agriculture along
naïlah
Ranip
Size: 150 X 200 Sq. M

10. Beginning of river
in city
Sabarmati Bridge
Size: 250 X 500 Sq. M

11. Historical structure
Sarkhej Roza
Size: 300 X 250 Sq. M

12. Seasonal lake
Chandola
Size: 650 X 650 Sq. M

13. City zoo
Kankaria
Size: 125 X 550 Sq. M
In the city, Bank mynas use weepholes of under-bridge, overbridges, retaining walls to nest.

Rock pigeon have adapted in using various niches of the city to nest. The above picture depicts one in a weep-hole of Naroda over-bridge.

Nests of Red-wattled Lapwing are built form different materials according to the site they chose. In the University area, the birds have chosen cow-dung pellets to nest with.

This House Crow chose a railway pole under the shade of a solar panel to nest.

The rural Bank Mynas, on the other hand have been digging out trenches on earth-banks to nest communally.

Sunshades and other projections have been a favorite nesting spot for Rock Pigeons, be the building single-storeyed or multi-storeyed.

In the fields of Ranip, the blades of grasses were twisted together to form a saucer-like nest to lay eggs.

Allanthis excelsa trees have been observed to have House Crow nests of twig platform throughout the city.

BIRDS AT DIFFERENT SITES - NESTING HABITS
A Black Kite chose the top of a light pole to nest.

Rose-ringed parakeets with Bank Mynas have chosen weep-holes of Shahibaug under-bridge to nest.

Black Kites generally chose the top branches of a high tree, here, Polyalthia longifolia, to nest.

They generally chose boles of trees like Azadirachta indica to nest in hollows excavated by other birds or themselves.
Black kites roosting on light poles near Parimal Garden.

Spotted Owlet use the cave of a structure of Sarkhej Roza to roost in the afternoon.

Peahens in Sundervan find in the sloping roof a perfect spot to roost for a night.

Yellow-footed Green Pigeon use cables to roost in Gujarat University area.

Black Kites choose Bombax ceiba to roost together near Gujarat University.

Spotted Owlet use a branchlet to roost during the wee hours of morning near Gujarat University.

A Peacock in Sardar Patel Institute use an Azadirachta indica branch to roost.

In Parimal Garden, they use the naked branches of Colvillea racemosa to roost.
Oriental Magpie-robin forages in the household dump.

In Law Garden, the Rose-ringed Parakeets come down to feed on bird seeds thrown for them by people.

Black Drongo perches on the barbed wire near a recently mowed lawn in Gujarat University to catch flies.

Green Bee-eaters perch on the retaining wall to catch insects from the adjacent Sabarmati river.

In Sundervan, they forage in the leaf litter of the bamboo.

Rose-ringed parakeets feed on the dried fruits of *Moringa oleifera* in Mithakhali railway track.

Black Drongo perches on a dead tree stump near a field in Ranip waiting for an insect to come in vicinity.

Green Bee-eater perches on the overhanging branches of Prosopis cinererea to catch insects from a recently dug area nearby.

BIRDS AT DIFFERENT SITES - FEEDING HABITS
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