Documentation on

The Free Ranging Avi Fauna of the Darjeeling Zoo

Imran Samad,
8th Semester 9Applied Electronics)
Netaji Subhash Engineering
College. Kolkata.
Preface

This project is a study of the various species of birds found in the hills of Darjeeling during the months January – February. Sampling was done in Darjeeling Kurseong and Mirik, and the place of occurrence of these species is well noted in their description. This documentation contains a brief introduction of the places fauna and birds that occur there. I hope it will aid everyone dedicated to study the place or gather casual knowledge of the beautiful hills.

On a personal note, it was a great opportunity and experience. Early morning walks sometimes traded for deep evening strolls helped me understand the place even better. I covered forests, towns and semi populated areas in my quest. It was serene and educating at the same time.
<table>
<thead>
<tr>
<th>Contents</th>
<th>Pg No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Evolution of Birds</td>
<td></td>
</tr>
<tr>
<td>Bird Biology</td>
<td></td>
</tr>
<tr>
<td>Avi - faunal Diversity of North East India</td>
<td></td>
</tr>
<tr>
<td>Study area</td>
<td></td>
</tr>
<tr>
<td>Objective</td>
<td></td>
</tr>
<tr>
<td>Methodology</td>
<td></td>
</tr>
<tr>
<td>Result</td>
<td></td>
</tr>
<tr>
<td>Threats and Conservation Measures</td>
<td></td>
</tr>
<tr>
<td>Conclusion</td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td></td>
</tr>
</tbody>
</table>
Introduction

“Eastern Himalayas” as considered is a stretch of extremely rugged mountain country along the northern border of India. The area lies roughly between latitudes 26º30’ and 28ºN., and longitude 87º and 97º30’ E. It is some 1000 Km long and varies in width from 120 to 200 km, including within its boundaries the Kingdom of Bhutan and the Indian States of Sikkim and Arunachal Pradesh- the last forming the extreme north-eastern corner of the Indian Union. The duars of Bengal and Assam, stretching contiguously along the base of the foothills, have included for the sake of completeness since many of the higher- elevation birds descend to them to spend the winter months. The western political boundary of this area in Sikkim is marked by the Singalila Ridge, or Spur, which rises abruptly from the terai plains and runs about 100 km south to north, separating the Darjeeling district of W. Bengal together with Sikkim State from the Kingdom of Nepal, and culminating at its northern extremity in some of the loftiest mountains in the world, the Kanchenjunga itself (8586 m), includes many other peaks of well over 6000m. However from the biological consideration, the Arun- Kosi Valley of eastern Nepal, 100 km west of Singalila is the natural boundary of the area since it is hereabouts that definite diversity in the character of the avifauna from the rest of Nepal and the western Himalayas becomes sensibly discernible. The geographical position of this mountain belt at the head of the Bay of Bengal – its nearness to the sea and inflow of the moisture – laden SW monsoon winds till the6y strike the mountain barrier to condense and cause heavy precipitation – makes it the most humid tract of the entire Himalayan chain. Its lower latitude and relatively warmer climate have conducted to a higher timber- line, higher alpine zone and higher snow-line than in the western Himalayas. Moist steamy tropical valleys occur in the foothills flanked by densely forested slopes seemingly side by side with stupendous snow- capped mountain ranges. The abrupt juxtaposition of so many different biotopes or life zones- ranging from almost plain level to over 6000 m, and from tropical heat to arctic cold- all telescoped within a straight- line distance of hardly more than 80 km, has given to the eastern Himalaya a flora and fauna which for richness and variety is perhaps unequalled in the world. Sequestered in the rain –shadow, moreover, lie dry, practically rainless valleys which add to the ecological complexities of the jumbled habitats and make the area as a whole particularly rich in flowering plants, butterflies and birds.

North Bengal comprising the districts of Jalpaiguri, Darjeeling, Dinajpur and Cooch Behar lies at the foothill of the great Himalayas. The area covers the moist and dense riverine forests of the Bengal Duars (Duars) and the stark foothills of the snow-capped Kanchenjunga range. The unique climatic and ecological conditions make North Bengal a unique home for a large variety of mega-fauna & superb restricted bird species.

The natural plant life and vegetation of Darjeeling is climate and altitude dependant but varied. As the climate varies throughout the year so does the flora. The dullness of winter disappears with the dawn of spring during the month of March and April.
The spring season is short but gives the town a rich colourful look. The Rhododendrons cover most parts of the hill station during this time of the year (March - April). There are 24 species of Rhododendrons in the hills of Darjeeling. The flowers are of different colours, scarlet, mauve, white with a tinge of rose.

The most commonly found species is called Lali Gurans (Rhododendron ferrugineum) among the locals due to its red petals. Some species of Rhododendrons have flowers which have a variegated appearance. Some are in the form of small shrubs with pink flowers.

In the months of April - May small white flowers of Peach and Pear bloom. The first sign of red cherries are also seen around this time. This edible fruit is the locals delight.

Most of the houses of Darjeeling cultivate Orchids during this time of the year (April to May). This flower can be grown from cuttings. The orchids are golden, silver, pink, white and purple. At times potted orchid plants are also seen. Cymbidium, a variety of orchid is worth mentioning as this is imported from Holland and Australia and finds a place in Darjeeling hill town. You will often get to see freshly cut flowers as table decorations in the restaurants and home stays in Darjeeling district.

Around the festival month of Durga Puja and Fulpati in October the hilly regions of this district is flooded with white, orange, maroon and golden yellow Marigolds. This flower is used as prayer offerings. The Nepalis call Marigold (Genus: Tagets) ‘hundred leafed flower’ in their local language.

In Darjeeling district, most part of the hilly region have the evergreen pine tree locally known as 'Dhupi'(Cryptomaria japonica). The only coniferous plant is the 'Larch'(Genus Larix) in this hilly zone. Small bamboo trees are found in Kurseong, Kalimpong and Darjeeling. The species of bamboo 'Maling' is common in the forests of Darjeeling and interspersed among this are the tall oak trees, maple, chestnut, alder and birch.

You can also find thousands of varieties of flowerless plants like mosses lichen and ferns. The ferns have medicinal value. Another species of trees the 'Betula' (Betula
pendula) species is the only one found in the lower part of Kurseong town. Walnut (Juglans major) and Pipli (Exbucklandia populnea) are found in the upper areas. The most common undergrowth of Kurseong subdivision are the lichens and ferns.

Most part of the foothills of the Himalayas or the Terai region is occupied by the 'Sal' tree. Sal trees (Shorea robusta) are very tall and sometimes reach a height of 30 meters. Winter (November to January) is the time for the oranges.

**Evolution of Birds**

The **evolution of birds** began in the Jurassic Period, with the earliest birds derived from a clade of theropoda dinosaurs named Paraves. Birds are categorized as a biological class, **Aves**. The earliest known is *Archaeopteryx lithographica*, from the Late Jurassic period, though *Archaeopteryx* is not commonly considered to have been a true bird. Modern phylogenies place birds in the dinosaur clade Theropoda. According to the current consensus, Aves and a sister group, the order Crocodilia, together are the sole living members of an unranked "reptile" clade, the Archosauria. Four distinct lineages of bird survived the Cretaceous-Tertiary extinction event 66 million years ago, giving rise to ostriches and relatives (Paleognathae), ducks and relatives (Anseriformes), ground-living fowl (Galliformes), and “modern birds” (Neoaves).

Phylogenetically, Aves is usually defined as all descendants of the most recent common ancestor of a specific modern bird species (such as the house sparrow, *Passer domesticus*), and either *Archaeopteryx*, or some prehistoric species closer to Neornithes (to avoid the problems caused by the unclear relationships of *Archaeopteryx* to other theropods). If the latter classification is used then the larger group is termed Avialae. Currently, the relationship between dinosaurs, *Archaeopteryx*, and modern birds is still under debate.
Bird Biology:

Bird anatomy, or the physiological structure of birds' bodies, shows many unique adaptations, mostly aiding flight. Birds have a light skeletal system and light but powerful musculature which, along with circulatory and respiratory systems capable of very high metabolic rates and oxygen supply, permit the bird to fly. The development of a beak has led to evolution of a specially adapted digestive system. These anatomical specializations have earned birds their own class in the vertebrate phylum.

Avi faunal Diversity of North East India

The NE India constitutes vast evergreen forests of the Brahmaputra river valley, the broad leaf forests at the foothills and the high altitude sub-alpine coniferous vegetation and the Indo-Myanmar dense bamboo and pine forests. This is a vast ecosystem include the elements of riparian as well as low and high altitude mountainous ecosystems suitable as premier bird habitats. This region hosts one of the most famous and celebrated sanctuaries and reserved forests of the subcontinent as well as the world, known for their spectacular avian biodiversity: Dibang, Namdha, Eaglenest, Kamlang & Mehao (Arunachal Pradesh); Manas, Kaziranga, Garampani, Nameri, Dipor Bil, Pobitora, Pobha, Laokhowa, Bornadi & Oran (Assam); Bhagama, Siju & Nongkhum (Meghalaya); Fakim, Intanker & Pulebatze (Nagaland); Keibul Lam Jao (Manipur); Ngengpui & Khawnglung (Mizoram), Gumti, Charilam & Sepaijholo (Tripura), Kyongnosla, Pangolakha, Meanam & Shingba (Sikkim) and Jaldapara, Gorumara, Singalila & Senchal (West Bengal).

The avifauna diversity of this region is spectacular and home to the Great Indian Hornbill (Buceros bicornis) that has been placed under Near Threatened (NT) status by the IUCN. Several rare species of both resident and migratory birds are reported from this pristine habitat. Being located within the biome of the majestic Eastern Himalayas, the eco-region provides a unique habitat for a wide diversity of
local species. This is not only an important ecosystem for the local and resident avian species; but also a diverse habitat for numerous short and long distance migrant species that crisscross the region during their annual and semi-annual migration. The unique ecosystem provides multiple species with adequate opportunity to feed and forage as well as nest, breed and raise their chicks successfully with relatively little anthropogenic pressures and carbon foot prints.

Several avian species come and visit the NE from other parts of the subcontinent such as Central and Western Himalayas and southern India; and there are also species visiting the regions from the distant Siberia (Russia), Mongolia, central, southern and SE China, Myanmar Thailand, Indo-Chine, Pakistan, Afghanistan, Iran and Central Asian countries like the Tajikistan, Uzbekistan, Kyrgyzstan, Turkmenistan and Kazakhstan and west Asia. The avian diversity of the region include different species of **ducks, swans, geese, teals, grebes, pochards, pintails, ibis, shanks, terns, pelicans, storks, Asian open bills, bitterns, spoonbills, sandpipers, plovers, cranes, egrets, herons, cormorants, kingfishers, lesser adjutants, greater adjutants, crakes, water hens, coots, moorhens, snipes, swamp hens, jacanas, rails, falconets, kestrels, hobbys, hawks, kites, vultures, harriers, goshawks, falcons, owls, owlets, eagles, ospreys, woodpeckers, pheasants, peacocks, tailor birds, rollers, honey guides, hornbills, sunbirds, bee eaters, orioles, sand grousers, frogmouths, lapwings, muniyas, parakeets, quails, hoopoe, crow pheasants, yuhina, parrot bill, martins, warblers, tree creepers, babblers, pipits, wagtails, leafbirds, flowpeckers, sunbirds, grosbeaks, bunting, larks, thrushes, flycatchers, blackbirds, drongos, treepies, sparrows, common crow, jungle crow, mynas, starlings, barbets, bulbuls, nightjars, swifts, swiftlets, swallows, magpies, finches, shrikes, wood shrikes, pigeons and doves, blue peafowls, piculets, robins, wild pheasants, swamp francolins, Bengal floricans, coucals, cuckoos, minivets, pittas, dollar bird, malkohas, curlews, ruffs, stints, cuckooshrikes, godwits and different finches to name only a handful.

**Study Area:**

Padmaja Naidu Himalayan Zoological Park, Darjeeling formerly known as Himalayan Zoological Park, Darjeeling was established on 14th August 1958. The Zoological Park is located at an altitude of 7000 ft (2150 mts) in Jawahar Prabat (Birch Hill) on the northern fringe of Darjeeling town. The Zoological Park is situated in the lower Himalayas in 27°3’ N and 88°18’E, at the confluence of Ethiopian, Palaeartic, Mediterranean and Indo- Malayan flora and fauna. Of the total 78.5 acres with the Zoological Park, 67.56 acres is presently under the Zoological Park management.

The Park in its collection has a total of **49** number of species. The free ranging faunal diversity as recorded by the Park includes mammals, avifauna, Reptiles, amphibians, common insects and butterflies (**MASTER (layout) PLAN & FIRST MANAGEMENT PLAN** (2001-02 TO 2010-11).
OBJECTIVE
To record the avifaunal diversity in the small patch of forest of Darjeeling Zoo for a period of one month i.e. from 01.02.2017-28.02.2017.

METHODOLOGY:
1) Walking through existing tracks and trails. Binocular was used to view birds for identification and photographs taken.
2) Reference for identification done from various sources:
   ➢ Wikipedia, short communications and articles.
RESULT: Birds Located at Darjeeling Zoo

1) House Pigeon (*Columba livia domestica*)

Mid-sized gregarious birds found near human settlements. They are diurnal i.e. they are active all day long. They were one of the first birds to be domesticated for their ability to map places and return home. ORDER: COLUMBIFORMES; FAMILY: COLUMBIDAE.

Facts: Size: 11-14 inches/Weight: 200-300 grams/Wingspan: 20-26 inches

2) Spotted Dove (*Spilopelia chinensis*)

Mid-sized gregarious birds found along with pigeons. They are diurnal and prefer to stay near human settlements for higher availability of food. Feed mainly on grains and fruit. ORDER: COLUMBIFORMES; FAMILY: COLUMBIDAE.

Facts: Size: 12-14 inches/ Wingspan: 20-26 inches/ Weight: 200-300 grams
3) **Jungle Crow** (*Corvus macrorhynchos*)

A scavenging bird that also feeds on insects, plants, fruits and practically anything edible. It is very adaptable and is able to survive on a wide range of food sources, making it capable of colonizing new areas, due to which it is often considered a nuisance, especially on islands. **ORDER:** Passeriformes; **FAMILY:** Corvidae.


Found extensively everywhere near/in forests.

4) **House Crow** (*Corvus splendens*)

These birds can be seen near marketplaces and garbage dumps, foraging for scraps. They have also been observed to eat sand after feeding on carcass. Large trees with big crowns are preferred for nesting. **ORDER:** Passeriformes; **FAMILY:** Corvidae.


4) **Blue Whistling Thrush** (*Myophonus caeruleus*)

It is known for its loud human-like whistling song at dawn and dusk. Like others in their genus, they feed on the ground, often along streams and in damp places foraging for snails, crabs, fruits and insects. **ORDER:** Passeriformes; **FAMILY:** Muscicapidae.

5) **Green Tailed Sunbird** (*Aethopyga nipalensis*)

Usually found alone or in a pair, it mostly feeds on flower nectar. It is mostly active during morning hours. It lives in open mountain woods with moss-covered trees, from 1825 to 3350 meters elevation. **ORDER:** Passeriformes; **FAMILY:** Nectariniidae

**Facts:**
- **Size:** 5-6 inches
- **Wingspan:** 8-10 inches
- **Weight:** 15-30 grams
- Found near flowers (orchids).

6) **Barn Swallows** (*Hirundinidae rustica*)

The barn swallow is a bird of open country that normally uses man-made structures to breed and consequently has spread with human expansion. It builds a cup nest from mud pellets in barns or similar structures and feeds on insects caught in flight. This species lives in close association with humans, and its insect-eating habits mean that it is tolerated by man; this acceptance was reinforced in the past by superstitions regarding the bird and its nest. **ORDER:** Passeriformes; **FAMILY:** Hirundinidae

**Facts:**
- **Size:** 6-8 inches
- **Wingspan:** 12-13 inches
- **Weight:** 20-30 grams
- Found near human settlements.
7) **House sparrow** (*Passer domesticus*)

The house sparrow is strongly associated with human habitations, and can live in urban or rural settings. Though found in widely varied habitats and climates, it typically avoids extensive woodlands, grasslands, and deserts away from human development. It feeds mostly on the seeds of grains and weeds, but it is an opportunistic eater and commonly eats insects and many other foods. ORDER: Passeriformes; FAMILY: Passeridae


8) **Common Myna** (*Acridotheres tristis*)

An omnivorous open woodland bird with a strong territorial instinct. It has adapted extremely well to urban environments. The range of the common myna is increasing at such a rapid rate that in 2000 the IUCN Species Survival Commission declared it one of the world's most invasive species and one of only three birds in the top 100 species that pose an impact to biodiversity, agriculture and human interests. ORDER: Passeriformes; FAMILY: STURNIDAE

Facts: Size: 8-12 inches/ Wingspan: 7-10 inches/ Weight: 100-150 grams. Found mostly in open areas.
9) **Himalayan bulbul** (*Pycnonotus leucogenys*)

It is native to central Asia and is mostly found in large groups perching on mid-sized trees. They are uniquely identified by their crest and their beautiful four whistle song.

**ORDER:** Passeriformes; **FAMILY:** Pycnonotidae

Facts: Size: 6-8 inches/ Wingspan: 9-11 inches/ Weight: 30-50 grams

Found near forests and grasslands.

10) **Yellow breasted chat** (*Icteria virens*)

The yellow-breasted chat is a shy, skulking species of bird, often being only heard but not seen. The breeding habitats of this species are dense, brushy areas and hedgerows. Hidden deep in bushes, they seldom leave their habitat.

**ORDER:** Passeriformes; **FAMILY:** Incertae sedis

11) **Grey-winged Blackbird** (*Turdus boulboul*)

The Grey-winged Blackbird feeds mainly in trees, searching for prey in moss on the branches. But it also forages on the ground, performing rapid hops alternated with pauses. It feeds on insects and larvae, and caterpillars. It also takes snails, earthworms and slugs. Fruits and berries are also consumed. The female is of olive green plumage. During the winter, they often forage in small flocks.

Order: Passeriformes; Family: Turdidae.

Facts: Size: 10-12 inches/ Wingspan: 8-10 inches/ Weight: 100-150 grams

Found in dense forests.

12) **Himalayan Shrike Babbler** (*Pteruthius ripleyi*)

Himalayan shrike-babblers are strictly arboreal and are seen foraging for insects mainly in the upper canopy. During the breeding season they are found in pairs but at other times several birds may be found, often in mixed-species foraging flocks. They also feed on berries, hopping along branches and sometimes hanging like a nuthatch.

Order: Passeriformes; Family: Vireonidae.

Facts: Size: 5-6 inches/ Wingspan: 7-9 inches/ Weight: 40-80 grams

Found at canopy of the forest.
13) **Grey Wagtail** (*Motacilla cinerea*)

The species is always associated with running water when breeding, although they may use man-made structures near streams for the nest. Outside the breeding season, they may also be seen around lakes, coasts and other watery habitats. Like other wagtails, they frequently wag their tail and fly low with undulations and they have a sharp call that is often given in flight. ORDER: Passeriformes; FAMILY: Motacillidae.

Facts: Size: 6-8 inches/ Wingspan: 9-11 inches/ Weight: 60-80 grams

Found at forest canopies near water.

Besides Darjeeling Zoo following were the species spotted at other places in Darjeeling.

13) **Little egret** (*Egretta garzetta*)

These are large, beautiful birds which often migrate from the northern regions to escape the chilling winter of the region. They are primarily found near water bodies and mainly feed on fish and other insects. They are welcomed in paddy fields for they clear crops of insects infesting them. ORDER: Pelecaniformes; FAMILY: Ardeidae.

Facts: Size: 22-26 inches/ Wingspan: 35-42 inches/ Weight: 400-600 grams

Found near water bodies. Spotted at **Mirik Lake**.
Indian Darter (*Anhinga melanogaster*)

The darters or snakebirds are mainly tropical water birds. The term "snakebird" refers to their long thin neck, which has a snake-like appearance when they swim with their bodies submerged, or when mated pairs twist it during their bonding displays. ORDER: Suliformes; FAMILY: Anhingidae.

Facts: Size: 34-40 inches/ Wingspan: 45-48 inches/ Weight: 1100-1400 grams

Found near water bodies. Spotted at Mirik Lake.
Other Birds at Darjeeling Zoo

All the birds mentioned above were spotted and identified personally by me. However, there are several other birds found in the hills at different locations. They are listed below.

<table>
<thead>
<tr>
<th>Bird</th>
<th>Scientific Name</th>
<th>Found at</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darjeeling Woodpecker</td>
<td><em>Dendrocopos darjelensis</em></td>
<td>High temperate forests</td>
</tr>
<tr>
<td>Fulvous Breasted Woodpecker</td>
<td><em>Dendrocopos macei</em></td>
<td>Forest edges</td>
</tr>
<tr>
<td>Greater Yellow Nape</td>
<td><em>Picus flavinchu</em></td>
<td>Broadleaf forests</td>
</tr>
<tr>
<td>Lesser Yellow Nape</td>
<td><em>Picus chlorophus</em></td>
<td>Broadleaf forests</td>
</tr>
<tr>
<td>Alexandrine Parakeet</td>
<td><em>Psittacula eupatria</em></td>
<td>Wooden forests</td>
</tr>
<tr>
<td>Greenish Tree Warbler</td>
<td><em>Phylloscopus trochiloides</em></td>
<td>Forests and gardens</td>
</tr>
<tr>
<td>Chestnut Crowned Warbler</td>
<td><em>Seicerus castaniceps</em></td>
<td>Oak forests</td>
</tr>
<tr>
<td>Chestnut Crowned Laughing Thrush</td>
<td><em>Garrulax mitratus</em></td>
<td>Forest undergrowth</td>
</tr>
<tr>
<td>Whiskered Yuhina</td>
<td><em>Yuhina flavicollis</em></td>
<td>Lower and middle forest</td>
</tr>
<tr>
<td>Rufous Sibia</td>
<td><em>Heterophasia capistrata</em></td>
<td>Middle forest</td>
</tr>
<tr>
<td>Rufous-Winged Fluvetta</td>
<td><em>Alcippe castaneceps</em></td>
<td>Forest undergrowth</td>
</tr>
<tr>
<td>Chestnut Headed Tesia</td>
<td><em>Tesia castaneocoronata</em></td>
<td>Forest ground</td>
</tr>
<tr>
<td>Chestnut-Tailed Minla</td>
<td><em>Minla strigula</em></td>
<td>Lower canopy</td>
</tr>
<tr>
<td>Mountain Tailorbird</td>
<td><em>Orthotomus curculus</em></td>
<td>Bushes and lower jungle</td>
</tr>
<tr>
<td>Verditer Flycatcher</td>
<td><em>Eumyias thalassina</em></td>
<td>Open woods</td>
</tr>
<tr>
<td>Little Pied Flycatcher</td>
<td><em>Ficedula westermanni</em></td>
<td>Tree canopies</td>
</tr>
<tr>
<td>Chestnut Bellied Rock Thrush</td>
<td><em>Monticola rufiventris</em></td>
<td>Open forests</td>
</tr>
<tr>
<td>Large Niltava</td>
<td><em>Niltava gradis</em></td>
<td>Open forests</td>
</tr>
<tr>
<td>White Tailed Robin</td>
<td><em>Myiomela leucora</em></td>
<td>Lower forests</td>
</tr>
<tr>
<td>Scarlet Minivet</td>
<td><em>Pericrocotus flammeus</em></td>
<td>Damp forest undergrowth</td>
</tr>
<tr>
<td>Common Tree Magpie</td>
<td><em>Cissa chinensis</em></td>
<td>Forest canopies</td>
</tr>
<tr>
<td>Little Spider Hunter</td>
<td><em>Arachnothera longirostra</em></td>
<td>Dense forests</td>
</tr>
<tr>
<td>Black Bulbul</td>
<td><em>Hypsipeteus leucocephalus</em></td>
<td>Thick undergrowth</td>
</tr>
<tr>
<td>Hill Mayna</td>
<td><em>Gracula religiosa</em></td>
<td>Forest canopies</td>
</tr>
<tr>
<td>White Tailed Nuthatch</td>
<td><em>Sitta himalayensis</em></td>
<td>Middle forest</td>
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<tr>
<td>Green Backed Tit</td>
<td><em>Parus monticolus</em></td>
<td>Coniferous forests</td>
</tr>
<tr>
<td>Great Hill Barbet</td>
<td><em>Megalaima virens</em></td>
<td>Moist forests</td>
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<td>Rosy Pipit</td>
<td><em>Anthus roseatus</em></td>
<td>Highland forests</td>
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<tr>
<td>Scarlet Finch</td>
<td><em>Haematopis sipahi</em></td>
<td>Lower forests</td>
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<tr>
<td>Yellow Bellied Flowerpecker</td>
<td><em>Dicaeum melanozanthum</em></td>
<td>High forests</td>
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<tr>
<td>Little Bunting</td>
<td><em>Schoeniclus pusillus</em></td>
<td>Near gardens</td>
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<tr>
<td>Hill Prinia</td>
<td><em>Prinia atripalidis</em></td>
<td>Lower Forest</td>
</tr>
<tr>
<td>Red-Rumped Swallow</td>
<td><em>Cecropis daurica</em></td>
<td>Lower Forest</td>
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<tr>
<td>Black Throated Tit</td>
<td><em>Aegithalos concinnus</em></td>
<td>Open Forest Areas</td>
</tr>
<tr>
<td>Great Parrotbill</td>
<td><em>Conostoma aemodium</em></td>
<td>Forest Undergrowth</td>
</tr>
<tr>
<td>Oriental Magpie Robin</td>
<td><em>Copsychus saularis</em></td>
<td>Tree canopies</td>
</tr>
</tbody>
</table>
Threats and Conservation Measures

- Some species of birds are highly susceptible to disturbance by people and their activities, and others are not so sensitive. For example, the Crested Shrike-tit builds its deep, woven cup-shaped nest high in the outer foliage of eucalypts and other trees, but will readily desert the nest completely if disturbed by people coming too near, including birdwatchers. An in-depth study of Darjeeling birds is needed to draw further conclusions. Keeping human traffic as low as possible in certain areas can help eliminate this problem.

- Birds communicate with each other through calls and songs that hold a particular meaning a same species. Loud noise from nearby areas may damage the process and therefore affect the entire biodiversity of the area. For example, in Mexico, researchers found that house finches raised the pitch of their lowest song notes in response to road noise. Therefore, controlling noise pollution is a major step for their protection.

- The most imminent threat to birdlife is the clearance of their habitat – felling of trees, construction of any sorts, even clearing of land by burning as dry forests catch fire quick. Reduction of such activities is tough but necessary. On the other hand, planting of trees needs to be encouraged; houses may have a garden or a roof garden to help birds survive.

- Pollution of any type is harmful for the environment and therefore the birds. Nature is an intricate web where prediction of any sorts in terms of effects of changes or intervention of human activities is nearly impossible. For example a study done by Saud University in Islamabad City proved how vegetation of dumping areas suffered, producing a chain effect on the environment. The most important step is to educate people into having a better environment.
Climate change is the most obvious threat as adaptation to quick changes to the environment is nearly impossible for the flora and fauna of a place. Education and strict laws are the best weapons against this.
Conclusion

The study taken under the month of February, 2017 was exciting and informative. Spotting birds at various places was fun and identifying them using the internet and other means was equally challenging. I had observed a few more birds in the green forests of the hills, but could not identify them successfully, hence I have not mentioned them here.

Comparing casually with the birdlife during the monsoons, winters seemed to be quieter. This compels one to think how several species may have migrated to warmer areas to escape the dip in temperature. However drawing conclusions is an act to be done only after bird sampling during monsoon. This provides a scope to work on the same project also after a few months and provide a broader look at the species and also help understand the entire biodiversity of the place.
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