

Birds of Chamundi Hills Reserve Forest, Mysore, Karnataka

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Study area

The Chamundi Hills Reserve Forest (12°15'34"–12°17'5"N 76°39'63"–76°42'02"E) comprises an isolated range of hillocks, popularly known as Chamundi Hills, with a periphery of c. 11 km, situated south-east of Mysore city, Karnataka. The hillocks range in altitude from 861–944 m a.s.l., surrounding a plateau that is c. 1,024–1,057 m high. They are igneous rocks, of pink and gray granite, formed due to recent volcanic activity (0.8 billion years old), and are considered young when compared to the 2.3 billion years old peninsular Gneissic rocks of Sargur–Kabbal durga, close by (Kamath 1988).

Gravelly red soil, rich in silica content, a rocky surface and, a scanty precipitation of 762 mm (Suryanath 1988) support a tropical deciduous thorn-scrub type of vegetation in Chamundi Hills Reserve Forest. Being an overpowering geographical feature of the landscape, Chamundi Hill's influence on the ecology of the region plays a crucial role in the microclimate of Mysore. It is a prominent part of the Kaveri River basin, and an important watershed for the many tanks that dot the area. The Karnataka state forest department presently protects the reserve forest.

Atop Chamundi Hill, many Hindu temples, including the famous Chamundeshwari temple, are present since 400 A.D. A settlement of 145 houses and 124 tourist-related shops surround the temple. About 10,000 pilgrims visit the temple daily, peaking to 30,000 a day during the Dasara (*Navarathri* festival) holidays.

The vegetation of Chamundi Hill comprises of 442 species of flowering plants spread over 91 families (Sadananda & Sampathkumara *in prep.*). The trees here are armed with thorns, stunted and slow growing. A vast area is covered with bushes of *Pterolobium hexapetalum*, *Toddalia asiatica*, *Rhus mysorensis*, and *Ziziphus oenoplia* forming impenetrable undergrowth. Nine different micro-climatic regions of floristic importance with some species specificity are recorded here. These include, plants of the plains (*Syzygium cumini*, *Tamarindus indica*), foot hills (*Cochlospermum religiosum*, *Boswellia glabra*, *Commiphora caudata*), slopes (*Shorea talura*, *Garuga pinnata*), plateaux (*Gmelina arborea*, *Pterocarpus marsupium*, *Santalum album*),

valleys (*Mangifera indica*, *S. talura*), hill-tops (*Diospyros montana*, *Holarhena pubescens*), Ponds or pools (*Hygrophila schulli*, *Limnophila indica*), tanks (*Aponogeton natans*, *Centella asiatica*, *Eclipta alba*, *Bacopa monnieri*, *Utricularia* spp.) and significant evergreen scrub at higher elevations (*Canthium dicoccum*, *Plecosperrum spinosum*) (Rao & Razi 1981).

In the forest, leaf fall begins with arrival of summer. Herbs, shrubs and grasses dry up, converting the entire hill into a dry twigs and thorns country except for pockets of evergreen scrub, exposing many difficult-to-see, winter migrants and breeding birds. Mid-summer and pre-monsoon showers settle the dust. The entire area turns verdant with different shades of green by the end of the monsoon period. Retreating monsoon ensures greenery till the beginning of winter. The vegetation cycle is the main source for bird diversity.

Observations & results

During 11 years of observation (1996–2006) based on random visits—on an average once in 2–3 weeks—139 species of birds belonging to 44 families were recorded from the reserved forest (Table 1). It is noteworthy that 11% of the 1,225 bird species reported from India (Islam & Rahmani 2005) are found in Chamundi Hill Reserve Forest.



Chamundi Hills, Mysore district



K. R. Kishendas

Expansion of city up to the foothills

Out of the 139 bird species recorded here, 96 (69%) are resident. 63 of these breed here. 41 (29%) species are winter migrants. Two species, Pied Crested Cuckoo *Clamator jacobinus* and Brainfever Bird *Hierococyx varius* were recorded in the study area only during summer and the rains. It is interesting to note that the Pied Crested Cuckoo is present outside the reserved forest amid high-grown bushes and small trees throughout the year.

Species that occur in scrub jungles, grasslands and lightly wooded deciduous areas are recorded here. Waterbirds are few because of the absence of perennial water bodies. The species range from the typical plains residents like Ashy Prinia *Prinia socialis* to winter migrants like Black-naped Oriole *Oriolus chinensis* and Indian Blue Robin *Luscinia brunnea* (Shivanand & Shivaprakash 2004).

Here, Bonelli's Eagle *Hieraetus fasciatus* and Franklin's Prinia *Prinia hodgsonii* breed every year. The Bonelli's Eagle pair shifted their breeding site to an adjoining area due to construction activity near its earlier nesting site.

The hills form a vantage point to observe migratory, roosting and breeding birds that fly to lakes like Kukkarahalli, Lingambudhi, Karanji, Dalavay and Shettihalli even though they are 2–6 km away. Darters (Phalacrocoracidae), pelicans (Pelecanidae), Painted Storks *Mycteria leucocephala* and ducks (Anatidae) flying over the hills have not been considered in the present analysis.

Globally-threatened and critically endangered Indian White-backed Vulture *Gyps bengalensis* (BirdLife International 2001a) was sighted only once in the last four years. Two or three of them used to feed at garbage dumps in the foothills of Chamundi Hills along with Egyptian Vultures *Neophron percnopterus*. Sadly this is history now.

Globally-threatened and vulnerable Yellow-throated Bulbul *Pycnonotus xantholaemus* (BirdLife International 2001c), an endemic of southern peninsular India, used to be active in valleys and on slopes (Thejaswi 2005), mostly in boulder-strewn vegetation. It is now altogether missing since August 2003.

Globally-threatened and vulnerable Lesser Kestrel *Falco naumanni* (BirdLife International 2001b) is a rare winter

visitor, sighted in the very low gradient slopes of the foothills joining the main land where large patches of grass are present. The presence of harrier (*Circus* sp.) roosts, occurrence of Amur Falcon *F. amurensis* and Lesser Kestrel was recorded (Thejaswi et al. 2005) within 2–3 km from Chamundi Hill. Now only Lesser Kestrel frequents the Chamundi Hill's slope zone.

Near-threatened Oriental White Ibis *Threskiornis melanocephalus* (BirdLife International 2001), widespread and locally common in lowlands of dry zone, is common at the waterholes that fringe the foothills.

Threats and conservation measures

Many stone quarries and brick kilns operating in the last decade are now almost completely closed as the forest department erected a chain link fence around the reserve forest during 1998–2003, under the aegis of the Indo-Norwegian Chamundi Hill Conservation and Management Project. Several check-dams have been constructed all over the hilly area augmenting the water table. Plantations of many local varieties of plants have come up. However, the ever-expanding suburbs of Mysore are engulfing the buffer zone and foothills rapidly. The township atop Chamundi Hill is also expanding. Increased population pressure around the hill and atop is affecting the forest in many ways—forest fires, grazing, collection of flowers, medicinal plants and firewood are some of the problems that need to be contained immediately. The omnipresent problem of garbage, whether food leftover by tourists or pilgrims, augments trash generated by the township, creating unhealthy conditions. In addition, garbage contractors of Mysore City Corporation spread the garbage haphazardly over the foothills, in spite of an existing solid waste reclamation plant. All these become unwelcome feeding grounds for mynas (Sturnidae), crows (Corvidae), ibises (Threskiornithidae) and vultures (Accipitridae), which frequent the hill before and after the feeding.

A proposal to install a ropeway to the hill has invoking public outrage—as it disturbs the zonal bio-diversity and



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Chamundi Hills, eastern slope



Clement Frands

Orange-headed Thrush *Zoothera citrina*

destroys natural beauty. The proposed ropeway passes through Yellow-throated Bulbul habitat. Environmental engineering students of Sri Jayachamarajendra College of Engineering, Mysore, and NGOs like Mysore Amateur Naturalists, Centre for Appropriate Rural Technology and, Mysore Science Forum, along with many concerned citizens of Mysore have taken up the issue, insisting on an environmental impact assessment by a competent and independent body, before implementation of the project.

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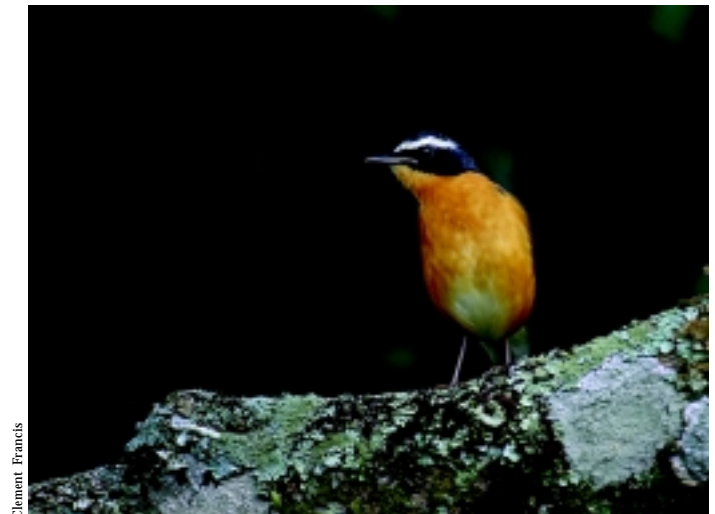
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Table 1. Birds of Chamundi Hills (1996–2006)

Species	Status
Little Egret <i>Egretta garzetta</i>	R, U
Cattle Egret <i>Bubulcus ibis</i>	R, C
Indian Pond-Heron <i>Ardeola grayii</i>	R, U
Oriental White Ibis <i>Threskiornis melanocephalus</i>	R, C
Black Ibis <i>Pseudibis papillosa</i>	R, C
Oriental Honey-Buzzard <i>Pernis ptilorhynchus</i>	R, Ra
Black-shouldered Kite <i>Elanus caeruleus</i>	R, B, C
Black Kite <i>Milvus migrans</i>	R, B, A
Brahminy Kite <i>Haliastur indus</i>	R, B, C
Egyptian Vulture <i>Neophron percnopterus</i>	R, B, C
Indian White-backed Vulture <i>Gyps bengalensis</i>	R, Ra
Short-toed Snake-Eagle <i>Circaetus gallicus</i>	R, Ra
Crested Serpent-Eagle <i>Spilornis cheela</i>	V, Ra
Shikra <i>Accipiter badius</i>	R, B, C
Eurasian Sparrowhawk <i>A. nisus</i>	WV, C
White-eyed Buzzard <i>Butastur teesa</i>	R, C
Indian Spotted Eagle <i>Aquila hastata</i>	R, Ra
Tawny Eagle <i>A. rapax</i>	R, Ra
Bonelli's Eagle <i>Hieraetus fasciatus</i>	R, B, C
Booted Eagle <i>H. pennatus</i>	WV, Ra
Lesser Kestrel <i>Falco naumanni</i>	WV, Ra
Common Kestrel <i>F. tinnunculus</i>	WV, Ra
Red-headed Falcon <i>F. chicquera</i>	R, Ra
Shaheen Falcon <i>F. p. peregrinator</i>	R, Ra
Grey Francolin <i>Francolinus pondicerianus</i>	R, C, B
Jungle Bush-Quail <i>Perdica asiatica</i>	R, C, B
Rock Bush-Quail <i>P. argoondah</i>	R, C, B
Yellow-wattled Lapwing <i>Vanellus malabaricus</i>	R, C, B
Red-wattled Lapwing <i>V. indicus</i>	R, C, B
Green Sandpiper <i>Tringa ochropus</i>	WV, U
Wood Sandpiper <i>T. glareola</i>	WV, U
Common Sandpiper <i>Actitis hypoleucos</i>	WV, U
Stone-Curlew <i>Burhinus oedicnemus</i>	R, U
Blue Rock Pigeon <i>Columba livia</i>	R, B, A
Little Brown Dove <i>Streptopelia senegalensis</i>	R, B, A
Spotted Dove <i>S. chinensis</i>	R, B, A
Eurasian Collared-Dove <i>S. decaocto</i>	R, B, A
Yellow-legged Green-Pigeon <i>Treron phoenicoptera</i>	V, Ra
Rose-ringed Parakeet <i>Psittacula krameri</i>	R, C, B
Pied Crested Cuckoo <i>Clamator jacobinus</i>	SV, U
Brainfever Bird <i>Hierococcyx varius</i>	SV, U
Indian Plaintive Cuckoo <i>Cacomantis passerinus</i>	WV, U
Asian Koel <i>Eudynamis scolopacea</i>	R, B, C
Small Green-billed Malkoha <i>Phaenicophaeus viridirostris</i>	R, B, C
Greater Coucal <i>Centropus sinensis</i>	R, B, C
Barn Owl <i>Tyto alba</i>	R, Ra
Eurasian Eagle-Owl <i>Bubo bubo</i>	R, Ra
Mottled Wood-Owl <i>Strix ocellata</i>	R, Ra
Spotted Owlet <i>Athene brama</i>	R, C
Indian Jungle Nightjar <i>Caprimulgus indicus</i>	R, B, U
Common Indian Nightjar <i>C. asiaticus</i>	R, B, U
Asian Palm-Swift <i>Cypsiurus balasiensis</i>	R, C
Alpine Swift <i>Tachymarptis melba</i>	V, Ra
House Swift <i>Apus affinis</i>	R, B, C
White-breasted Kingfisher <i>Halcyon smyrnensis</i>	R, B, C
Small green Bee-eater <i>Merops orientalis</i>	R, C
Blue-tailed Bee-eater <i>M. philippinus</i>	WV, C
Indian Roller <i>Coracias benghalensis</i>	WV, C
Common Hoopoe <i>Upupa epops</i>	R, B, C
Indian Grey Hornbill <i>Ocyrocus birostris</i>	R, B, C
Brown-headed Barbet <i>Megalaima zeylanica</i>	R, B, C
White-cheeked Barbet <i>M. viridis</i>	R, B, C
Coppersmith Barbet <i>M. haemacephala</i>	R, B, C
Lesser Golden-backed Woodpecker <i>Dinopum benghalense</i>	R, U
Black-shouldered Woodpecker <i>Chrysocolaptes festivus</i>	R, Ra
Indian Pitta <i>Pitta brachyura</i>	WV, U
Jerdon's Bush-Lark <i>Mirafra affinis</i>	R, B, C
Singing Bushlark <i>Mirafra cantillans</i>	

Species	Status
Ashy-crowned Sparrow-Lark <i>Eremopterix grisea</i>	R, B, U
Rufous-tailed Finch-Lark <i>Ammomanes phoenicurus</i>	WV, Ra
Red-rumped Swallow <i>Hirundo daurica</i>	R, B, A
Common Swallow <i>H. rustica</i>	WV, A
Large Pied Wagtail <i>Motacilla maderaspatensis</i>	R, B, C
Yellow Wagtail <i>M. flava</i>	WV, C
Grey Wagtail <i>M. cinerea</i>	WV, Ra
Richard's Pipit <i>Anthus richardi</i>	WV, Ra
Paddyfield Pipit <i>A. rufulus</i>	R, B, C
Tawny Pipit <i>A. campestris</i>	WV, Ra
Blyth's Pipit <i>A. godlewskii</i>	WV, Ra
Small Minivet <i>Pericrocotus cinnamomeus</i>	R, B, C
White-bellied Minivet <i>P. erythropygius</i>	
Common Woodshrike <i>Tephrodornis pondicerianus</i>	R, B, Ra
Red-whiskered Bulbul <i>Pycnonotus jocosus</i>	R, B, C
Red-vented Bulbul <i>P. cafer</i>	R, B, A
Yellow-throated Bulbul <i>P. xantholaemus</i>	R, B, U
White-browed Bulbul <i>P. luteolus</i>	R, B, C
Common Iora <i>Aegithina tiphia</i>	R, B, C
Jerdon's Chloropsis <i>Chloropsis cochinchinensis</i>	R, B, C
Brown Shrike <i>Lanius cristatus</i>	WV, C
Bay-backed Shrike <i>L. vittatus</i>	WV, U
Blue-headed Rock-Thrush <i>Monticola cinclorhynchus</i>	WV, C
Blue Rock-Thrush <i>M. solitarius</i>	WV, C
Pied Thrush <i>Zosterora wardii</i>	
Orange-headed Thrush <i>Z. citrina</i>	
Indian Blue Robin <i>Luscinia brunnea</i>	WV, Ra
Oriental Magpie-Robin <i>Copsychus saularis</i>	R, B, C
Indian Robin <i>Saxicoloides fulicata</i>	R, B, A
Pied Bushchat <i>Saxicola caprata</i>	R, B, A
Rufous-bellied Babbler <i>Dumetia hyperythra</i>	R, B, U
Yellow-eyed Babbler <i>Chrysomma sinense</i>	R, B, U
Common Babbler <i>Turdoides caudatus</i>	
Large Grey babbler <i>T. malcolmi</i>	R, B, U
White-headed Babbler <i>T. affinis</i>	R, B, C
Streaked Fantail-Warbler <i>Cisticola juncidis</i>	R, B, C
Franklin's Prinia <i>Prinia hodgsonii</i>	R, B, U
Jungle Prinia <i>P. sylvatica</i>	R, B, C
Ashy Prinia <i>P. socialis</i>	R, B, A
Plain Prinia <i>P. inornata</i>	R, B, C
Paddyfield Warbler <i>Acrocephalus agricola</i>	WV, C
Blyth's Reed-Warbler <i>A. dumetorum</i>	WV, C
Indian Great Reed-Warbler <i>A. stentoreus</i>	WV, C
Booted Warbler <i>Hippolais caligata</i>	WV, C
Common Tailorbird <i>Orthotomus sutorius</i>	R, B, C



Clement Francis

Indian Blue Robin *Luscinia brunnea*

Species	Status	Species	Status
Large-billed Leaf-Warbler <i>Phylloscopus magnirostris</i>	WV, Ra	Yellow-throated Sparrow <i>Petronia xanthocollis</i>	R, B, Ra
Greenish Leaf-Warbler <i>P. trochiloides</i>	WV, Ra	Baya Weaver <i>Ploceus philippinus</i>	R, B, C
Common Lesser Whitethroat <i>Sylvia curruca</i>	WV, U	Grey-headed Starling <i>Sturnus malabaricus</i>	WV, Ra
Orphean Warbler <i>S. hortensis</i>	WV, Ra	Brahminy Starling <i>S. pagodarum</i>	WV, C
Asian Brown flycatcher <i>Muscicapa dauurica</i>	WV, U	Rosy Starling <i>S. roseus</i>	WV, C
Blue-throated Flycatcher <i>Cyornis rubeculoides</i>		Common Myna <i>Acridotheres tristis</i>	R, B, A
Asian Paradise-Flycatcher <i>Terpsiphone paradisi</i>	R, Ra	Jungle Myna <i>A. fuscus</i>	R, B, A
Great Tit <i>Parus major</i>	R, B, C	Eurasian Golden Oriole <i>Oriolus oriolus</i>	WV, C
Tickell's Flowepecker <i>Dicaeum erythrorhynchos</i>	R, B, A	Black-naped Oriole <i>O. chinensis</i>	WV, Ra
Purple-rumped Sunbird <i>Nectarinia zeylonica</i>	R, B, A	Black Drongo <i>Dicrurus macrocercus</i>	WV, C
Purple Sunbird <i>N. asiatica</i>	R, B, A	Ashy Drongo <i>D. leucophaeus</i>	WV, Ra
Oriental White-eye <i>Zosterops palpebrosus</i>	R, B, U	White-bellied Drongo <i>D. caerulescens</i>	R, B, Ra
Red Munia <i>Amandava amandava</i>	R, B, U	Bronzed Drongo <i>D. aeneus</i>	WV, Ra
White-throated Munia <i>Lonchura malabarica</i>	R, B, C	Indian Treepie <i>Dendrocitta vagabunda</i>	
Spotted Munia <i>L. punctulata</i>	R, B, C	House Crow <i>Corvus splendens</i>	R, B, A
House Sparrow <i>Passer domesticus</i>	R, B, C	Jungle Crow <i>C. macrorhynchos</i>	R, B, A

Abbreviations used in Table 1.

A=Abundant; B=Breeding; C=Common; R=Resident; Ra=Rare; SV=Summer visitor; U=Uncommon; V=Vagrant; WV=Winter visitor

A blank in the 'status' column indicates that the species was recorded after this paper was submitted for publication.



Shaheen Falcon *Falco peregrinus*