Diversity of Avian Fauna of Thirthahalli Panchayat Town Of Shivamogga District, Karnataka, India

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ABSTRACT

This paper documents a list of birds of Thirthahalli panchayat town of Shivamogga district, Karnataka, India. Birds are great economic importance to man. Avifaunas are important for the ecosystem as they play various roles as scavengers, pollinators, predators of insect pest, bioindicators of different kind of environment like urbanization and industrialization. They are very sensitive indicators of pollution problems and function as early warning system. During the study 39 species of birds belonging to 32 families and 15 orders were recorded. More species were sighted in order Passeriformes, followed by Coraciformes, Pelicaniformes, Charadriiformes, Columbiformes, Psittaciformes and Accipitriformes. Falconiformes, Pidicipediformes, Ciconiformes, Gulliformes, Cruculiformes, Anseriformes, Suliformes, and Strigiformes were represented by a single species each.

Keywords: Avifauna, Thirthahalli, Shivamogga.

Abbreviations: IUCN-International Union for Conservation of Nature; LC-Least Concern; CE-Critical Endangered; NT-Near Threatened

1. INTRODUCTION

Birds are the feathered, bipedal, endothermic, egg laying flying vertebrates. It has been said that birds can exit without man, but man would be in difficult situation without them. Birds are also great economic importance to man. Avifaunas are important for the ecosystem as they play various roles as scavengers, pollinators, predators of insect pest, bioindicators of different kind of environment like urbanization and industrialization (Sharma, 1982). They are very sensitive indicators of pollution problems and function as early warning system (Gole, 1984). Wadatkar and Kasambe (2002) reported 171 species of birds from Pohar-Malkhed reserve forest, Amravati Maharashatra.ulkarni et al. (2005) reported 151 species of birds in Nanded region of Andra Pradesh, Padmavat et al. (2010) reported 109 species of birds from Ousteri Wetland of Puducherry and Kulkarni and Kanwate (2011) reported 102 species of birds from Kinwat forest of Maharashatra. Considering the importance of birds to human being many researchers have studied the diversity of birds (Abdulali, 1981; De Luca et al., 2004; Inac et al., 2008; Patel and Dharya, 2008).

1.1 Distribution

Birds live and breed in most terrestrial habitats and on all seven continents. The highest bird diversity occurs in tropical regions. It was earlier thought that this high diversity was the result of higher speciation rates in the tropics, however recent studies found higher speciation rates in the high altitudes that were high offset by greater extinction rates than in the tropics (Weir et al., 2007).

1.2 Flight

Most birds can fly, which distinguishes them from all most all other vertebrate classes. Flight is primary means of locomotion for most bird species and is used for breeding, feeding, predator avoidance and escape. Birds have various adaptations for flight, including the light weight skeleton, two large flight muscles and modified forelimb that serves as an aerofoil (Gill Frank, 1965). Flightlessness often arises in birds on isolated islands, probably due to limited resources and absences of land predators (Mac Nab and Brian, 1994).

1.3 Behavior

Most birds are diurnal, but some birds, such as many species of owls and nightjars, are nocturnal and many coastal waders feed when the tides are appropriate, by day or night (Mac Nab and Brian, 1994).
1.4 Diet and feeding

Birds diets are varied and often include nectar, fruits, plants, seeds, carrion and various animals including small birds because birds have no teeth, their digestive system is adapted to process unmanicured food items that are swallowed whole. Birds that are employed many strategies to obtain food or feed on a variety of food items are called generalists, while others that concentrate time and effort on specific food items are considered specialists (Gill Frank, 1995). Birds feeding strategies vary by species. Many birds glean for insects, invertebrates, fruits and seeds. Some hunt insects by suddenly attacking from a branch. Those species that seek insects are considered beneficial biological control agents and their presence encouraged in biological pest control programs (Reid, 2006).

1.5 Water and drinking

Water is needed by many birds although their mode of excreting excess salts is. It is found in elasmobranches, seabirds and some reptiles. Salt glands maintain salt balance and allow marine vertebrates to drink seawater.

Crop milk

Crop milk is a secretion from the lining of the crop of parent birds that is regurgitated to young birds. They are found among all pigeons and doves where they are referred to as pigeon milk. Crop milk is produced by flamingos and penguins.

1.6 Migration

Many bird species migrate to take advantage of global differences of seasonal temperatures, therefore optimizing availability of food sources and breeding habitat. The migrations vary among the different groups. Many land birds, shore birds and water birds undertake annual long distance migrations, usually triggered by the length of day light as well as weather conditions (Battey et al., 2000). Before migration, birds substantially increases body fats and reserves and reduce the size of some of their organs (Klaassen Mark, 1996). Sea birds also undertake long migrations, the longest annual migration being those of Sooty Shearwaters, which nest in New Zealand and Chile and spend the Northern summer feeding in the North Pacific of Japan, Alaska and California, an annual round trip of 64,000 km (Shaffer et al., 2006).

1.7 Communication

Birds communicate using primarily visual and auditory signals. Signals can be interspecific and intraspecific. Birds some times use plumage to assess and assert social dominance (Moller and Anders Pape, 1988). Variation in plumage also allows for the identification of birds, particularly between species.

1.8 Flocking and other associations

While some birds are essentially territorial or live in small family groups, other birds may form large flocks. The principle benefits of flocking are safety in numbers and increased foraging efficiency and defense against predators (Gill Frank, 1995). Birds some times also form associations with non-avian species. Plunge diving seabirds associate with dolphins and tuna, which push shoaling fish towards the surface (Au David and Pitman, 1986).

1.9 Resting and Roosting

The high metabolic rates of birds during the active part of the day are supplemented by rest at other times. Many birds rest on one leg, while some may pull up their legs in to their feathers, especially in cold weather (Buckley, 1968).

1.10 Breeding

1.10.1. Social systems

Ninety-five percent of bird species are socially monogamous. These species pair for at least the length of the breeding season or in some cases for several years or until the death of one mate (Gowaty Patricia, 1983). Monogamy allows for biparental care, which is especially important for species in which females require males assistance for successful brood rearing (Freed Leonard, 1987).

1.9.1 Territories, nesting and incubation

Many birds actively defend a territory from others of the same species during the breeding season; maintenance of territories protects the food sources for their chicks. Bird eggs are usually laid in nest. Most species create elaborate nests, which can be cups, domes, plates, mounds and burrows (Hansel, 2000). Incubation, which optimizes temperature for chick development, usually begins after the last egg has been laid (Gill Frank, 1995). In monogamous species incubation duties are often shared, whereas in polygamous species one parent is wholly responsible for incubation. Incubation period ranges from 10 days (Woodpeckers and cuckoos) to over 80 days as in Kiwis (Gill Frank, 1995).

1.9.2 Parental care and fledging

The length and nature of parental care varies widely amongst different orders and species.

1.9.3 Brood parasites

Brood parasites, in which an egg layer leaves her eggs with another individuals brood, is more common among birds than any other type of organism. After a parasitic bird lays her eggs in another bird's nest, they often accepted and raised by the host at expense of the hosts own brood.

1.10 Relationship with humans

Since birds are highly visible and common animals, humans have had a relationship with them since the dawn of man. Several bird species have become commercially significant agricultural pests. Human activities can also be detrimental, and have threatened numerous bird species with extinction. Birds can act as vectors for spreading diseases.

1.11 Economic importance

Domesticated birds raised for meat and eggs, called poultry, are the largest source of animal protein eaten by humans. Chickens account for much of human poultry consumption, though turkeys, ducks and geese are also relatively common. Other commercially valuable products from birds include feathers, which are used as insulation in clothing and bedding, sea bird guano, which is a valuable source of phosphorus and nitrogen. Birds have been domesticated by humans both as pets and for practical purposes.

1.12 Conservation

Though human activities have allowed expansion of a few species, such as the Barn Swallow and European Starling, they have caused population decreases or extinction in many other species. Over a hundred bird species have gone extinct in historical times (Fuller, 2000). The most commonly cited human threat to birds is habitat loss. Other threats include over hunting and accidental mortality due to structural collisions (Brothers, 1991).

Governments and conservation groups work to protect birds, either by passing laws that preserve and restore bird habitat or by establishing captive population for reintroductions. Such projects have produced some successes; one study estimated that conservation efforts saved 16 species of bird that would otherwise have gone extinct between 1994 and 2004, including the California condor and Norfolk Parakeet (Butchart, 2006).

2. MATERIALS AND METHODS

2.1 Study area

Thirthahalli panchayat town is 60 km from the district headquarters, Shivamogga. It lies on the bank of the river Tunga. Thirthahalli lies between 13° 42’ 0” N latitude and 75° 13’ 48” E longitude. Thirthahalli experiences cool climate.
climate with temperature ranging between 12°C to 22°C during winter and between 20° to 32° during summer. The cold season is from December to February, it is followed by hot season (March-May). The South-West monsoon is from June to September.

2.2 Methodology
For the study three different spots were selected around Thirthahalli panchayat town. The spots were Korana kote, Elimane and Hurali. Regular bimonthly observation was made from June to September 2012. Birds were sighted using Binocular of 8 X 40 magnifications. These observations were made in the morning or in the evening. Field identifications were carried out with the help of various filed guides (Ali and Ripley, 1983; Kazmierczak, 2000; Grimmett et al., 2002). The nomenclature and systematic sequence of birds as give by Manakadan and Pittie (2001) has been followed. The conservation status presented here is as assigned by Jhunjhunwala et al. (2001). Conservation status is as given by IUCN (2010).

3. RESULTS AND DISCUSSION
During the study 39 species of birds belonging to 32 families and 15 orders were recorded (Table 1, Figures 1 to 41). More species were sighted in order Passiformes (14), followed by Coraciformes(5), Peliconiformes(4), Charadriiformes, Columbiformes, Psittaciformes and Accipitriformes(2). Falconiformes, Pidicipediformes, Ciconiiformes, Galliformes, Cruciformes, Anseriformes, Suliformes, and Strigiformes were represented by a single species each. Genus composition of Peliconiformes, Ciconiiformes, Galliformes, Cruciformes, Anseriformes, Suliformes, and Strigiformes were represented by a single species each. Genus composition of Peliconiformes,

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Common name</th>
<th>Scientific name</th>
<th>Family</th>
<th>C S</th>
</tr>
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<tbody>
<tr>
<td>01</td>
<td>Indian Myna</td>
<td>Aethopyga malabarica</td>
<td>Sturnidae</td>
<td>LC</td>
</tr>
<tr>
<td>02</td>
<td>Common Hill Myna</td>
<td>Gracula religiosa Linnaeus</td>
<td>LC</td>
<td></td>
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<tr>
<td>03</td>
<td>Little Ringed Plover</td>
<td>Charadrius dubius Scop.</td>
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</tr>
<tr>
<td>04</td>
<td>Little Grebe</td>
<td>Jacynthybus ruficollis Pal.</td>
<td>Podicipitidae</td>
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<tr>
<td>05</td>
<td>Lesser Whistling Duck</td>
<td>Dendrocygna javanica H.</td>
<td>Anatidae</td>
<td>LC</td>
</tr>
<tr>
<td>06</td>
<td>Little Cormorant</td>
<td>Microcarbo niger Vieillot</td>
<td>Phalacrocoracidae</td>
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<tr>
<td>07</td>
<td>Black Ibis</td>
<td>Pseudibis papillosa Tem.</td>
<td>Threskiornithidae</td>
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<tr>
<td>08</td>
<td>Eurasian spoonbill</td>
<td>Platalea leucorodia L.</td>
<td>Threskiornithidae</td>
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<tr>
<td>09</td>
<td>Little Egret</td>
<td>Egretta garzetta Linnaeus</td>
<td>Aedeidae</td>
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<td>India Pond Heron</td>
<td>Ardeola grayi Sykes</td>
<td>Aedeidae</td>
<td>LC</td>
</tr>
<tr>
<td>11</td>
<td>Black Capped Kingfisher</td>
<td>Halcyon pileata Bodd.</td>
<td>Hycoyidae</td>
<td>LC</td>
</tr>
<tr>
<td>12</td>
<td>White Breasted Kingfisher</td>
<td>Halcyon smynis L.</td>
<td>Hycoyidae</td>
<td>LC</td>
</tr>
<tr>
<td>13</td>
<td>Common Iora</td>
<td>Aegithina pityra Linnaeus</td>
<td>Aegithidae</td>
<td>LC</td>
</tr>
<tr>
<td>14</td>
<td>Indian Pysow</td>
<td>Psyl,nilus Linnaeus</td>
<td>Phasianidae</td>
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<tr>
<td>15</td>
<td>Scarlet Backed Pecker</td>
<td>Dicaea cruentatum L.</td>
<td>Dicaeidae</td>
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<tr>
<td>16</td>
<td>Malabar Grey Hornbill</td>
<td>Ocycerus griseus Latham</td>
<td>Bucerotidae</td>
<td>LC</td>
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<tr>
<td>17</td>
<td>Pheasant Tailed Jacana</td>
<td>Hydrophasinus chirurgus S</td>
<td>Jacanidae</td>
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<tr>
<td>18</td>
<td>Cerulean Kingfisher</td>
<td>Alcedo coerulescens V.</td>
<td>Alcedinidae</td>
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<td>19</td>
<td>Rufous treepie</td>
<td>Dendrocitta vagbyuda La</td>
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<td>LC</td>
</tr>
<tr>
<td>20</td>
<td>Red Breasted Flycatcher</td>
<td>Ficedula parva Bechthein</td>
<td>Muscicapidae</td>
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<tr>
<td>21</td>
<td>Asian Koel</td>
<td>Eudynamys scolopaceus L.</td>
<td>Cilindidae</td>
<td>LC</td>
</tr>
<tr>
<td>22</td>
<td>Laughing Dove</td>
<td>Spixloala senegalansies L.</td>
<td>Columbidae</td>
<td>LC</td>
</tr>
<tr>
<td>23</td>
<td>Kock Pigeon</td>
<td>Columbula liva Gmelin</td>
<td>Columbidae</td>
<td>LC</td>
</tr>
<tr>
<td>24</td>
<td>India Blue Robin</td>
<td>Luscinia brunnea Hodgson</td>
<td>Muscicapidae</td>
<td>LC</td>
</tr>
<tr>
<td>25</td>
<td>Indian Pitta</td>
<td>Pitta brachystryx Linnaeus</td>
<td>Pittidae</td>
<td>LC</td>
</tr>
<tr>
<td>26</td>
<td>Yellow Wagtail</td>
<td>Motacilla flava Linnaeus</td>
<td>Motacilidae</td>
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<tr>
<td>27</td>
<td>Scarlet Minivet</td>
<td>Perleocrotus flaves Fort.</td>
<td>Campephagidae</td>
<td>LC</td>
</tr>
<tr>
<td>28</td>
<td>Jungle Crow</td>
<td>Corvus macrorhychos Wa.</td>
<td>Corvidae</td>
<td>LC</td>
</tr>
<tr>
<td>29</td>
<td>Rufou Bellied Babbler</td>
<td>Turdus subula Jerdon</td>
<td>Timaliidae</td>
<td>LC</td>
</tr>
<tr>
<td>30</td>
<td>Rose-ringed Parakeet</td>
<td>Psittacula krameri Scopi</td>
<td>Psittaculidae</td>
<td>LC</td>
</tr>
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<td>31</td>
<td>India Hanging Parrot</td>
<td>Loricrus vernalis Spa.</td>
<td>Psittaculidae</td>
<td>LC</td>
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<tr>
<td>32</td>
<td>House Sparrow</td>
<td>Passer domesticus L.</td>
<td>Passeridae</td>
<td>LC</td>
</tr>
<tr>
<td>33</td>
<td>Spotted Owlet Nepal</td>
<td>Tyto tenebris Linnaeus</td>
<td>Tytonidae</td>
<td>LC</td>
</tr>
<tr>
<td>34</td>
<td>Short toed Snake Eagle</td>
<td>Cirsacetus gallicus Gmelin</td>
<td>Accipitridae</td>
<td>LC</td>
</tr>
<tr>
<td>35</td>
<td>White-rumped Vulture</td>
<td>Gyps bengalensis Gmelin</td>
<td>Accipitridae</td>
<td>LC</td>
</tr>
<tr>
<td>36</td>
<td>Spot billed Pelican</td>
<td>Pelecanus philippensis L.</td>
<td>Pelecanidae</td>
<td>NT</td>
</tr>
<tr>
<td>37</td>
<td>Red Whiskered Bulbul</td>
<td>Pyconotus jocosus L.</td>
<td>Pyonotidae</td>
<td>LC</td>
</tr>
<tr>
<td>38</td>
<td>Indian Roller</td>
<td>Coracias bengalensis L.</td>
<td>Coraciidae</td>
<td>LC</td>
</tr>
<tr>
<td>39</td>
<td>Brahminy Kite</td>
<td>Haliastur indus Bodd.</td>
<td>Accipitridae</td>
<td>LC</td>
</tr>
</tbody>
</table>

CS-Correction Status, LC-Least Concern, Critical Endangered, NT-Near Threatened

Out of 39 species 37 are Least Concern (LC), Gyps bengalensis is Critical Endangered (CR) and Pelecanus philippensis is Near Threatened (NT). The species richness and diversity of birds is higher in the studied area as

![Figure 1](image1.png)

Figure 1
Little Grebe
Ciconiiformes, Galiformes, Cruliformes, Anseriformes, Suliformes, and Strigiformes were represented by a single species each. Genus composition of Peliconiformes, Ciconiiformes, Galliformes, Cruciformes, Anseriformes, Suliformes, and Strigiformes were represented by a single species each. Genus composition of Peliconiformes, Ciconiiformes, Galliformes, Cruciformes, Anseriformes, Suliformes, and Strigiformes were represented by a single species each. Genus composition of Peliconiformes,
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Figure 21
Scarlet Minivet

Figure 22
Jungle Crow

Figure 23
Rufous Bellied Babbler

Figure 24
Rose Ringed Parakeet

Figure 25
House Sparrow

Figure 26
Spotted Owlet Nepal
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Thirthahalli is a borderline between Western Ghats and Plateau. The growth of natural trees, social forestry with polyculture practices and irrigated paddy fields provide a better food.

From our observations we conclude that, the bird community varied significantly among different habitats. In heterogeneous ecosystem like Thirthahalli panchayat town, vegetation type played a major role in diversity of birds. Bird’s habitat protection should be given the first priority in any conservation programme. Research efforts should be stepped up to gather basic information on the biology and ecology of all birds in any area as these provide a sound basis for effective management programmes.
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Figure 40
Distribution of birds in different orders

Figure 41
Distribution of birds in different orders
Figure 42
Genus compositions of Peliconiformes

Figure 43
Genus compositions of Coraciformes
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Figure 44
Genus compositions of Passiformes

FIG. 45
Map of India, Karnataka, Shivamogga showing Thirthahalli panchayat town
SUMMARY OF RESEARCH
1. Birds of Thirthahalli panchayat town of Shivamogga district, Karnataka, India was studied.
2. A total of 39 species of birds belonging to 32 families and 15 orders were recorded.
3. Out of 39 species 37 are Least Concern (LC), Gyps bengalensis is Critical Endangered (CR) and Pelecanus philippensis is Near Threatened (NT).
4. In heterogeneous ecosystem like Thirthahalli panchayat town, vegetation type played a major role in diversity of birds.

FUTURE ISSUES
1. In future, this work can be extended by studying the density of different birds.
2. Seasonal impact on avian fauna can also include for the future study

DISCLOSURE STATEMENT
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