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ENVIS Newsletter: Avian Ecology & Inland Wetlands

Vol. 10, No.1 (2005)

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Ashfaq Ahmed Zarri and Asad R. Rahmani

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ENVIS

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A tribute to the people of the Nilgiris

CONTENTS

FOREWORD

This issue of Buceros is an update on the current status of the birds of the Upper Nilgiri hills in the Western Ghats. It is based on four years of personal observations during recently completed studies on the ecology of bird communities, threatened species and critical habitats. In addition the authors have sifted through the existing literature to highlight the disappearance of many formerly common bird species, while recording some others which are new and significant.

The Upper Nilgiris are biogeographically extremely interesting. The vegetation consists mainly of undulating grasslands, interspersed with isolated shola forests, which support nine Western Ghat endemics and some threatened bird species. Bird surveys and community studies in the past were confined mainly to lower elevations. Records from the Upper Nilgiri plateau, above *c*. 1700 m, are comparatively few, often published in travelogues. More detailed reports tend to focus on particular species. This document will therefore, interest ornithologists and amateur bird watchers in the area, as well as researchers.

From a conservation perspective, this update illustrates the effects of loss and degradation of critical habitats for endemic species, habitat specialists, and even common species. It is shocking to find that the Red-headed Vultures, which was once so common that it was part of Toda folk-lore, has not been seen for several decades now. This update will serve as a baseline for assessments of bird status in the future and pinpoints some of the major factors responsible for the status changes that occurred in the past.

Dr. Rachel Reuben
Hon. Secretary, BNHS

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SUMMARY

Although excellent bird collections have been amassed from the Nilgiris in South India, and several bird surveys have been conducted since the late nineteenth century, they were either focused on the lower elevations, or were species specific. Bird surveys and community investigations in the higher elevations of the Nilgiris are few, with results generally unpublished or described in travelogues. A review of most of the accessible literature on the avifauna of the Upper Nilgiris suggested a gap in the knowledge on the status of different birds. Apparently many of the Indian birds underwent status change due to direct or indirect impacts of the increasing human population. The Nilgiris being no exception bore the brunt of developmental activities, and is one of most exploited hill stations. Several threats including habitat loss, fragmentation, and excessive use of inorganic fertilizers and pesticides necessitated the documentation of the current composition and status of birds for future monitoring and conservation action.

Realising this, the Bombay Natural History Society commissioned a research project, with generous funding from the U.S. Fish and Wildlife Service, to research a range of issues such as the ecology of grasslands, bird community ecology, autecology of some threatened bird species and impacts of invasive species on the grassland ecosystem. One of the objectives of the project was to document the composition and status of common and rare birds. During the course of this four years project, observations on common as well as rare birds were recorded during field work for any of the other research objectives, extensive bird surveys, line transects monitoring, daily travelling, treks and bird watching trips. This report is the compilation of bird records maintained in our field diaries between 2001 and 2004.

In the course of this study, several rare and uncommon birds were recorded and their status evaluated. We present here an annotated checklist of 192 bird species for the upper Nilgiris Plateau (above 1,700 msl), of which 145 were recorded by us between December 2000 and February 2004 and 47 were recorded by other authors. The species list also includes 10 threatened birds, five recorded during this study and five recorded by other authors in the past. Seven Near Threatened species were recorded, including four during this study and three by other authors. A few species historically known to be very common have either declined or disappeared, while some that were uncommon at one time have become very common or even acquired pest status. Comparison of the current bird status with existing literature indicates a drastic decline in the populations of wintering snipes, Eurasian Woodcock *Scolopax rusticola*, and some raptors, and disappearance of four vulture species. Threatened species and Western Ghats endemic birds such as the Nilgiri Laughingthrush *Garrulax cachinnans*, White-bellied Shortwing *Brachypteryx major* and the winter visitor Kashmir Flycatcher *Ficedula subrubra*, were identified to be at risk on account of habitat loss and anthropogenic pressures.

Annotated avifauna of the Upper Nilgiris, Western Ghats, India

INTRODUCTION

Background

This issue of *Buceros* is based on the research carried out under the Ecology of Shola and Alpine Grasslands Project from 2001 to 2004. This project was the last phase of a series of ecological investigations carried out by the Bombay Natural History Society (BNHS) on different grassland ecosystems of India. The first phase of the project funded by the U.S. Fish and Wildlife Service started in 1990 and included studies on six different grassland sites. The intensively studied grasslands include the wet grasslands of Terai, the dry grasslands of Banni in Kutch, semi-arid grasslands in Solapur and Rollapadu, and tropical grasslands in Velavadar and Dahod in Gujarat. The project was the first of its kind in India and highlighted the need for habitat management for several flagship species of these grasslands including the Great Indian Bustard (*Ardeotis nigriceps*), Lesser Florican (*Sypheotides indica*), Swamp Francolin (*Francolinus gularis*) and the Wolf (*Canis lupus*).

The project contributed information ranging from biodiversity inventories to intensive ecological processes such as bird community ecology and autecology of threatened mammal and bird species dependent on grasslands. The project advocated the need for protecting these neglected grassland ecosystems and outlined practical management priorities for their long-term conservation. This was achieved by publishing the research findings in journals, and articles and reports in national and international magazines and newsletters.

Towards the end of the first phase of the study, BNHS realized the need to carry out similar investigations on the alpine grasslands of the Sikkim Himalaya and *Shola* grasslands of the Western Ghats. One of the objectives of the *Shola* grasslands component of this project was to document the status and composition of the avifauna of the Upper Nilgiris Plateau. This document is one of the various publications that aim to disseminate the findings of our project.

Ornithological explorations in the Upper Nilgiris

Since the nineteenth century, many bird collections and surveys listed the birds of the Nilgiri hills. Most of these surveys were either focused on lower elevations or were not intensive, and their records generally remained unpublished or were described in travelogues on exploratory visits. Bird community investigations in the higher elevations of the Nilgiris were scarce. Davison (1883) provided perhaps the earliest and the most comprehensive account of the birds of the Nilgiris, mainly based on his personal observations and bird collections. Cardew (1885) provided observations on some species unrecorded or left doubtful by Davison (1883). Baker and Inglis (1930) provided natural history observations on several Nilgiri birds. Betts (1931) recorded the behaviour and status of bulbuls of the Nilgiris and other birds. Ali (1977) highlighted the affinities of the Nilgiri and Himalayan fauna, including the laughingthrushes.

Ornithological exploration in the recent decades focused either on a single species or bird group. For example, Khan (1979) worked on the ecology of the Black-and-Orange Flycatcher (*Ficedula nigrorufa*). Islam (1985) investigated the ecology and behaviour of the Nilgiri Laughingthrush (*Garrulax cachinnans*). Gokula (1998) studied the bird communities of the thorn and dry deciduous forests of Mudumalai Wildlife Sanctuary in the lower elevations of the Nilgiris. Thirumurthi and Balaji

(1999) surveyed raptors in Nilgiris while Vijayan *et al*. (2000) conducted a preliminary status survey of the Nilgiri Laughingthrush. Zarri *et al*. (2005) conducted the first intensive ecological investigation on the avifauna of the Nilgiris and reported the patterns of bird community, guild structure and their habitat utilization. Autecology works on Nilgiri Pipit (*Anthus nilghiriensis*) is underway since 2002 (Uma Maheshwari pers. comm.) and the ecological study of the Nilgiri Laughingthrush has been completed by Zarri (in prep.).

Game hunting in the Nilgiris

In 1879, the Nilgiri Game and Fish Preservation Act, the first game law in India, was passed. The Act provided for closed seasons, protection of females and immature animals on government lands only, and vested in the Collector of the district, considerable powers regarding the conditions under which a licence to shoot might be issued.

A shooting licence had a fee of to 50 rupees and entitled the holder to shoot several heads of Sambar *Cervus unicolor*, Spotted Deer *Axis axis*, Nilgiri Tahr *Hemitragus hylocrius*, Gaur *Bos frontalis* and Four-horned antelope *Tetracerus quadricornis*. Small game included wintering snipes (*Gallinago nemoricola*, *G. stenura, G. gallinago, Lymnocryptes minimus*) Eurasian Woodcock, Nilgiri Wood-pigeon *Columba elphinstonii*, Grey Junglefowl *Gallus sonneratii*, Red Spurfowl *Galloperdix spadicea,* Painted Spurfowl *Galloperdix lunulata*, Indian Peafowl *Pavo cristatus*, Painted Sandgrouse *Pterocles indicus*, Grey Francolin *Francolinus pondicerianus* and several other quail varieties (Phythian-Adams 1927).

The Nilgiri Game Association (presently the Nilgiri Wildlife and Environment Association) offered rewards for the slaying of several of the more destructive of the falcon family and also of the Greater Coucal (*Centropus sinensis*), and a fair number of these were killed annually. In 1926 the Nilgiri Game Association decided to reintroduce rewards for the destruction of vermin, being eight rupees for each Hawk, Greater Coucal, Harrier and Eagle-owl (Phythian-Adams 1927). Raptors thought destructive included Peregrine Falcon *Falco peregrinus,* Pale Harrier *Circus macrourus,* Marsh Harrier *C. aeruginosus* and Common Buzzard *Buteo buteo*.

The British game hunters of that time employed local tribals to beat the cover to flush out Woodcock, Junglefowl and other small game. Baker (1922a), describing his sporting days in the Nilgiris, gave the following count for his bag during the season 1920-21: Woodcock *Scolopax rusticola* (37), Junglefowl *Gallus sonneratii* (38), Snipes (145), Spurfowl *Galloperdix spadicea* (50), Pigeon (species not mentioned) (39), Hare *Lepus nigricollis* (13). All this amounted to 271 heads from 33 outings or an average of around eight to nine per trip. Detailed account of such records is provided in Baker (1923).

There were several attempts to introduce game birds in the Upper Nilgiris plateau, but sooner or later most of them met with failure. Species that were introduced include 32 Chukor in 1892 and 90 in 1916, 6 Guineafowl in 1893, 12 Pheasants (English name not mentioned) in 1892, 10 Peafowl in 1901, 74 Red Junglefowl between 1903 and 1907, 5 Ceylon Junglefowl in 1906, 8 See See Partridge in 1911 and 11 in 1916.

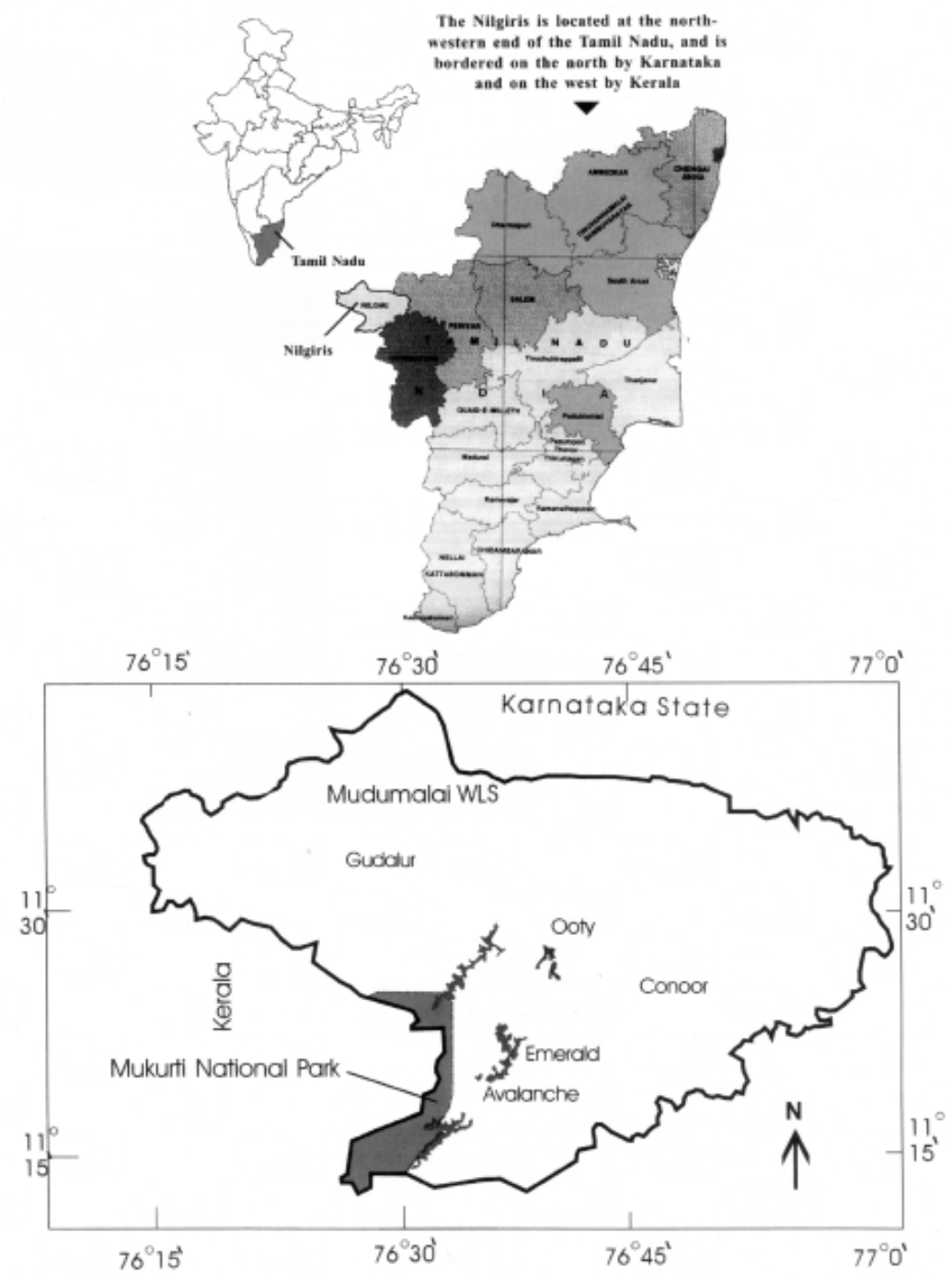
STUDY AREA: THE NILGIRI HILLS

From the biogeographical point of view, the Nilgiri hills are one of the most fascinating features of the Indian subcontinent. Altitude, climate and rainfall combine to make them particularly rich habitat for plants and animals. The main features of the Nilgiris are described below.

Upper Nilgiris plateau

The Nilgiris can be divided into two natural regions: a) Upper Nilgiris plateau, extending 56 km from east to west, 20 km from north to south, deeply

Fig. 1: Location of the Nilgiris in India



Note the small area of Mukurti National Park at the southwest of the Nilgiris, is the last protected grassland habitat in the Nilgiris

indented, with an average elevation of 1980 m; b) southeast Wynaad *c*. 900 m above msl, covered with bamboo forests, and paddy flats (Hockings 1989). The area covered during the current study is part of the Nilgiri Hills from 1,700 m to the Dodabetta (2636 m) and will be called Upper Nilgiris Plateau (Figure 1). The entire plateau has a range of undulating hills running in different directions. The eastern half of the plateau corresponds roughly to the Coonoor taluka, whereas the western half, together with Sigur plateau, constitutes the Udhagamandalam taluka.

The Kundha range rises steeply from the Silent Valley and the Nilambur Valley of Kerala, and the Ouchterlony Valley of the Nilgiri-Wynaad. This forms an unbroken wall, except for the Sispara Pass, and has several high peaks, such as Pichal Betta 2,561 m, Mukurti Peak 2,556 m and Nilgiri Peak 2,477 m. An inner range of hills runs parallel to the Kundha range, starting south of Devar Betta 2,515 m, near Avalanche and including the high peaks of Naraidu Betta and Kolari Betta 2,630 m. The inner set of peaks not only protects the Ootacamund basin from the rigors of the west wind, but also produces a marked difference in the climate of the territories east and west of Avalanche. The Upper Nilgiris also form the main watersheds for Bhavani and Moyar rivers, two important tributaries to the Cauvery River. Eight Important Bird Areas (IBAs), namely Mukurti National Park, Avalanche Reserve Forest, Taishola, Longwood Shola, Coonoor, Bison Swamp and Governor Shola have been identified recently from the Upper Nilgiris (Islam and Rahmani 2004).

Location and topography

The Nilgiris is located between 11° 10' and 10° 30' N latitude and between 76° 25' and 77° 00' E at the junction of the Eastern and Western Ghats, the two mountain ranges that run parallel to the coastline of peninsular India. The word Nilgiris (Sanskrit *Nila* blue, and *Giri* hills), was presumably suggested by those living on the neighbouring plains, for the blue haze that envelopes the range, as is common with most large distant hills.

The Nilgiris district in the State of Tamil Nadu has an area of 2,525 sq. km. Bounded on the west by Kerala, on the north by Karnataka and on the southeast by Coimbatore district; the Nilgiris occupies the highest and western most part of Tamil Nadu (Figure 2). It falls under Biogeographic Zone 5 as per biogeographic classification of Rodgers and Panwar (1988). The approximate distance to Malabar Coast (Arabian Sea) is 100 km (Hockings 1989). The district headquarters is Udhagamandalam (=Ootacamund), popularly known as Ooty, located about 550 km from the state capital Chennai, and 85 km from Coimbatore.

The Nilgiris is slightly tilted towards the east, like the entire Deccan Plateau and almost 40% rises above 1,800 m in the Central Nilgiris Plateau. The highest peak in the Nilgiris, "Dodabetta" or Big Mountain is 2,636 m above msl and is also the second highest peak in peninsular India after Anaimudi (2,695 m). The Nilgiris plateau rises sharply from the surrounding country and is divided by a range of peaks running in a general north-south direction. The western end of the plateau is sheer rock, while the interior of the plateau consists mainly of undulating grassy hills, divided by narrow valleys, each containing a stream or swamp surrounded by *shola* forest.

Climate

The Nilgiris lie in the tropical zone, but have a sub-tropical to temperate climate. Legris (1969) and Lengerue (1977) gave a great deal of information on the weather and climate of the Nilgiris. From the meteorological point of view, considering upper-air dynamics, surface winds and weather patterns including rainfall, four seasons or periods can be distinguished in South India, including the Nilgiris.

(a) The northeast monsoon period (December-March), mainly a rainless period for the Nilgiris Plateau

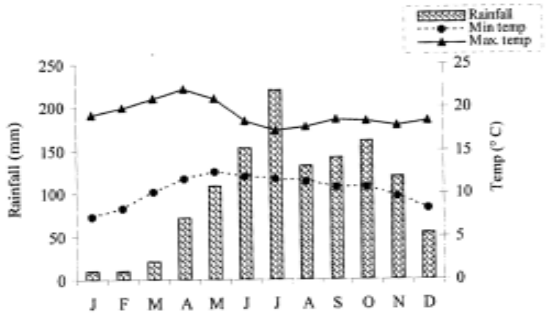
(b) The first inter monsoon period (April-May)
(c) The southwest monsoon period (June-September) a windy, overcast and extremely wet period.
(d) The second inter-monsoon period (October-November), about 15-20 rainy days registered in the study area during this period.

Temperature and Rainfall

The area receives both the southwest and northeast monsoons during which the western Upper Nilgiris, around Mukurti National Park, and its environs receives up to 5,600 mm rainfall annually. The Nilgiris receive an average annual rainfall of 2,000 mm while locally in the Mukurti National Park ridge top, it is around 5,000 mm. There is considerable local variation in the average annual rainfall, with three peaks in May, July and October, corresponding to well defined pre-monsoon, southwest monsoon and post-monsoon periods. There are 3-4 dry months from December-March (Blasco 1970).

The mean temperature during the coldest months is less than 15 °C, while frost prevails from November-December till mid-March. Average diurnal temperature during northeast monsoon ranges between 12 - 17 °C, with the lowest being in December and January. Seasonal rainfall (mm) and number of rainy days for the Upper Nilgiris are presented in (Table 1)

Fig. 2: **Ombrothermic diagram of the Upper Nilgiris for 40 years (1961-2000)**



Source: Central Soil and Water Conservation Research and Training Institute, Udhagamandalam

Table 1 Seasonal rainfall (mm) and number of rainy days for the Upper Nilgiris, Western Ghats

Season	Rainfall (mm)		Rainy days	
	1961-2000	2001-2003	1983-2000	2001-2003
Rain (Jun-Oct)	806.4	512.95	59.3	59
Winter (Nov-Jan)	180.9	56.60	12.2	5
Summer (Feb-May)	210.2	322.50	16.5	17
Total	1197.5	892.05	88	81

Source: Central Soil and Water Conservation Research and Training Institute, Udhagamandalam

Wind and Frost

High wind velocity is generally a feature of high elevations and Nilgiris is no exception. Due to the influence of topographical features, the wind velocity in sheltered areas such as Coonoor (6.4 km/hr) is much lower than exposed areas (Dodabetta 18.4 km/hr). A high average wind velocity and high frequency of peak values are associated with southwest monsoon. The pattern is seen in the stunted montane *shola* vegetation on exposed slopes and also the stunted growth of isolated *Rhododendron* trees, where only the branches on the extreme leeward side have leaves, and trees are markedly bent in the direction opposite to that of wind.

Occurrence of frost in the tropical areas is characteristic of montane regions. Frost in Nilgiris generally lasts from December to mid-March. It is usually confined to small pockets in narrow valleys, though continuous tracts of grass-covered valleys and gentle slopes also accumulate frost. Frost is also believed to be one of the factors controlling *Shola*-grassland formation. And only species with temperate origin regenerate on exposed frost prone areas (Meher-Homji 1965).

Soil and Water bodies

According to Champion and Seth (1968) the underlying rock in the Nilgiris is crystalline throughout, mostly gneisses. In general, the entire undisturbed plateau soil can be classified under 'humic ferralitic mountain soil' on account of uniformity of topsoil, as well as soil profile characteristics (Gaussen *et al.* 1962).

Of the numerous stream and rivulets in the study area, most drain into the two principal rivers of the Nilgiris: the Bhavani and the Moyar. The Bhavani originates from the southern upper plateau, and flows eastward through a deep valley on the southern border of the district. However, Moyar flows eastwards, through a deep valley on the northern border of the district. Both of these eventually join the Cauvery River. With the construction of a series of dams, including Pykara and Upper Bhavani Dams, there are numerous reservoirs that hold water most of the year.

Human impact a historical perspective

The oldest inhabitants of the Upper Nilgiris are the '*Toda*' tribals, who were buffalo herders and burned grasslands each year in earlier times. Little is known about when and from where *Todas* arrived. Ancestors of another community '*Badaga*' were farmers and probably lived on the upper plateau for centuries before the fall of the Vijayanagar Empire in 1565 AD (Noble 2004). It is not known when '*Kota'* farmers settled on the plateau.

The first of the European expeditions to the Upper Nilgiris started in 1602 or early part of 1603 (Price 2002) by a priest named Fininicio. Nearly two centuries later, Dr. Buchanan on 24 October 1800 reached Devanaikenkota, a fort situated a few miles to the east of the Hills, on the northern bank of Bhavani River. Twelve years later in 1812, Keys, a surveyor, accompanied by MacMahon, an apprentice, was sent up to the hills by Garrow, the Collector of Coimbatore. Most of these early surveyors faced difficulties and could barely reach the Upper Nilgiris. Finally in 1818, Whish and Kindersley, Assistants to the Collector of Coimbatore, made their way to the hills.

Sullivan, in a communication dated July 31st 1819, wrote "The inclemency and reputed insalubrity of the climate of this country (Nilgiris), above all its almost inaccessible situation, has prevented any attempt being made to explore it until 1818, when the attempt was successfully executed by the Assistant Collectors, Messrs Whish and Kindersley" (Price 2002).

The Nilgiri hills came into the possession of the East India Company in 1799, by the treaty of Serangapatnam. The first phase of European settlement may have taken place during 1820 to 1830 (Kala 1977). Towards, the beginning of the 19th Century, the British started settling in the Nilgiris, and in 1863 they introduced tea and coffee, which subsequently attracted scores of labourers. The planters converted several thousand hectares of pristine *shola* patches and grasslands into tea plantations, and the remaining fragments were degraded by cutting and lopping to meet the growing fuel wood and timber demand. Unimaginative settlement policy on the part of the government resulted in leasing out of vast tracts of these grasslands for settlements and conversion into cultivation to cater to human needs.

With the impetus provided by the National Forest Policy of 1952, attempts were made to convert the pristine grasslands of the Nilgiris Upper Plateau into plantations of exotic species. Introduction of *Eucalyptus* and A*cacia* spp. to supply firewood, pulpwood, rayon and tannins to the viscose industry has done serious damage to the ecology of this region. About 10 species of *Eucalyptus,* five of *Acacia, Pinus* and some other non-natives were planted in all available terrains. Several evergreen forest patches were clear felled for these commercial plantations. Jha *et al.* (2000) estimated the loss of dense forest in the Nilgiris from 1973-1995 to be around 294 sq. km

(from 783 down to 489 sq. km) (37.5%). They also reported an increase in the open forest from 798 to 921 sq. km (15.4%), degraded forest increase 284 to 447 sq. km (57%), and waterbodies 11 to 84 sq. km (66%).

Till the first half of the twentieth century, the Nilgiris remained thinly populated. By 1950s, influx of immigrant labourers for several development projects took place. The establishment of several new settlements of labourers including immigrant Sri Lankan repatriates mounted pressure on the natural resources of the region. Ecologically the Nilgiris faced another setback from the development of hydroelectric power projects. Under the stress of anthropogenic pressures and rapid changes, several alien invasives got established in the Nilgiris, becoming a threat to the native ecosystem, mainly the scarce grasslands. *Cytisus scoparius*, *Ulex europaeus* and *Lantana camara* are the major invaders which have caused serious damage to native vegetation.

MUKURTI NATIONAL PARK

Mukurti National Park (Figure 1) is the only protected area falling under our intensive study area. It lies from 11° 10' to 11° 22' N and 76° 26' to 76° 34' E. It forms a key protected area for conservation of high altitude grassland flora and fauna. MNP encompasses an area of 78.46 sq. km. The entire terrain is undulating grassland with patches of montane evergreen forest (*shola*) confined to the folds of hills and depressions. The average altitude is around 2,400 m above msl. There are several peaks, the highest being Kolari Betta 2,630 m, while Mukurti Peak 2,556 m and Nilgiri Peak 2,477 m also deserve mention. Mukurti was declared a wildlife sanctuary in 1980 under the Wildlife (Protection) Act of 1972 and a national park in 1990, mainly for the protection of the endangered Nilgiri Tahr *Hemitragus hylocrius*. It is part of the Nilgiri Biosphere Reserve, the first one to be notified in 1986 among the 18 biosphere reserves of India. Being home to several endangered and endemic species, it is one of the important protected areas in the Western Ghats. There are several streams, most of which are tributaries of the Bhavani River.

VEGETATION TYPES OF THE UPPER NILGIRIS

The floristic properties of the Nilgiris have attracted several scientists since the second half of the 19th Century. All these studies have been revised and compiled by Gamble (1935) and Fyson (1915-20). The Nilgiris is thought to be a centre of speciation and has several endemic species. The western end of Sispara leading to the Silent Valley National Park is considered a place of high biological diversity. Sharma *et al.* (1977) recorded 2760 species of vascular plants from the Nilgiris, of which 2611 are angiosperms belonging to 942 genera and 163 families. Blasco (1970) recorded 82 endemics exclusive to the Nilgiris at high elevations. There are around 120 orchids, including 9 endemics from the Upper Nilgiris. Apart from the vast diversity of natural vegetation, 400 or more species have been introduced into this area mainly for economic interests (Hockings 1989). The vegetation of the study area (Upper Nilgiris) can be classified into three broad categories:

a) *Southern Montane Wet Temperate Forest*

Nilgiri vegetation consists mainly of undulating grasslands interspersed with numerous isolated forests with sharply defined borders, popularly known as '*shola*'. The s*hola* type is classified as sub-group 11 A (Type C1) Southern Montane Wet Temperate Forests by Champion and Seth (1968). These forests usually occur at the head of streams in the folds of converging slopes above 1700 m.

Shola forests are regarded as a climatic complex by most workers. Alternatively, they are thought to be relics of a glacial epoch, when the temperature in the Subcontinent was appreciably lower than it is now (Hora 1949; Meher-Homji 1965,

1972). Fire during the drier months and frost during the winter are also suggested as limiting factors for the spread of *shola*. The species in *shola* are all evergreen, and include elements of both tropical and temperate origin. Myrtaceae, Lauraceae, Ternstroemiaceae, Elaeocarpaceae, Rutaceae, Rubiaceae, Symplocaceae, Acanthaceae, Piperaceae, Loranthaceae, Ericaceae and Eleagnaceae are some of the families found in these forests. Occurrence of a number of genera of distinctly Himalayan types such as *Rhododendron, Hypericum*, *Rubus*, *Lonicera*, *Gaultheria, Artimisia,* and *Pittosporum* is very interesting in this region. *Turpinia, Symplocose, Eugenia* and *Rhododendron* are found in nearly all the s*hola* patches.

b) *Montane Grasslands of the Plateau*

Grasslands are found at high altitudes in the Western Ghats in South India. Champion and Seth (1968) classified these grasslands as sub-group 11A (Type C1/DS2) Southern Montane Wet Grassland. The *shola* grasslands are primarily short and uniform, mainly found in a few areas in the Annamalai – Palni – Elamalai hills complex to the south and the Nilgiri hills to the north of Palghat Gap. Mukurti National Park, Eravikulam, Rajamalai and Grass Hills of Annamalai are some important areas harbouring these grasslands. The ecological status of the *shola* grasslands formation has been a subject of controversy over the years and many contributions have been made, the Nilgiris in particular getting more attention. These grasslands were considered by many as a sub-climax (Raghavan 1957, Gupta 1960) and as edaphic or climatic climaxes by Champion and Seth (1968).

Grasses have long been recognized as a significant part of the vegetation in the Nilgiris above 1,200 m, and over 10% of the total grass species are endemic (Noble 2004). Palynological evidence provided by Vishnu-Mittre and Gupta (1972) tentatively suggests the presence of grasslands over a long period in the past. Temperate grasses such as *Poa* and *Agrostis* can be seen at elevations above 2000 m. These grasslands are comprised of *Tripogon, Andropogon, Chrysopogon, Ischaemum, Eragrostris* and *Panicum* species. These grasslands also contain several species of orchids and balsams, besides being home to grassland dependent species such as the Nilgiri Tahr and the Nilgiri Pipit.

In the 20th Century, these grasslands were considered as 'gaps' or 'blanks' and were converted into monoculture plantations and cultivation, threatening their specialist flora and fauna such as the Nilgiri Tahr. Presently, grasslands in the Nilgiris are mainly confined to the Mukurti National Park, and a few patches are seen in other parts of Upper Plateau i.e. Upper Bhavani, Wenlock Downs, Lakkedi and Bison Swamp area. Grassland patches can be seen at several other places near villages, towns and around Wattle and Blue Gum plantations.

c) Exotic plantations

Plantation in the Nilgiris started in the 19th Century by clear felling of natural forests and burning of grasslands. Plantations constitute mainly Black Wattle, Blue Gum, Mexican Pine, Alder, Cinchona, Coffee, and Tea. About five species of *Acacia*, ten of *Eucalyptus* and four of pines were introduced for feeding the timber and pulp wood industry in the plains. By 1987, Eucalyptus alone covered about 12,000 ha (Meher-Homji 1989). Mexican Pine has typically been planted in frost pockets where Wattle and Blue Gum had failed. Wattle, one of the most successful and extensively planted species, also regenerates through seed, forming impenetrable thickets of thin poles, blocking the passage of larger mammals. Today, plantations form the dominant cover across the length and breadth of the Nilgiris.

METHODS

The paper is based on the notes from our field diaries maintained during fieldwork for bird

community investigations as well as observations made during extensive surveys in the Upper Nilgiris (> 1,700 m above msl) during December 2000 to February 2004. Elevations in feet for the localities described in the historical records were converted to meters for uniformity in presentation. Nomenclature for the localities followed the Survey of India 1: 50,000 toposheets and coordinates were recorded using a GARMIN *12XL* GPS. Survey sites and their geographical locations are listed in Appendix-1.

Mukurti National Park (MNP hereafter), and Avalanche, Lakkedi, Devar Betta, Upper Bhavani and Taishola of Nilgiris South Division formed the intensive study area. Other areas surveyed during this study include Governor's Shola, Cairn Hill Forest, Snowdon, Porthimund, Dodabetta, Taishola, Kora Kundha, Coonoor, Bikkatti, Bembatti, Longwood Shola at Kotagiri, Kodanadu and Emerald Valley (Figure 1 and Appendix 1).

Species recorded by us more than ten times are described as common here, the ones seen between 3-10 times as uncommon and those seen only once or twice as rare for the Upper Nilgiris plateau. Species accounts are supplemented with information on their numbers ringed at Avalanche during January-February 2003. Sequence and nomenclature follow Manakadan and Pittie (2000). Conservation status of the threatened birds follow BirdLife International (2001). Status of the species noted during this study is recorded as present status, while brief notes are provided for the species recorded by other authors.

AVIFAUNAL COMPOSITION OF THE UPPER NILGIRIS

The Upper Nilgiris supports an interesting bird community, with nine Western Ghats endemic and several threatened species. In general, the bird composition of the Upper Nilgiris appears to be depauperate compared to the lower elevations. For instance, Gokula (1998) recorded 265 species in the Mudumalai Wildlife Sanctuary in the lower elevations of the Nilgiri hills, while we could record only 192 species in the Upper Nilgiris. This includes breeding residents, winter visitors, local summer migrants, vagrant and passage migrants.

Of the sixteen Western Ghats endemic species, nine were recorded during this study, namely the Nilgiri Wood Pigeon *Columba elphinstonii*, Nilgiri Pipit, Grey-headed Bulbul *Pycnonotus priocephalus,* Black-and-Orange Flycatcher, Small Sunbird *Nectarinia minima,* Nilgiri Flycatcher *Eumyias albicaudata,* Nilgiri Laughingthrush *Garrulax cachinnans,* White-bellied Blue Flycatcher *Cyornis pallipes* and White-bellied Shortwing *Brachypteryx major.*

The threatened species (BirdLife International 2001) recorded by us from the study area include: Nilgiri Laughingthrush (Endangered) and Kashmir Flycatcher, Lesser Kestrel *Falco naumanni*, White-bellied Shortwing, and Nilgiri Wood Pigeon (Vulnerable). The Near Threatened species recorded during this study include Nilgiri Pipit, Black-and-Orange Flycatcher and Nilgiri Flycatcher.

The threatened species recorded from the Upper Nilgiris Plateau by other authors and not seen during this study include the White-backed Vulture *Gyps bengalensis* and the Long-billed Vulture *Gyps indicus* (Critically Endangered), the Lesser Florican *Sypheotides indica* (Endangered), the Imperial Eagle *Aquila heliaca* and the Wood Snipe *Gallinago nemoricola* (Vulnerable). The Near Threatened species recorded by other authors include the Red-headed Vulture *Sarcogyps calvus,* the Pallid Harrier *Circus macrourus,* Black-necked Stork *Ephippiorhynchus asiaticus* and the Ferruginous Pochard *Aythya nyroca*.

Compared to the records of Davison (1883), it appears that some species such as the Brahminy Kite *Haliastur indus,* House Crow *Corvus splendens*, Besra *Accipiter virgatus,* Crested Serpent Eagle *Spilornis cheela*, Emerald Dove *Chalcophaps indica,* Alpine Swift *Tachymarptis melba*, and

White-throated Kingfisher *Halcyon smyrnensis* are more common presently than during the nineteenth century. The species that have recorded a noticeable decline in the upper Nilgiris include the Pallid Harrier *Circus macrourus,* White-rumped Vulture and Long-billed Vulture, Red-headed Vulture, Egyptian Vulture *Neophron percnopterus*, Eurasian Woodcock *Scolopax rusticola,* Wood Snipe *Gallinago nemoricola*, Pintail Snipe *Gallinago stenura*, Pied Cuckoo *Clamator jacobinus,* Large Hawk Cuckoo *Hierococcyx sparverioides* and Common Hawk Cuckoo *Hierococcyx varius.*

Species seen only once during this study include the Black-capped Kingfisher *Halcyon pileata,* Pompadour Green Pigeon *Treron pompadora*, Lesser Kestrel, Osprey *Pandion haliaetus*, Plum-headed Parakeet *Psittacula cyanocephala*, Grey-headed Bulbul, Scarlet Minivet *Pericrocotus flammeus,* Yellow-browed Bulbul *Iole indica*, Red-rumped Swallow *Hirundo daurica,* Rosy Starling *Sturnus roseus,* Scarlet Minivet *Pericrocotus flammeus,* Ashy Woodswallow *Artamus fuscus,* Malayan Night-heron *Gorsachius melanolophus,* Black-crowned Night Heron *Nycticorax nycticorax,* Pintail Snipe *Gallinago stenura* and Indian Peafowl *Pavo cristatus.* See notes in Appendix 1 for details of locations.

Rare and significant records are discussed in detail and confirmed historical records are included to provide an insight on the species that have either declined or disappeared from the Upper Nilgiris.

SPECIES ACCOUNT

LITTLE GREBE
Tachybaptus ruficollis

One female with three chicks was seen along the banks of Manjoor Reservoir on 16 May 2003. Common resident, few birds generally seen at Ooty Lake but never seen in the other reservoirs such as Avalanche, Emerald and Upper Bhavani during dozens of visits. Other records from Ooty Lake include Kumar (1996) on 10 August 1996, and Nair (1995) who reported 30 odd birds in mid-September 1994.

GREAT CORMORANT
Phalacrocorax carbo

Common resident, usually seen in small numbers around most of the water reservoirs. Up to 25 birds observed frequently during monsoon at Avalanche reservoir, with twelve nests recorded at the crown of a *Eucalyptus* plantation during July 2002. The nesting birds often observed mobbing and chasing away Jungle Crows *Corvus macrorhynchos* from close to its nest before sunset. Between February to April 2002, when the reservoir was dry, no bird was seen at Avalanche.

Nair (1996) observed 42 nests and 130 birds in breeding plumage on partially submerged trees in the reservoir at Glenmorgan (1,970 m) and twenty birds breeding in Kamarajasagar Reservoir near Ootacamund town at 2100 m. Kumar (1996) reported a solitary bird in breeding plumage on 9 December from Ooty Lake. All these records are significant in the absence of any other report of breeding of this species from anywhere in the peninsular Indian hills. They are normally found in the lowland rivers, jheels, reservoirs, tidal lagoons and are also known to ascend up to considerable elevations in the lakes of Nepal, Ladakh and Kashmir (Ali and Ripley 1987, Grimmett *et al*. 1998).

DARTER
Anhinga melanogaster

We did not come across this species in the Nilgiris. Davison (1883) obtained it from Pykara River, about 15 km from Ootacamund. In recent decades there has been no other record of Darter from anywhere in the Upper Nilgiris. Hence Davison's record should perhaps be considered as vagrant.

LITTLE EGRET
Egretta garzetta

Rare in Upper Nilgiris, one bird observed on the shore of Avalanche reservoir on 11 January 2004, one bird (probably the earlier one) again sighted in the same reservoir on another location on 16 January 2004. Thejaswi, S. (pers. comm.) sighted one bird at T. R. Bazar near Naduvattam on 15 January 2004.

CATTLE EGRET
Bubulcus ibis

Common resident, some birds could always be seen around marshy grazing areas near habitations. Never seen in the MNP and surrounding reserve forests.

INDIAN POND HERON
Ardeola grayii

Common resident and widespread, mostly solitary but occasionally up to four birds sighted near reservoirs or perched on trees along streams and also in dry habitats near plantations. Appears to be extremely wary of humans, unlike at the lower elevations. Unlike in the past, the Nilgiris today do not have the shallow water habitats required by these birds. Davison (1883) reported it as a winter visitor to the Nilgiris, disappearing on the approach of its breeding season. However, we recorded it in the Upper Nilgiris throughout the year.

BLACK-CROWNED NIGHT-HERON
Nycticorax nycticorax

It seems to be rare in the Upper Nilgiris. A single bird sighted on 8 March 2002 at Bangitappal, perched on a short tree near the stream bisecting the valley. It is likely to occur at Pykara and Glenmorgan reservoirs.

MALAYAN NIGHT-HERON
Gorsachius melanolophus

Only one sub-adult observed on a roadside wattle tree near Parson's Valley *c*. 2,200 m on 21 May 2003. Perhaps a vagrant to the Upper Nilgiris. The bird displayed the prominent crest and vermiculations on the wings; the white spots on the crest and the nape were also distinctly seen. Ali and Ripley (1987) recorded it as discontinuously distributed species of evergreen biotope generally up to 800 m elevation.

EUROPEAN WHITE STORK
Ciconia ciconia

Not seen in the Nilgiris during our three year study. Davison (1883) noted, "Mr. G. A. R. Dawson, of Coonoor, obtained two specimens of this bird on the Nilgiris, one of which is, I believe, still in his possession. He also sighted a flock of 18 birds feeding on the open grassland near Sandy Nullah between Ootacamund and Pykara". Davison himself had never seen it in the Nilgiris.

COMMON TEAL
Anas crecca

Davison (1883) reported having seen it on many occasions in small parties on the lake at Ootacamund, but they did not remain for long after their arrival, being either killed or frightened away. No other record known to us.

ORIENTAL HONEY-BUZZARD
Pernis ptilorhynchus

Common winter visitor, several observed singly or in pairs, soaring over the grassy downs or forested hills of MNP and surroundings. Davison (1883) noted "I have never noticed it on the Nilgiri plateau or on the more elevated portion of the slopes". Primrose (1904) collected two specimens from Nilgiris. Thirumurthi and Balaji (1999) recorded five birds during their survey of the raptors. N. Netli Kuttan a *Toda* tribal found a bird removing stones fixed at the opening of a *shola* tree cavity containing a honeycomb. The *Todas* block the entrance of the tree cavity containing a comb (an indigenous

method of harvesting honey from tree cavities). Having successfully removed the stones, the bird was feeding on the honey and the bees (*Apis dorsata*).

BLACK-SHOULDERED KITE
Elanus caeruleus

Common in the Nilgiris, more often seen in the altered habitats near cultivation and tea estates than in grasslands. Davison (1883) mentioned it as rare on the Nilgiris. Pittie (1987) included it as an altitudinal record at 1,860 m. However, it is not unusual to record it near Dodabetta (2634 m).

BLACK KITE
Milvus migrans

The sub-species *Milvus migrans govinda* is a very common resident raptor near human habitations in the Upper Nilgiris and is joined by *M. m. lineatus* during winter, when both could be seen soaring over the municipal garbage dumps on the outskirts of Ooty. Davison (1883) recorded, "very few indeed breed on the Nilgiris and few seen during the southwest monsoon, but is common between December till June". They migrate from heavy-rainfall areas to drier areas, before the commencement of monsoon, but precise data is lacking (Ali and Ripley 1987).

BRAHMINY KITE
Haliastur indus

Common resident, often seen soaring at Ooty Lake or circling over the water reservoirs near Lawrence, Avalanche and Emerald, human habitation and cultivated areas. Davison (1883) recorded it as not numerous on the Nilgiris, with a few pairs seen about the swampy shores of the Ooty Lake. He also observed that if its nest or eggs are touched, the birds will as a rule, forsake the nest, breaking any eggs that there are in it. Primrose (1904) described it as far from common in the Nilgiri hills. Thirumurthi and Balaji (1999) record 107 birds at different locations during their survey in the Nilgiris and reported it as the most common raptor after *Milvus migrans*. Presumably, they have become commoner with the opening of the Upper Nilgiris for human habitation.

EGYPTIAN VULTURE
Neophron percnopterus

We did not see even a single individual between December 2000 and February 2004. Davison (1883) recorded it as abundant on the Nilgiris, especially at Ooty and *Badaga* villages in its vicinity, on slopes, and breeding on numerous cliffs and slopes. Primrose (1904) also observed it as very common around the *Badaga* and other villages of the Nilgiris, and a large colony round the filthy 'Kota' village (Kotagiri) where they breed. Thirumurthi and Balaji (1999) record it at Coonoor (1,800 m).

INDIAN WHITE-BACKED VULTURE
Gyps bengalensis

Not even a single bird seen by us during this study. However, Davison (1883) recorded it as abundant in the Nilgiris. Primrose (1904) recorded that, "this is I think the most common vulture, though these birds prefer to patronize the plains, rather than hills, and are nowhere plentiful at the higher elevations." It has declined massively all over South Asia (Prakash 1999, BirdLife International 2001), possibly due to food poisoning in Pakistan (Oaks *et al*. 2004) and also in India (Shultz *et al.* 2004).

LONG-BILLED VULTURE
Gyps indicus

We did not see a single bird between December 2000 and February 2004. Like the previous species it has also declined massively all over South Asia (Prakash 1999, BirdLife International 2001), possibly due to food poisoning (Oaks *et al*. 2004; Shultz *et al.*

2004). Davison (1883) recorded its occurrence in the Nilgiris and its slopes as uncommon, while Primrose (1904) was not certain about its presence, as he did not observe any.

RED-HEADED VULTURE
Sarcogyps calvus

Once common on the Nilgiris, it is now perhaps locally extinct. It was a part of the local *Toda* tribal folklore. Davison (1883) writes, "This species is not abundant on the Nilgiris, for perhaps as many as forty or fifty other vultures may be congregated near a body, only two or three seldom indeed as many as half a dozen of them, will be found with the mob, all other times they are met with singly or in pairs". Primrose (1904) reported it as common and observed a nest near Craigmore Toll Gate, Ooty. In view of these earlier observations, it appears to have severely declined during the twentieth century. Thirumurthi and Balaji (1999) claim to have recorded it at Ooty and Kotagiri. However, we did not see even a single bird during this entire study, and local birdwatchers deny seeing this species in the last two to three decades.

SHORT-TOED SNAKE EAGLE
Circaetus gallicus

Uncommon winter visitor, one sighted at Taishola on 22 June 2002, perched on a tall tree, perhaps surveying its surroundings for prey. Another bird sighted soaring and circling high over the same forest on 4 July 2002. Ali and Ripley (1987) recorded its habitat as open cultivated plains, stony deciduous scrub and foothills country and semi-desert quite unlike the area where it was recorded in the Upper Nilgiris.

CRESTED SERPENT EAGLE
Spilornis cheela

Common resident, seen circling and soaring over the grasslands around Upper Bhavani and MNP. Davison (1883) collected a single bird at the foot of Coonoor Ghat on 1 February 1881 and also reported it as absent over the higher plateau of the Nilgiris. Stairmand (1972) reported it to be common over the forested areas in the Nilgiris.

EURASIAN (WESTERN) MARSH-HARRIER
Circus aeruginosus

None recorded during this study; however, Davison (1883) recorded it as common on the Nilgiris and its slopes. He recorded, "usually seen about marshy ground, but not infrequently it may be seen hunting over the grassy sides of a hill or dry cultivated ground". He recorded it as bold and fearless, and saw it on many occasions strike at wounded snipe and quail.

PALLID HARRIER
Circus macrourus

Not seen by us during our study. Davison (1883) remarks "abundant, frequents by preference the cultivated lands about *Badaga* villages, grassy hills and swamps, cold weather visitant to the Nilgiris, coming in about the end of October, and I have seen it as late as the last week of April". Thirumurthi and Balaji (1999) claim to have seen six birds at Dodabetta.

PIED HARRIER
Circus melanoleucos

Not seen by us but Davison (1883) recorded its occurrence as sparingly on the Nilgiris and their slopes.

CRESTED GOSHAWK
Accipiter trivirgatus

We did not see even a single individual between December 2000 and February 2004. Also, there were no earlier records of this species from the Upper Nilgiris. However, Thirumurthi and Balaji (1999) claim to have seen seven birds at Avalanche, Mukurti, Mamaram and Pykara.

SHIKRA
Accipiter badius

Resident, uncommon in the Nilgiris, except in the undisturbed regions towards MNP, sighted near cultivated areas near Ooty and other habitations. Davison (1883) recorded it as uncommon on the plateau and more common on the slopes of the hills. Primrose (1904) recorded it as "very common" in the Nilgiris. Ali and Ripley (1987) recorded the vertical distribution limit of Shikra to be approximately 1,400 m. Kumar (1992) described a record from Sholur valley (around 10 km north of Ooty) as unusual. Thus its occurrence in the Nilgiris (up to 2,600 m) is a record of vertical distribution in peninsular India.

BESRA SPARROWHAWK
Accipiter virgatus

Resident, common over the study area, frequent at Avalanche (2,200 m) and similar elevation in the Upper Nilgiris plateau. Davison (1883) described it as rare (no nest found) in the Nilgiris, and recorded it as a silent, forest loving bird rarely coming out into the open. However, contrary to Davison's observation, we found the bird making squealing calls *tschew tschew tschew*...from December till March or April. Davison (1883) further notes, "It is a permanent resident, but never found a nest".

EURASIAN SPARROWHAWK
Accipiter nisus

We did not record any during this study. Davison (1883) remarks, "Occur sparingly on the hills, a female shot at Ooty on 7 February 1881 is undistinguishable from many European specimens, showing no approach to *melaschistos"*. Thirumurthi and Balaji (1999) report 16 birds from Kotagiri and Kil Kotagiri during their survey of raptors in the Nilgiris.

WHITE-EYED BUZZARD
Butastur teesa

Uncommon winter visitor to the Upper Nilgiris, seen occasionally in open scrub and grasslands with scattered *Rhododendron*.

COMMON BUZZARD
Buteo buteo

Common winter visitor at all elevations in the Nilgiris. Usually sighted solitarily, rarely in pairs. Occasionally seen perched on dead trees in open grasslands. Soars silently but occasionally heard making mewing calls.

LONG-LEGGED BUZZARD
Buteo rufinus

Common winter visitor, sighted at different locations in the study area generally near grasslands.

BLACK EAGLE
Ictinaetus malayensis

Common resident, widely distributed and recorded at different locations over the landscape in small groups of two to four. For example, four birds seen soaring at Naduvattam (1,800 m) on 13 June 2001, one sighted on a *shola* tree at Avalanche on 16 March 2002. Davison (1883) and Primrose (1904) reported it as common on the Nilgiris and its slopes. Primrose (1904) recorded breeding at the Gunjara precipices, near Kil Kotagiri, in company with many other hawks (species not mentioned). Burgess (1937) saw it either singly or in pairs all over these hills especially "where the plateau falls away to the low country." Unnikrishnan and Rajasekhar (1993) reported the bird from Taishola.

EASTERN IMPERIAL EAGLE
Aquila heliaca

We did not record any Imperial Eagle during December 2000 to February 2004. However, 60 years ago, Burgess (1937) recorded it as an occasional visitor, having seen a bird at the top of the Sigur Ghat. He further said that "the bird was feeding on what looked like a hare. I approached the bird to fifteen

yards, when it flew away from me, but it went only a short distance and then came at me with talons extended, and it was all I could do to keep it away with a walking stick. Next day two birds were seen at the same spot, circling with a dozen or more vultures (species not mentioned). Soon they separated from the vultures and flew above us at no great height. Since then I have seen the bird three or four times".

BONELLI'S EAGLE
Hieraaetus fasciatus

Uncommon resident, three birds seen at Taishola on 12 September 2003, first a single adult was sighted, which was joined later by two others. All three kept soaring over the Taishola Tea Estate area for quite some time. According to Davison (1883), they were not very rare on the Nilgiris and its slopes, and commit havoc among domestic pigeons. Burgess (1937) records, "they are common on the Nilgiris, though they are never seen more than two at a time, but not also a single, hunt in pairs and put in some wonderful teamwork". He also records "It can be seen in Nilgiris at all seasons and probably it must nest on the rocky crags of Mukurti or Nilgiri Peak".

BOOTED EAGLE
Hieraaetus pennatus

We did not record any between December 2000 and February 2004, but Primrose (1904) reported it as common in the Nilgiris.

RUFOUS-BELLIED EAGLE
Hieraaetus kienerii

Rare resident, a single adult bird sighted flying overhead near our base camp at Avalanche. The bird (probably the same individual) was seen soaring in the same locality on three consecutive days (28 to 30 August 2003). Thirumurthi and Balaji (1999) claim to have sighted four birds in Mukurti. We did not see any bird in Mukurti National Park, although it was our main study area.

CHANGEABLE HAWK EAGLE
Spizaetus cirrhatus

We did not record any during our three years study. Davison (1883) was certain about its occurrence over the Nilgiris and Stairmand (1972) recorded one bird in the Upper Nilgiris.

MOUNTAIN HAWK EAGLE
Spizaetus nipalensis

We did not record it during this study, however, Davison (1883) recorded "I know of but one specimen of this species obtained on the Nilgiris, and that was given to me in June 1872 for Mr. Hume by Mr. F. L. Chapman of Ootacamund". They are distinguished at once from other Indian Hawk-Eagles by the feathering of the tarsi running down beyond the first joint of the mid toe.

OSPREY *Pandion haliaetus*

Rare winter visitor, one recorded near Upper Bhavani dam on 19 December 2003. No other record known from the Upper Nilgiris.

LESSER KESTREL
Falco naumanni

Rare passage migrant, classified as Vulnerable because of population decline in most of its distribution range (BirdLife International 2001). A single female was seen perched on a wattle tree on the roadside near Upper Bhavani on 16 November 2001. Stayed on the perch for sufficient time for us to clearly see its whitish claws and less distinct moustachial stripes. Davison (1883) commenting on Jerdon's having found a Lesser Kestrel breeding on cliffs on the Nilgiris said "he probably mistook it for the resident race of the Common Kestrel, which does breed on the cliffs".

COMMON KESTREL
Falco tinnunculus

Very common resident, usually seen perched on elevated positions such as transmission lines, poles or isolated tall trees scattered in the grasslands from where it dives or pounces at the prey on the ground and returns to the same or other perch. Davison (1883) obtained specimens of both the migratory and resident races and observed a bird pouncing down and carrying off a Painted Bush Quail *Perdicula erythrorhyncha.* Primrose (1904) collected a nest with four eggs in March 1903.

PEREGRINE FALCON
Falco peregrinus

We have no record of this species from anywhere in the Upper Nilgiris during this study. However, Davison (1883) sighted a pair near Ooty and one pair between Naduvattam and Gudalur on 26 March (year not recorded). One bird recorded in Mukurti by Thirumurthi and Balaji (1999).

PAINTED BUSH QUAIL
Perdicula erythrorhyncha

Common resident, seen round the year at several locations, in small parties of two to ten birds, along roads near tea plantations, such as at Red Hill Tea Estate, Ittalar, Taishola and Bikkatti. Three adult birds observed with five chicks along a tea plantation near Taishola on 25 April 2002. According to Davison (1883) it occurs in larger or smaller coveys, and with dogs afford some pretty shooting.

RED SPURFOWL
Galloperdix spadicea

Common resident, has a retreating nature and is seen s*hola*, mainly in Mukurti National Park and adjoining forests.

GREY JUNGLEFOWL
Gallus sonneratii

Common resident, occurs in all habitats, both natural forest and plantations. In grasslands it generally remains close to the cover. Several birds could be seen along roads while driving through forests. Males generally observed accompanying the brood unlike reported in the literature. For instance a male seen with female and four chicks along road in Taishola on 25 April 2002 and another male sighted with three adult females and five chicks near a *Rubus* thicket besides a *shola* near Mullimunth village. We found a nest with five eggs unusually placed in a small depression along the earthen road bank near Lawrence on 26 April 2003. Of the five, only two eggs hatched successfully and the female deserted the rest. Two cocks observed fighting on 5 February 2003. Many females sighted with fledglings from April to June, at various locations.

INDIAN PEAFOWL
Pavo cristatus

Rare resident with some seasonal altitudinal movement. One adult male was sighted on 10 May 2001 at the edge of Avalanche *shola c*. 2,200 m. Another male sighted near Avalanche Shola (undated) in 2002 (Solomon Frederick, pers. comm.). Its occurrence at *c.* 2200 is thus an altitudinal record for this region.

WHITE-BREASTED WATERHEN
Amaurornis phoenicurus

Common resident seen mainly around Ooty Lake, rare in other localities. A single bird seen near Lawrence Tea Estate on 22 June 2002. The bird crossed the road to reach a waterhole created by a leak from a water pipe. It is rare, perhaps because of the scarce wetland habitat. Davison (1883) killed one in the Botanical Gardens at Ooty. Kumar (1996) recorded many from Ooty Lake on 9 August. Nair (1995) reported seeing around 15 birds feeding actively in Ooty Lake.

COMMON MOORHEN
Gallinula chloropus

Common resident at Ooty Lake, and breeds among the sedges growing on the margins. Not seen along the other reservoirs in the Upper Nilgiris. At Ooty Lake, Kumar (1996) observed it in breeding plumage on 9 August, and Nair (1995) sighted about 35 birds during September.

LESSER FLORICAN
Sypheotides indica

No recent known record of this species from the Nilgiris. Davison (1883) quoted Hume "a specimen was killed on the slopes to the Nilgiris some years ago between Naduvattam and Pykara, going down to the Wynaad". The above record should thus be considered as of historical importance.

RED-WATTLED LAPWING
Vanellus indicus

Common resident, often one or two birds seen near all the big and small reservoirs as well as open grazing lands.

EURASIAN WOODCOCK
Scolopax rusticola

Once common winter visitor and a favourite game bird in the Nilgiris, its population has declined and it is uncommon today. A single bird observed on 28 December 2002 in a small moist and shaded grass patch beside a wattle stand at Avalanche. Subsequently we sighted (probably) the same bird on the same site on 30 & 31 December 2002 and 22 & 23 January 2003. A bird sighted near Kolari Betta near a waterhole along the road on 23 January 2003, two birds sighted in January 2003, and one bird each in December 2003 and January 2004 at different locations.

Davison (1883) notes, "Woodcock is not uncommon from about October to the end of the February in the Nilgiris and their shooting is an amusement". Home and Logan (1923) reported a woodcock shot on 28 April in Krurnand near Mukurti Peak as an exceptionally late date for the woodcock in the Nilgiris. Inglis (1923) quotes Baker (who wrote to him in 1921), "now a single gun is lucky, as I have been, if he gets 30 to 40 cocks in a season and 6 in a day. In 1920-21, I got 35 and in 1921-22, I got 29 and in both seasons my best bag was six in a day out of seven seen". Further notes on woodcock shooting in Nilgiris can be seen in Fletcher (1911), Home and Logan (1923) and Lambton (1911).

The woodcock is believed to be the only non-stop long distance flier in India, from the Himalaya to the Nilgiri hills (a distance of 2,500 km) (Sengupta 1990a). Sengupta (1990b) proposed its migratory route from Himalaya to the Nilgiris via Bangladesh, West Bengal (where several specimens were netted in Salt Lake, Calcutta between 1963 and 1969) and Eastern Ghats, with or without a stopover.

WOOD SNIPE
Gallinago nemoricola

This winter visitor was not recorded during this study. It has been described as a rare visitor to the Nilgiris (Jerdon 1839–1840). Davison (1883) noted "it was never common and seems to be getting still rarer, year by year". The fact that 13 birds were shot in the Nilgiris between 1922 and 1935, however, suggested that no decline had taken place and that a small wintering population survived (Whistler and Kinnear 1936). Also from his game records between 1923 and 1948 Phythian-Adams (1948) listed only 8 birds of this species shot in Nilgiris unlike Pintail and Fantail snipes that figured in thousands. Hence, we assume that this is the rarest of all snipes wintering in the Upper Nilgiris. It is listed Vulnerable by BirdLife International (2001).

PINTAIL SNIPE
Gallinago stenura

Rare winter visitor, only one bird sighted at Avalanche, near the Guest House on 20 February

2004. It was once common and a favourite game bird in the Nilgiris. Davison (1883) observed it coming earlier and returning later than the Jack and Wood snipes. He notes having seen it as early as the last week of August and leaving as late as the last week of May. Details of numbers shot are cited in Phythian-Adams (1948) and Whistler and Kinnear (1936).

COMMON SNIPE
Gallinago gallinago

None recorded during this study. Davison (1883) reported its occurrence throughout the Nilgiris but described it as rare. Details of the numbers shot are cited in Phythian-Adams (1948) and Whistler and Kinnear (1936)

JACK SNIPE
Lymnocryptes minimus

None recorded during this study. Davison (1883) reported it as occasional visitor to the Nilgiris. Details of numbers shot are cited in Whistler and Kinnear 1936 and Phythian-Adams (1948).

GREEN SANDPIPER
Tringa ochropus

Common winter visitor, seen along Ooty Lake. Ten birds sighted on two different dates in December 2003, near the rail track, where Ooty sewage enters the lake. Davison (1883) recorded it as only very rare visitor, having seen one specimen shot at Ooty Lake.

WOOD SANDPIPER
Tringa glareola

We never came across this sandpiper during our study. Davison (1883) observed that it remains very late, having found it in the Botanical Garden at Ootacamund as late as July.

COMMON SANDPIPER
Actitis hypoleucos

Common winter visitor, generally solitary birds seen at Avalanche, Upper Bhavani, Pykara and other reservoirs and lakes. However, up to ten seen feeding in one site, where Ooty sewage enters Ooty Lake. It is reported from the Upper Nilgiris as early as 4 August (Betts 1930), at Ooty Lake on 9 August (Kumar 1996), and Avalanche on 28 August 2002 during this study. Around 20 birds seen at Ooty Lake by Nair (1995) is perhaps the largest number recorded together anywhere in the Upper Nilgiris plateau.

BLUE ROCK PIGEON
Columba livia

Common resident, seen near almost all human habitations. We presume that it has extended its range over most parts of the Upper Nilgiris, with the expansion of the human settlement across the plateau.

NILGIRI WOOD-PIGEON
Columba elphinstonii

Common resident, shy and restricted to *shola* habitat. It is classified as Vulnerable owing to its small, declining population, as a result of widespread destruction of its habitat (BirdLife International 2001). More often heard than seen, it remains in the thick canopy *shola* calling "*Ho Hu Hu Hu*". Up to four birds seen in a 1 km intact *shola* transect. Often they feed on insects and fallen fruits on the road passing through *shola*, and quickly take cover on the approach of a vehicle.

LITTLE BROWN DOVE
Streptopelia senegalensis

None recorded during this study. Davison (1883) reported that they occur sparingly on the tableland (upper plateau) of the Nilgiris and a few can always be obtained around the *Badaga* cultivation.

SPOTTED DOVE
Streptopelia chinensis

Common resident, well spread in the Nilgiris (Jameson 1969), more often near habitations. Uncommon in the Mukurti National Park.

EURASIAN COLLARED-DOVE
Streptopelia decaocto

Davison (1883) notes, "I shot one at a village (not named) about seven miles from Ootacamund and on the plateau of the Nilgiris, but it is the only one I ever heard of being killed at this elevation". None recorded during our study.

EMERALD DOVE
Chalcophaps indica

Common, subject to local movement, generally solitary as seen in the Upper Nilgiris from February till the onset of southwest monsoon. Many recorded singly in different localities on different dates. However, Davison (1883) could not find it as high as Ootacamund (2000 m).

POMPADOUR GREEN PIGEON
Treron pompadora

Vagrant to the Upper Nilgiris; a single bird observed perched atop a Cypress hedge in front of the Avalanche Forest Guest House on 14 September 2002. The bird kept to the same perch for about 10 minutes. It has been described as "common" below Coonoor (1800 m) by Jameson (1969), thus its record at Avalanche *c*. 2,200 m is significant.

PLUM-HEADED PARAKEET
Psittacula cyanocephala

Perhaps vagrant to western upper plateau; a single bird observed perched atop a dead wattle tree for about an hour at Avalanche on 6 August 2002. Common around lower elevations about Coonoor (Jameson 1969). No other record known from the Upper Nilgiris plateau.

BLUE-WINGED PARAKEET
Psittacula columboides

Uncommon resident, two birds observed on 5 October 2003 near Solur (1,800 m), and a flock of 11 birds in flight near Taishola (2100 m) on 23 November 2003. Quite common on the Nilgiri slopes and plains, Davison (1883) shot it on more than one occasion near Ooty. Previously described as distributed at 500-1,500 m (Ali and Ripley 1987). Thus our record at 2100 m is quite significant.

PIED CRESTED CUCKOO
Clamator jacobinus

We could not find any during this study. Davison (1883) reported it as common on the Nilgiris, also reported its habitat as thickly wooded country, and cultivated land interspersed with scrub and bushes. He also reported it as most numerous near Ootacamund, Coonoor, Kotagiri and other villages.

LARGE HAWK-CUCKOO
Hierococcyx sparverioides

Not recorded during this study. Davison (1883) recorded it as numerous on the Nilgiris in *shola* and occasional in well-wooded gardens.

BRAINFEVER CUCKOO
Hierococcyx varius

Not seen during this study. Described as plentiful on the plateau and the slopes of the Nilgiris by Davison (1883). Davison also recorded that there is hardly a garden or grove that does not contain one or more birds. He observed a young of this species being fed by the Nilgiri Laughingthrush (*Garrulax cachinnans*).

ASIAN KOEL
Eudynamys scolopacea

Not recorded during this study. Davison (1883) once shot a bird in the Gardens at Ootacamund, but its occurrence at that elevation is quite unusual, unlike on the slopes of Nilgiris.

GREATER COUCAL
Centropus sinensis

Common resident, sparsely distributed but is less numerous on the Nilgiris plateau than the slopes.

Usually single, but occasionally seen in pairs near partially disturbed habitat near habitations. Parochial and generally stays close to cover.

COMMON CUCKOO
Cuculus canorus

Rare, perhaps vagrant. One adult female photographed near our base camp at Avalanche on 30 September 2002 and another male near Upper Bhavani on the same day. The bird foraged in a clearing besides the stream, pounced frequently at insects and returned to the same perch every time, and spent considerable time on the ground during foraging.

COLLARED SCOPS-OWL
Otus bakkamoena

We did not come across this species. Primrose (1904) recorded it in the Nilgiris, though he never collected any skin.

FOREST EAGLE-OWL
Bubo nipalensis

We did not come across this species during this study. Davison (1883) recorded it as permanent resident but occurring sparingly on the Nilgiris, seen singly, but occasionally in pairs also. He also recorded that the native *shikaris* (hunters) say it regularly kills hares, young jackal (*Canis aureus*) and young Indian Muntjac (*Muntiacus muntjak*) (Davison 1883).

BROWN FISH-OWL
Ketupa zeylonensis

Common resident, often heard from evening till late night, near our base camp at Avalanche and similar well-wooded areas. Seen in different localities, usually dashes out from its perch in front of a vehicle. Often seen perched atop tall *Pinus* or *Eucalyptus* trees along power transmission lines, making characteristic reverberating *boom-boom* calls. Feeds on crabs, which abound in all swamps and marshes. It is usually seen in pairs (Davison 1883). Based on his skin collection, Primrose (1904) describes it as very common in the Nilgiris. Ali and Ripley (1987) reported its distribution up to *c*. 1,400 m in peninsular India; however, we have seen it commonly at 2,200 m and even higher in the Upper Nilgiris.

MOTTLED WOOD-OWL
Strix ocellata

Rare resident, little information available on its seasonal or vertical movements (if any). One bird sighted perched at about 5 m on a wattle tree near the Trout Hatchery at Avalanche on 5 August 2002. No other record from anywhere in the Upper Nilgiris plateau.

BROWN WOOD OWL
Strix leptogrammica

Common resident, sighted in June 2001 followed by other records of a single bird on 15 March and on 20 November 2002 at Avalanche. The bird generally perches on tall *Pinus* trees near street lamps. Once seen near Lakkedi during daytime in December 2001. Several others recorded from different locations in the Upper Nilgiris. It seems from Baker and Inglis (1930) that it was more common in these hills than at present.

JUNGLE OWLET
Glaucidium radiatum

Not seen during this study. Primrose (1904) sighted it in a *shola* near the Terrace Tea Estate as high as 1940 m, but found it as uncommon overall.

BARN OWL
Tyto alba

Rare in the Upper Nilgiris, never seen during this study. A dead bird was sent to us by S. Sounderrajan who narrated "This bird was killed by three Bonnet Macaques (*Macaca radiata*) while it perched on a tree near the Canteen of the Hindustan

Photo Films campus near the Ooty-Gudalur road. Ravi, T. sighted one of the macaque squeezing the neck of the owl. When Ravi chased the macaque, it dropped the bird and fled. The bird had died before it was dropped. The specimen was sent to BNHS collection."

SHORT-EARED OWL
Asio flammeus

Rare winter visitor in the Upper Nilgiris, a single bird sighted at Bangitappal on 3 March 2001. Again sighted at Bangitappal Valley in June 2002 perched on a short *Rhododendron* tree at 1800 hrs. Flew swiftly and perched over an exposed rock in the grassland beside a *shola* patch.

INDIAN JUNGLE NIGHTJAR
Caprimulgus indicus

Common resident, seen all over the Upper Nilgiris. Often heard near Avalanche reservoir in the evenings. Commonly seen while driving through well-wooded roads in the evening. Calls could be heard near Avalanche reservoir in the evening.

COMMON INDIAN NIGHTJAR
Caprimulgus asiaticus

Common in the study area. Seen on several occasions along the wattle bordered road in several localities in the evenings.

INDIAN EDIBLE-NEST SWIFTLET
Collocalia unicolor

Common resident, seen more often near Ooty. Confirmed records are from the Tiger Caves near Ooty-Coonoor road. Betham (1902) recorded, "I believe there are several colonies of this little Swiftlet in the neighbourhood of Ooty". He collected two nests from a cave, and sighted eight nests, of which 7 contained 2 eggs each. Walkey (1978) reported many half-saucer shaped nests containing about three white eggs, fixed securely to the walls and roofs of a cave with thick gum of solidified saliva.

WHITE-RUMPED NEEDLETAIL-SWIFT
Zoonavena sylvatica

Common resident, seen throughout the study area, more over the grassy downs, flocks of up to 30 birds seen occasionally, in the southwestern Nilgiris such as at Bangitappal and Western Catchment II and III. Often flocks with the House Swallow *Hirundo tahitica*.

ALPINE SWIFT
Tachymarptis melba

Resident and common around the western slopes of MNP. Usually remains in small flocks of up to 10, being most common over the grasslands around Western Catchments II and III. Davison (1883) found it as uncommon on the Nilgiris.

MALABAR TROGON
Harpactes fasciatus

Rare and perhaps moves attitudinally, a single pair seen at Taishola on 25 April 2002 at 10 hrs. Detected first by call, male and female were seen perched about 40 m apart. Presumably, it ventures into the *shola* habitat around south and southwestern Nilgiris from the slopes adjoining Palghat, Silent Valley National Park and the Nilambur Forest Division, perhaps during the peak summer when it is generally dry in plains (Zarri and Rahmani, in press).

SMALL BLUE KINGFISHER
Alcedo atthis

Rare in the study area, perhaps with some local movements; one adult bird sighted perched on the dead stump of a submerged tree in the Avalanche reservoir on 11 January 2003. Another sighted at Avalanche on 20 May 2003 near the stream. Kumar (1996) sighted a bird around Pykara Lake on 10 August 1996.

STORK-BILLED KINGFISHER
Halcyon capensis

Common resident, subject to vertical movements. Usually solitary, its raucous chattering laugh heard near streams. First recorded on 20 January 2003 along the stream at Avalanche at *c.* 2,200 m, and subsequently the bird was sighted near the same stream several times in winter. One bird heard in Longwood Shola on 25 April 2003. Never recorded in MNP. Jameson (1978) described it at Coonoor (1,935 m) as an altitudinal record.

WHITE-BREASTED KINGFISHER
Halcyon smyrnensis

Common resident in the study area, generally a solitary bird seen perched on transmission wires or on stands of wattle near the streams or cultivated lands. One bird ringed on 21 January 2003. Davison (1883) described the bird as a straggler to the upper plateau, and common at Coonoor, Naduvattam and Pykara. He had shot it near Ooty two or three times.

BLACK-CAPPED KINGFISHER
Halcyon pileata

A vagrant bird sighted on 8 March 2002 at Avalanche near the reservoir. Known as distributed up to 1000 m (Ali and Ripley 1987), its record at Avalanche *c.* 2150 m is quite significant. We know of no other record of this species from anywhere in the Upper Nilgiris plateau.

SMALL BEE-EATER
Merops orientalis

Rare to the Upper Nilgiris plateau unlike lower elevations. One bird was seen in flight on 29 June 2002 from very close in Mullimunth village (11° 30' 095'' N 76°. 61' 181'' E) between Lawrence and Avalanche.

CHESTNUT-HEADED BEE-EATER
Merops leschenaulti

Resident, uncommon, perhaps subject to vertical movements, two birds observed perched on a telephone wire at Kundha Bridge village (1900 m) on 16 May 2003. Common on the Nilgiri slopes below 1,600 m and plains near Mudumalai Wildlife Sanctuary. According to Davison (1883) they do not ascend the plateau but are common on the slopes.

INDIAN ROLLER
Coracias benghalensis

Rare resident in the study area, one bird sighted perched on a transmission wire over an agriculture field at Lawrence at *c.* 2100 m, on 16 March 2002. Another bird seen flying over a tea plantation near Ellakandi village (2100 m) along Emerald to Ooty road on 16 February 2004. According to Davison (1883) it does not ascend the hills and is not common even on the base of hills. This is apparently not true anymore.

COMMON HOOPOE
Upupa epops

Common resident and perhaps subject to local movements. It is seen from the first week of November till May. Seen more at Kundha, Taishola, Bikkatti, Ooty, Coonoor, Kotagiri and other localities near cultivated areas or tea plantations. None sighted in the western Upper Nilgiris mainly in the MNP and the surroundings. Sighted twice at Avalanche; once foraging in a transmission line opening beside a wattle plantation on 18 November 2002 and another foraging in front of our base camp at Avalanche on 3 April 2003 from where it was chased away by a pair of Jungle Myna, *Acridotheres tristis*.

Stairmand (1972) described it as "uncommon" in Ooty. However, Davison (1883) claims to have shot great numbers on the Nilgiris. Jameson (1969) described the plumage and call characteristics in the Nilgiris, and Pittie (1987) reported sighting of a single bird at Wellington (1,832 m) as an altitudinal record.

WHITE-CHEEKED BARBET
Megalaima viridis

Common resident, restricted to *shola* habitat throughout the study area. More often heard than seen. Observed duetting with Scimitar Babbler *Pomatorhinus horsfieldii*. In the Nilgiris, great damage is done by it in orchards, especially to apples and pears (Davison 1883).

CRIMSON-THROATED BARBET
Megalaima rubricapilla

Rare resident, one bird observed at Kodanadu 1800 m on 25 April 2003. Overall rare in the rest of the Upper Nilgiris plateau, mainly around the western Upper Nilgiris. Quite common on the slopes at lower elevations.

RUFOUS WOODPECKER
Celeus brachyurus

Not recorded by us during this study, but common around the Nilgiri plains such as the Mudumalai Wildlife Sanctuary. Davison (1883) obtained one specimen of this species a few miles from Ootacamund. Perhaps Davison's record should be treated as vagrant.

GREAT BLACK WOODPECKER
Dryocopus javensis

Rare in the study area, only a single bird recorded in a *Eucalyptus* plantation interspersed with *shola* trees at Snowdon (near Wood House *c.* 2,200 m), near Ootacamund on 1 April 2002. However, it is common around the Nilgiri plains. It is typically a bird of heavy evergreen forests of the Western Ghats, where it is fairly common up to 1,290 m (Betts 1934). Santharam (2003) recorded its preference for moist deciduous forests, near evergreen/semi-evergreen forests or riverine forest patches. Shy and wary, it keeps to the interior of the forests and occasionally ventures into cultivation on the jungle edge.

LITTLE SCALY-BELLIED GREEN WOODPECKER
Picus xanthopygaeus

Common resident, recorded a few times, mainly near Ooty. A male sighted in Taishola Tea Estate on 25 April 2002, one female on 15 March 2003 and one female on 22 April 2003 foraging among Silver Oak *Grevillia robusta* trees planted between the tea shrubs for checking soil erosion. Seen a few more times near plantations along the road from Lawrence to Taishola but never in the MNP. Presumably, it does not go higher than 2,200 m and generally remains closer to the eastern and southeastern slopes of the Nilgiris. Betts (1934) reported that, "few pairs are resident in the *shola* around Ooty, and I have seen two on the border of copses on the downs of the Nilgiri Plateau". The bird seems to feed mainly on ground dwelling ants like its English congener *Picus viridis* and is consequently partial to park land and open country (Betts 1934).

LESSER GOLDEN-BACKED WOODPECKER
Dinopium benghalense

Common resident throughout the Nilgiris at all elevations. Four to five birds, usually seen foraging among the trees near orchidarium and *shola* edge at Avalanche. These birds follow the same route between their roosting and foraging sites in a follow my leader way, making loud "drr…rr..rr.rr..rr." calls. Loose flocks of up to six birds are commonly seen in partially disturbed as well as undisturbed *shola* patches.

GREATER GOLDEN-BACKED WOODPECKER *Chrysocolaptes lucidus*

Common resident in the forests near Ooty, Coonoor, Wellington, Kundha, Kotagiri and other villages. Rare around the western Upper Nilgiris around Mukurti National Park and surroundings.

INDIAN PITTA
Pitta brachyura

An uncommon winter visitor in the Upper Nilgiris. Davison (1883) shot the bird near Ootacamund and on the slopes. Stairmand (1971a) sighted many (number not mentioned) at Ooty Botanical Garden. A single bird sighted at Avalanche perched at a low branch of a shady bush beside a stagnant pool of water on 25 November 2003. This bird was observed on several other visits near the same site between December 2003 and January 2004.

MALABAR CRESTED LARK
Galerida malabarica

Rare in the Upper Nilgiris, one bird was sighted feeding along the road coming from Kotagiri to Ooty at 1900m. No other record from anywhere else in the study area during this study.

DUSKY CRAG-MARTIN
Hirundo concolor

Common resident, generally seen near cliffs at Mukurti Peak, Nilgiri Peak, Kolari Betta, Pechakal Bettu and Pichal Bettu (*Bettu* means peak). Not uncommon in the Nilgiris during the winter (Davison 1883). Forms mixed flocks with Alpine Swift and House Swallow *Hirundo tahitica*. Previously recorded up to 1,800 m in south India (Ali and Ripley 1987, Kazmierczak 2000), but in the Nilgiris we recorded it up to the 2,550 m.

COMMON SWALLOW
Hirundo rustica

Common winter visitor, more near Kotagiri, Coonoor and Ooty town. Davison (1883) recorded it as common in the Nilgiris. Betts (1930) records its arrival in the Nilgiris as early as October. Pittie (1987) includes it as an altitudinal record at 1,832 m near Coonoor.

HOUSE SWALLOW
Hirundo tahitica

Common resident, widespread, seen practically throughout the Upper Nilgiris. Several nests recorded at different locations in March and April. Two nests seen in April 2002 in our garage were reoccupied in 2003 with little modification.

RED-RUMPED SWALLOW
Hirundo daurica

Rare passage migrant to the study area, a flock of nearly 100 individuals seen on 2 November 2003, in the Bangitappal Valley. The flock remained circling over the guesthouse for more than an hour, making a nasal "*queenk"* every now and then. Due to lack of any other record, the observation should be treated as a passage record.

FOREST WAGTAIL
Dendronanthus indicus

Uncommon winter visitor, sighted in moderately disturbed open plantation patches. Occurs all over the Nilgiris, but is rare (Davison 1883). Two birds sighted on 11 March 2001, followed by a single bird on 2 February 2002. While it is common during winter at lower elevations, it is uncommon in the Upper Nilgiris. Thought to be a return passage migrant in the Nilgiris based on first two sightings initially, but sightings of two birds at two different locations on 2 December 2002 at Avalanche clearly suggests that it is an uncommon winter visitor and not a passage migrant. We ringed one bird on 27 January 2003 at Avalanche.

LARGE-PIED WAGTAIL
Motacilla maderaspatensis

Common resident, more frequent in areas at lower elevations. Frequents marshy and open grazing areas during post monsoon. Usually sighted solitarily or in pairs throughout the study area around reservoirs, except in the MNP and its immediate surroundings. Common at Ooty Lake, close

to the spot where town's sewage *nullah* joins the Lake.

YELLOW WAGTAIL
Motacilla flava

Rare winter visitor, a single bird sighted on 17 March 2001, perched on a wattle tree along a transmission line at Avalanche. Another solitary bird sighted on 17 April 2001 near Kolari Betta, followed by a sighting on 17 April 2001 near the stream that bisects the Bangitappal valley.

GREY WAGTAIL
Motacilla cinerea

Common winter visitor, generally seen singly all over the study area, between August and April, near marshes, along the roads, open grazing lands and human habitations. Its population is thought to have declined in the study area for unknown reasons. Murray (1944) sighted it at Lovedale near Ooty on 2 September. Betts (1930) reported its arrival in the Nilgiris on 23 August. We ringed a bird on 21 January 2003 at Avalanche.

RICHARD'S PIPIT
Anthus richardi

Uncommon winter visitor, a solitary bird sighted at Lakkedi on 7 March 2001, perched on a short dead wattle tree; clearly displayed pale lores, and well streaked upper parts and breast. Another bird sighted feeding in the same locality the same day, followed by one seen in Bangitappal valley on 11 April 2001.

PADDYFIELD PIPIT
Anthus rufulus

Common resident, often seen singly or in pairs, frequents fallow land, with scarce scrub and grazed areas.

BROWN ROCK PIPIT
Anthus similis

Uncommon resident, usually three to four birds seen foraging near open grazed areas and cultivation. Apparently rare in the MNP.

ORIENTAL TREE PIPIT
Anthus hodgsoni

Common winter visitor, flocks of up to 20 individuals observed in the wattle and pinus plantations all over the Upper Nilgiris. It generally remains on the ground and on approach takes off abruptly to the horizontal boughs, the wing beat making loud "*burr burr"* sounds. They perch in full view and cock the tail slowly up and down, making low whistles. One adult bird netted at Avalanche on 24 January 2003 and photographed (wings 85, bill 13, Tarsus 21.5, Tail 66 and Weighed 24.5 gm). This was followed by sightings of six birds on 31 January 2003 and 10 birds on 1 February 2003. Stairmand (1971b) reported having seen it in small parties in the Ootacamund Botanical Garden on 16 January 1971.

NILGIRI PIPIT
Anthus nilghiriensis

Common resident, restricted to the undisturbed grasslands at higher elevations such as Bangitappal, Western Catchment, Lakkedi and others. It has been classified as Near Threatened owing to the gradual conversion of its grassland habitat into plantations (BirdLife International 2001). Found in good numbers at Avalanche and Mukurti National Park and sparingly in others (Islam and Rahmani 2004). When disturbed, it takes to the isolated *Rhododendron* or neighbouring *shola* trees, making "*chik chik*" calls. Nests usually well sheltered in the grassy slopes, with a clutch of up to two eggs, which are deep grey and splotched. Betham (1902) described a nest with ferns arranged at the entrance, which kept the nest shaded from sunlight. Uma Maheswari (pers. comm. 2003) observed nesting preference for larger tussock-forming grasses in the valleys. However, we recorded three nests in short tussocks, with little cover, over the ridges.

BLACK-HEADED CUCKOOSHRIKE
Coracina melanoptera

We did not come across this species during our study. Davison (1883) shot one bird in the Government Gardens at Ooty. Jameson (1971) reported it from Coonoor (1,800 m). There is no other record known to us.

SCARLET MINIVET
Pericrocotus flammeus

None recorded during this study. Common at lower elevations and slopes of Nilgiris, but only one vagrant male observed perched near the crown of a *shola* tree on 29 March 2003 near Avalanche Guest House (2100 m).

PIED FLYCATCHER-SHRIKE
Hemipus picatus

Common resident, seen both in *shola* and wattle plantations. Often observed frequenting isolated trees in the wattle plantation openings. Usually solitary, but small parties of three to four birds could also be seen in mixed hunting parties with White-eye *Zosterops palpebrosus*, Nilgiri Flycatcher (*Eumyias albicaudata*, Grey-headed Flycatcher (*Culicicapa ceylonensis*) and others.

GREY-HEADED BULBUL
Pycnonotus priocephalus

Rare in the Upper Nilgiris, one bird sighted at Taishola on 25 April 2002. Davison (1883) found one specimen around one mile from Coonoor. Jameson (1976a) also recorded it at Coonoor. Apparently common at lower elevations and the slopes of Nilgiris, our record from western Upper Nilgiris plateau should be thus treated as vagrant.

RED-WHISKERED BULBUL
Pycnonotus jocosus

Common resident, most conspicuous and noisy bulbul in the Nilgiris at all elevations. It nests from February to June and again in September after the southwest monsoon. Tame and confiding to a degree, in gardens and cultivated country, but equally common in open scrubby jungle, though it avoids heavy forest and the bare, treeless, grass downs of the plateau. Betts (1931) mentions its 'flycatching' during the evening. Four nests recorded near plantations and human habitations during April 2003. A pair was observed with two fledglings on 2 April 2003 in a wattle stand. Eleven birds ringed at Avalanche in January 2003.

RED-VENTED BULBUL
Pycnonotus cafer

Common resident except in the southwestern plateau near MNP and adjoining forests. Rarely gregarious, keeps to the disturbed, inhabited and open scrub with thickets of *Lantana* and others shrubs. Unlike *P. jocosus,* it is not widely distributed or common in the Upper Nilgiris except around the eastern and northern slopes. Betts (1931) described Davison's collection of a bird at Ooty (2250 m) as a straggler. He added that they are never seen along the western slope above 1,290 m.

YELLOW-BROWED BULBUL
Iole indica

Rare and perhaps subject to vertical movements, sighted only once at Taishola (2100 m) on 25 April 2002. Reported from places such as Kodanadu, Kotagiri and Naduvattam at lower elevations. This bird does not occur on the plateau of the Nilgiris, but is common below c. 2000 m (Davison 1883). Jameson (1976a) records it at Coonoor. It was thought to be restricted to evergreen forests, but in recent times, it has extended into deciduous forests due to loss of its evergreen forest habitat throughout the Western Ghats.

BLACK BULBUL
Hypsipetes leucocephalus

Common resident, seen throughout the Upper Nilgiris both in *shola* as well as plantations. Arboreal,

keeps to treetops, and seldom descends to undergrowth. *Shola* edges form its favourite haunt, where big flocks of up to 30 individuals were seen. Certain *shola* trees such as *Michelia nilgirica, Microtropis ramiflora, Pithecellobium subcoriaceum, Pittosporum tetraspermum, Symplocos pendula, Syzgium arnottianum, Eurya nitida, Ternstroemia japonica,* and *Turpina cochinchinensis* attract it in large numbers during fruiting. These bulbuls are very fond of visiting the flowers of Coral Tree *Erythrina* sp. (Betts 1931).

They form large flocks during the non-breeding season and though not migratory, leave the western plateau during the southwest monsoon (June to August). Purely a hill bird, rarely seen below 1,450 m except as a scarce wanderer in the cold weather (Betts 1931). Two birds ringed on 24 January 2003 at Avalanche.

COMMON IORA
Aegithina tiphia

Common at Kotagiri and Kodanadu, one bird seen on 25 April 2003 at the edge of Longwood Shola and another heard on 26 April 2003 at Kodanadu Reserve Forest. Never seen in Mukurti National Park and its immediate surroundings during this study.

BROWN SHRIKE
Lanius cristatus

Common winter visitor between November to early March; one bird observed on 3 February 2002 on a fruiting *Withania somnifera* tree, near Orchidarium at Avalanche (2,200 m). This bird was heard as well as sighted on several occasions in the same locality, but never seen in or near MNP. One bird ringed on 21 January 2003 at Avalanche. Jameson (1967) recorded it as late as mid April, but we have observed it even up to mid May at Avalanche, where it keeps to the edge vegetation and openings. Affects forest edges and clearings, secondary scrub jungle and grass-covered hillsides with scattered bushes and small trees in the dry deciduous and semi-evergreen biotope (Ali and Ripley 1987).

RUFOUS-BACKED SHRIKE
Lanius schach

Common resident all over the Upper Nilgiris, affects less forested, open and cultivated areas (often near tea and other plantations) and is less numerous around the lower elevations and plains. Breeding recorded between February to June (Betham 1902), nests in low thorny bushes in open and accessible areas. Devadhas (1964) recorded it mimicking Grey Junglefowl.

BLUE-HEADED ROCK-THRUSH
Monticola cinclorhynchus

Uncommon winter visitor, a single male sighted in a wattle plantation at Avalanche Reserve Forest on 31 December 2002. Another bird sighted foraging in wattle on 15 March 2003, followed by a sighting on 30 March 2003. Stairmand (1971b) sighted a female on 16 January at Ooty Botanical Garden followed by a male on 17 January 1971. Betts (1930) recorded its arrival in the Nilgiris in the last week of November, while Khan (1977) reported its occurrence in the Nilgiris from the first week of November to April end.

MALABAR WHISTLING-THRUSH
Myiophonus horsfieldii

Rare resident and probably subject to altitudinal movements, ventures into the upper Nilgiri plateau from neighbouring slopes. One individual heard near a small stream at Taishola on 25 April 2002. Another bird sighted near a waterfall near Taishola Tea Estate (2,000 m). According to Davison (1883) they do not occur on the plateau of the Nilgiris, while Jameson (1969) noted never having heard or seen it at Coonoor and thought that it was perhaps too high for them. Nair (1995) recorded it near Governor Shola (2000 m) about 7 km from Ooty town.

PIED THRUSH
Zoothera wardii

Not recorded during this study. Winter visitor, mainly at the lower elevations. Khan (1980a) found that they spend a long period in the Nilgiris, are highly territorial and always seen in pairs.

ORANGE-HEADED THRUSH
Zoothera citrina

Uncommon, perhaps subject to altitudinal movements, recorded in Upper Nilgiris only during winter. One bird *Z. c. cyanotus* seen in a *Pinus* patch at Avalanche on 22 January 2003. Very shy, it flew high up over a tall tree and soon disappeared. This was followed by sighting of a single bird at Avalanche on 29 January 2003, and another one on 31 January 2003, again at Avalanche.

SCALY THRUSH
Zoothera dauma

Common resident, usually solitary but sometimes seen in pairs. Usually dashes out in front of vehicles passing through the *shola* or plantation. A shy and retiring bird, rarely gives a satisfactory view, except when flushed from *shola* undergrowth. It is found only on the higher ranges of the Nilgiris (Davison 1883). Betham (1902) described a nest located up at 20 m from the ground, in a *shola* with little undergrowth. The nest is a beautiful, compact structure composed of moss and lined with blackish rootlets. Two birds were ringed at Avalanche, one each on 21 and 27 January 2003.

EURASIAN BLACKBIRD
Turdus merula

Common breeding resident in the Upper Nilgiris, less abundant at lower elevations. Generally inhabits *shola* as well as plantations with shaded moist undergrowth. Ripley (1950) collected both *T. m. nigropileus* and *T. m. simillimus* from the Nilgiris, the former distributed in the lower parts from north of Ooty, and the latter in the higher slopes to the south of the town. He restricted the locality of *nigropileus* to 'Kalahatti (northern Nilgiris plateau)' and of *simillimus* to Avalanche (higher southern Nilgiris plateau).

Seven nests with an average clutch of three recorded at different locations during this study. Prefers open country, especially small trees along the banks of *nullahs* for nesting. One of the seven nests was found in the fork of a roadside tree at 7 m from the ground on 22 May 2003 at Taishola. A pair seen feeding their two fledglings in a *Pinus* plantation near Devar Betta, on 4 July 2002. Twelve *simillimus* ringed between 14 January 2003 and 14 February 2003 at Avalanche.

WHITE-BELLIED SHORTWING
Brachypteryx major

Common resident, classified as Vulnerable due to its small, severely fragmented declining range, owing to destruction and degradation of its evergreen and semi-evergreen forest habitat (BirdLife International 2001). *B. m. major* recorded in the Nilgiri hills and other localities north of the Palghat Gap, affects dense wooded undergrowth, and keeps singly or in pairs. Up to 8 birds (usually single) could be seen in a 200-300 m vehicular drive immediately after sunset at Avalanche.

Strongly territorial, has several calls with slight variation in number of notes/patterns, loud chattering and faint whistles often heard in the evening. We ringed thirteen birds between 14 January 2003 and 14 February 2003 at Avalanche. Some of the colour ringed birds were often seen very close to the netting sites till January 2004, indicating its parochial habits. Breeds between April and August through southwest monsoon and has a clutch of two. Betham (1902) recorded three nests in May, two containing two chicks and a third two eggs. Of the eight nests (cup shaped) recorded by us at Avalanche, seven were

placed in the road banks and only one in *shola*. Senthilmurugan *et al.* (2005) recorded nest reuse in the Shortwing in the Upper Nilgiris plateau.

INDIAN BLUE ROBIN
Luscinia brunnea

Common winter visitor between the first week of October and the second week of May. Usually seen foraging around shaded *nullahs* and undergrowth of *shola* and plantations, tea plantations and partially disturbed forests. Betts (1930) reported its arrival in the Nilgiris on 23 October. Eight birds ringed between 14 January and 14 February 2003 at Avalanche. A dead bird found on the road in a wattle plantation on 23 December 2002, had a tick (approx. 3 mm) on the lateral side of the neck.

Apparently their sex ratio is highly biased towards males in the winter grounds in the Nilgiris. Khan (1980b) estimated one female to every 25 males seen in the Nilgiris, netted seven birds (all males) at Coonoor and reports sighting over a hundred males against two females in the Nilgiris and 70 males against one female at Kottoor, 60 km from Trivandrum in southern Kerala. Of the 15 birds ringed during this study at Avalanche, 14 were males. However, it is not clear if it is a case of biased sex ratio, or of males and females wintering at different locations or altitudes (as in Red-breasted Flycatcher *Ficedula parva*).

ORIENTAL MAGPIE-ROBIN
Copsychus saularis

Common resident, sighted along roads, forest edges, openings, degraded forest, tea gardens and cultivation. Usually seen singly, but occasionally in pairs almost all over the Upper Nilgiris.

PIED BUSHCHAT
Saxicola caprata

Common breeding resident, affects a variety of habitats generally near open country and in the neighbourhood of houses. Strongly territorial, usually seen in pairs, and breeds from March to July. Five nests recorded in 2001 and several during 2002 and 2003 in different localities. Nest is usually well sheltered and placed in earthen banks close to the ground, lined with feathers, roots, down or other soft material. Has usually a clutch of four greenish-white eggs, speckled with brown. On 16 May 2003, a pair was seen feeding insects to its two fledglings perched on a *Lantana* thicket along the road at Taishola.

NILGIRI LAUGHINGTHRUSH
Garrulax cachinnans

Common resident, it is the only bird primarily endemic to the Nilgiri hills, usually seen above 1,600 m. It is also the only Western Ghats bird classified as Endangered owing to its small range, and loss of habitat, primarily through conversion to plantation, agriculture and settlement (BirdLife International 2001). It is found in all the eight IBAs of Upper Nilgiris (Islam and Rahmani 2004). It has a distinct preference for *shola* edges and feeds on a variety of insects, fruits, and flowers. Betham (1902) described the bird as "a merry joker always on the laugh". "*Pee ko ko ko*" calls and the "*ko ko ko ko ko*" calls of the Nilgiri Laughingthrush are quite unmistakable and are among the most characteristic sounds of the Nilgiris (Wynter-Blyth 1949). Islam (1994) has described the breeding habits of this Laughingthrush.

Nests recorded between February and July with an average clutch of two bluish, spotted eggs. The Nilgiri Laughingthrush is fond of thick jungle, but nests in more or less open forests near the edges, in short trees with thick foliage. Fifty eight nests were recorded in an ecological study by the first author. Sixteen birds were ringed between 14 January and 14 February 2003 at Avalanche during this study.

SPOTTED BABBLER
Pellorneum ruficeps

Rare resident, absent around much of the upper Plateau, two birds seen foraging on the forest floor in Kodanadu (1,800 m) on 25 April 2003. Apparently they are common around the northern slopes and lower areas of the Nilgiris. Previously known up to *c*.1350 m throughout its distribution range (Ali and Ripley 1987). Stairmand (1946) reported it as seen around Glenburn, which is relatively lower and has warmer climate than upper Nilgiris. Pittie (1989) reported it from Wellington (1,850 m).

INDIAN SCIMITAR-BABBLER
Pomatorhinus horsfieldii

Common resident, seen in plantations and *shola,* usually singly or in small parties of two to four birds and occasionally in mixed hunting parties with the Nilgiri Laughingthrush or the Brown-cheeked Fulvetta. Nest recorded with two eggs in a grass tussock (*Chrysopogon zeylanicus*) on 26 April 2002 at Avalanche, and another nest recorded containing three eggs, placed in a grass tussock, at a roadside on 4 April 2003 at Avalanche. Invariably follow the same route every day to its foraging grounds and is heard duetting with the White-cheeked Barbet. Baker (1922b) reported a partial albino individual in the Nilgiris.

TAWNY-BELLIED BABBLER
Dumetia hyperythra albogularis

Davison (1883) shot it at Naduvattam at 1800 m. We are not aware of any other record from the Upper Nilgiris. We did not come across this species during this study.

LARGE GREY BABBLER
Turdoides malcolmi

Not seen in the study area. Davison (1883) notes "in 1869 or 1870 (not certain), a flock of about twenty individuals suddenly made an appearance at Ootacamund, taking their abode in the Government Public Garden, from whence they strolled among the well wooded gardens in the vicinity for about a radius of a mile and a half". Davison left Ootacamund in 1872, and till then they seemed to be just the same number; when he returned 10 years afterwards the flock was still there and frequented the same place, but had been reduced to five individuals, of which he shot one. They never seemed to have bred and gradually diminished in number.

JUNGLE BABBLER
Turdoides striatus

Common breeding resident, avoids thick jungle and remains near scrubby uncultivated patches or tea plantations in flocks of up to 10, near or away from human habitation. Never seen at Avalanche, Upper Bhavani and MNP but seen with chicks at Taishola in May 2003.

QUAKER TIT-BABBLER
Alcippe poioicephala

Common breeding resident, often sighted in small parties of up to ten birds along the *shola* edge, with a preference for fruiting *Rubus* thickets. It ascends the hills to around 1900 m and is exceedingly common (Davison 1883). We found it common even close to the Dodabetta peak (2600 m). Forms mixed hunting flocks with Pied Flycatcher Shrike, Velvet-fronted Nuthatch, White-eye and other forest birds. One bird sighted seated in a newly constructed nest containing no egg on 3 April 2003 at Avalanche. Nine birds ringed between 14 January and 14 February 2003 at Avalanche.

FRANKLIN'S PRINIA
Prinia hodgsonii

Unlike *P. socialis* and *P. inornata* it is recorded as vagrant to the Upper Nilgiris; only two birds sighted near Kolari Betta on 9 June 2002.

ASHY PRINIA
Prinia socialis

Common resident, affects scrub, cultivation and degraded forests near roads or close to habitations. Seen up to Dodabetta Peak (2667 m), common around Red Hill Tea Estate around openings with scattered young wattle trees but never seen in MNP. Usually single, making loud characteristic calls, but loose parties of up to four are also seen.

PLAIN PRINIA
Prinia inornata

Common resident, one or two birds generally seen in every visit in degraded vegetation, weed thickets, grasslands dotted with shrub or stunted trees and fallow lands close to or away from human habitations.

BLYTH'S REED-WARBLER
Acrocephalus dumetorum

Common winter visitor recorded throughout the study area, from October to April. Affects weed infested areas, shrubs, thickets bordering *shola* and plantations, gardens, urban compounds and tea estates. A low "*chuck*" uttered intermittently helps to detect it, otherwise it seldom affords a glimpse of itself. Khan (1977) reports it as common between the first week of October and end of May. Five birds ringed between 14 January and 14 February 2003 at Avalanche. One bird ringed on 20 January 2003, returned in November 2003 exactly to the same spot (Orchidarium at Avalanche), where it was netted and could be seen nearly the whole day. Thus it shows high site fidelity to its wintering quarters in the Nilgiris.

COMMON TAILORBIRD
Orthotomus sutorius

Never seen by us in the Upper Nilgiris plateau from December 2000 to January 2004. This bird does not ascend to the Upper Nilgiris plateau, but occurs from about the level of Coonoor downward (Davison 1883), known up to 1,800 m (Kazmierczak 2000). Pittie (1989) recorded it in June near Coonoor. Dewar (1904) sighted several in breeding plumage at Coonoor (1,800 m).

TICKELL'S WARBLER
Phylloscopus affinis

Common winter visitor, seen from September till mid May, throughout the Upper Nilgiris. Affects both *shola* as well as plantations with a preference for short and marginal forest vegetation. Seen in loose parties of up to 15 birds, forming mixed hunting parties with other wintering warblers and resident species such as Great Tit, White-eye and Quaker Tit-Babbler. Three birds were ringed, one each on 27, 28 January and 13 February 2003 at Avalanche during this study.

GREENISH LEAF-WARBLER
Phylloscopus trochiloides

Common winter visitor, seen throughout the Nilgiris at all elevations, between October and April. Less seen than heard, affects partially disturbed, open habitats and *shola* edges. Recorded up to Dodabetta (2634 m) in the Nilgiris. Arrives as early as 18 September (specimen by Davison, 1883) and stays as late as April. Jameson (1969) recorded it up to 5 April. Three birds ringed at Avalanche, two on 24 January and one on 30 January 2003.

LARGE-BILLED LEAF-WARBLER
Phylloscopus magnirostris

Common winter visitor but not as common as *P. affinis* and *P. trochiloides,* affects *shola* openings as well as plantations. Six birds ringed between 14 January and 14 February 2003 at Avalanche.

TYTLER'S LEAF-WARBLER
Phylloscopus tytleri

We did not come across this bird during our study. However, Davison (1883) obtained

two specimens, including one (male) at Ooty on 10 March 1881, and another at Ooty on 22 January 1882.

ORPHEAN WARBLER
Sylvia hortensis
Common about Coonoor, never seen above 1800m.

ASIAN BROWN FLYCATCHER
Muscicapa dauurica

Rare winter visitor to the study area, once sighted perched on a wattle tree in front of our base camp at Avalanche on 2 October 2002. The bird kept sallying for nearly an hour between 1230 hrs to 1330 hrs in the same area. Reported common at lower elevations**,** where it is usually seen between the first week of November and the last week of April (Khan 1977).

RUSTY-TAILED FLYCATCHER
Muscicapa ruficauda

Not seen during this study. However, Davison (1883) recorded it as sparingly distributed on the Nilgiris plateau and slopes during winter.

BROWN-BREASTED FLYCATCHER
Muscicapa muttui

Rare winter visitor to the study area. One bird sighted near a wattle patch near Avalanche reservoir on 5 October 2002. Another one perched on a low bush at the edge of an unmetalled road on 23 November 2002 in Bangitappal valley.

KASHMIR FLYCATCHER
Ficedula subrubra

Winter visitor, sparsely distributed in the Upper Nilgiris and classified as Vulnerable owing to its small, declining population and breeding range, which is also severely fragmented, due to destruction of temperate and mixed deciduous forest habitat (BirdLife International 2001). Three birds sighted between 9 and 27 March 2001 at Avalanche and 16 birds recorded during intensive survey between 8 October 2001 and 4 April 2002.

Keeps in pairs during winter, but individuals feed separately during the day. Prefers wattle openings along transmission lines and roosts in pairs on the same wattle tree throughout the winter. Pairs maintain winter territories, where they are seen together throughout winter. Apparently it shows site fidelity, as three pairs were recorded coming to the exact same small plantation patches (winter territory) during 2001 to 2003 winter (see Zarri and Rahmani 2004 for details). A male ringed on 24 January and a female on 30 January 2003 at Avalanche.

BLACK-AND-ORANGE FLYCATCHER
Ficedula nigrorufa

Common resident typical of the *shola,* classified as Near Threatened because of habitat loss (BirdLife International 2001). Generally seen busy sallying. The bird is anything but silent, and its peculiar call '*chir..chir.. rrr'* is often heard near *shola* undergrowth as well as plantations. Repeatedly visits small water pools, rivulet or a dripping rock for bathing and drinking. Khan (1979) studied its ecology in the Nilgiris. We ringed 14 birds between 14 January and 14 February 2003 at Avalanche.

Ten nests with an average clutch of two were recorded in *shola* at different locations in the study area between February and May 2002 and 2003. Nesting recorded from April to July, the nest is globular, untidy, lined with the blades of a sedge *Carex baccans*, with an entrance more or less at the top. Nests are generally placed on a dead stump about one meter from the ground with little cover. Betham (1902) described the nest as quite unorthodox, made from a lot of old leaves used as a foundation on which the nest proper is built. Pittie (1989) sighted a fledgling in mid-June at Sim's Park near Coonoor.

VERDITER FLYCATCHER
Eumyias thalassina

Uncommon winter visitor to the study area, unlike the lower elevation and the Nilgiri slopes, where it is very common. Two birds sighted on 26 January 2001, three on 28 January 2001 on a *Rhododendron* tree and again one bird on 18 September 2001 at Avalanche. None recorded during 2002 and 2003. Davison (1883) noted "Jerdon gives it Nilgiris, but I myself have never met with it in southern India; it must be, I think, of extremely rare occurrence".

NILGIRI FLYCATCHER
Eumyias albicaudata

Common resident, affects *shola* and plantations, and is classified as Near Threatened (BirdLife International 2001). Highly territorial and vocal during the nesting season (March through June). Sixteen cup-shaped nests, generally placed in earthen road banks, walls and holes in trees, with clutches of two or three pinkish-white eggs, were recorded during this study at different locations. One male ringed on 21 January 2003 at Avalanche. Dewar (1904) recorded it feeding on fruits on several occasions.

WHITE-BELLIED BLUE-FLYCATCHER
Cyornis pallipes

Rare resident to the Upper Nilgiris plateau, except around Kotagiri, Kodanadu and eastern slopes. Never seen around the western Upper Plateau. We sighted a pair foraging at Kodanadu Reserve Forest (1900 m) on 26 April 2003.

TICKELL'S BLUE-FLYCATCHER
Cyornis tickelliae

Not seen during this study. Seldom ascends to the Upper Nilgiris plateau but is very common around slopes and plains of the Nilgiris. Davison (1883) obtained one specimen (male) near Ooty on 10 Feb. 1881. Jameson (1976) reported sighting this flycatcher at Coonoor. Kumar (1996) sighted two males at two different locations in Ooty. We suspect they have seasonal altitudinal movements but need to confirm in future.

GREY-HEADED FLYCATCHER
Culicicapa ceylonensis

Common resident, more closely associated with *shola* than with plantations. They are common about the woods around Coonoor (Dewar 1904). Often form mixed hunting parties with Brown-cheeked Fulvetta, Velvet-fronted Nuthatch and Tickell's Leaf Warbler. Five birds ringed between 14 January and 14 February 2003 at Avalanche during this study. Several nests recorded placed between one to two meters from ground level, mainly in road banks or tree trunks. Two active nests recorded within one meter from the Nilgiri Flycatcher and Black-and-Orange Flycatcher nests. Betham (1902) described an unusual nest located on a tree trunk at 10 m from the ground. Inglis (1949) reported a nest unusually fastened to the trunk of a large rubber tree *Ficus elastica* at 6.5 m.

ASIAN PARADISE-FLYCATCHER
Terpsiphone paradisi

Common in the Upper Nilgiris, affects less wooded, open and marginal forests. Subject to altitudinal movements, ascends to the Upper Nilgiris during October to March. Never seen during the monsoon. An adult male sighted pouncing on butterflies on ground at Avalanche on 7 January 2003. Solitary birds could often be seen in wattle or *Pinus* plantations. Jameson (1969) reported it as uncommon at Coonoor.

WHITE-THROATED FANTAIL-FLYCATCHER
Rhipidura albicollis

Resident and common on the Nilgiris, affects shrub thickets and degraded plantations, near Ooty, Kotagiri, Coonoor, Bembatti, Bikkatti and similar areas. The birds observed in the Upper Nilgiris have

black breast with whitish spots unlike the grey breast described in Ali and Ripley (1987) and Grimmett *et al*. (1998).

WHITE-BROWED FANTAIL-FLYCATCHER
Rhipidura aureola

Common resident, more abundant at lower elevation and slopes, absent in western Upper Nilgiris in uninhabited places such as MNP and surroundings. Dewar (1904) reported it as fairly common about Coonoor.

GREAT TIT *Parus major*

Common resident throughout the Upper Nilgiris, frequents a variety of habitats forming mixed hunting parties with Oriental White-eye, Tickell's Leaf Warbler and Brown-faced Fulvetta. Fairly adapted to the presence of man, several nests were recorded in different localities between March and June.

BLACK-LORED YELLOW TIT
Parus xanthogenys

Uncommon around the western Upper Nilgiris, and perhaps subject to vertical movements. At Taishola one bird sighted foraging at 2100 m on 22 June 2002, followed by four birds sighted on 15 September 2002 and three on 16 May 2003. Five birds sighted foraging atop a tall tree on 5 September 2002, at Avalanche. The birds chased one another, calling noisily, and soon disappeared in the thick cover. Jameson (1969) sighted it in the Nilgiris during July. Stairmand (1972) described it as common near Glenburn, which is at much lower elevation and warmer than the study area.

VELVET-FRONTED NUTHATCH
Sitta frontalis

Common resident, abundant in *shola* patches all over the Upper Nilgiris. Generally recognized by its noisy metallic calls. Probes and gleans its prey from moss laden trees. Very restless, remains in small parties occasionally with Brown-cheeked Fulvetta, Great Tit and other species.

THICK-BILLED FLOWERPECKER
Dicaeum agile

Common resident and the only flowerpecker recorded during this study. Utters a loud, noisy call during flight, and feeds on nectar and berries in *shola* close to the tree crown, rarely seen in plantations. Occasionally forms mixed hunting parties with Small Sunbird and other insectivorus species. Found up to the highest peak in the Nilgiris.

SMALL SUNBIRD
Nectarinia minima

Common resident, subject to altitudinal movement, apparently very common during southwest monsoon (April to mid November). Abundant and generally seen in small mixed hunting parties with other forest species.

PURPLE SUNBIRD
Nectarinia asiatica

Rare in the Upper Nilgiris, never recorded in MNP and the immediate surroundings. Two sightings include a bird seen c. 6 km from Emerald towards Ooty in February 2002 and another bird near Kundha Bridge on February 2004. Davison (1883) records its occurrence on the Nilgiris and slopes, while Jameson (1969) recorded one bird in May at Coonoor. It seems to be a local migrant to the Upper Nilgiris during the winter.

ORIENTAL WHITE-EYE
Zosterops palpebrosus

Common resident in the Upper Nilgiris but diminishes around the slopes. Often forms small mixed hunting parties, seldom quiet, gives away its presence by frequently uttered "*chee chee*". Nests between March and May, its nest is usually a small cup comprising soft moss, lichens and spider webs,

generally in *shola* undergrowth. Flocks of up to 20 birds are seen during the non-breeding season. Twelve nests with an average clutch of two recorded during 2002 and 2003 and thirteen birds ringed between 20 January 2003 and 14 February 2003 at Avalanche. Hatchwell (1904) mistook *Z. palpebrosus* for *Z. ceylonensis*, noting "I sighted several birds and shot one Ceylon White-eye *Zosterops ceylonensis* at Coonoor in the Nilgiris"

COMMON ROSEFINCH
Carpodacus erythrinus

Common winter visitor between November and April, affects open areas solitarily or in small flocks of 10-12. Perhaps has a sex ratio biased toward males, generally one or two males seen in a flock of 7-8 females in plantations, *shola* and cultivation. Three birds ringed; two on 28 January 2003 and one on 30 January 2003 at Avalanche.

RED MUNIA
Amandava amandava

Uncommon resident, seen on a few occasions near Kundha Bridge at c. 2000 m. Sightings include four birds in flight at Kundha Bridge 2,000 m near *Lantana* thickets on 27 November 2003, one male and a female on 12 September 2003, followed by two birds on 25 September. Davison (1883) described it as common on the Nilgiris and the slopes near the cultivation, while Stairmand (1972) sighted a few parties between 1,935-2,420 m in the Nilgiris near Ootacamund. It could be present in Ootacamund, and perhaps Coonoor and Kotagiri too, though we did not see them in these localities.

SPOTTED MUNIA
Lonchura punctulata

Common breeding resident, subject to local movements, becomes more common during monsoon and nests between June and November, when the majority of other resident birds have completed nesting. Two nests sighted in July 2002, first placed in an ornamental Rose *Rosa* sp. bush in front of Avalanche Guest House at 2.5 m and another in a gorse *Ulex europaeus* bush. It disappears from the Upper Nilgiris after the nesting is over. Ganguli (1964) sighted three breeding pairs in June. Kumar (1996) recorded a bird carrying nest material on 10 August. Pittie (1989) sighted the birds carrying nesting material at Ooty Botanical Garden in June 1989. Nair (1995) sighted a pair building its nest in a shrub in September.

HOUSE SPARROW
Passer domesticus

Common resident, still plentiful near human habitations, but locals have reported decline in many areas. Its decline has been witnessed widely, and the Nilgiris are no exception. Two birds ringed on 25 January 2003.

COMMON MYNA
Acridotheres tristis

Not seen in the western Upper Nilgiris. Does not ascend the hills in the Nilgiris (Davison 1883). Common about Coonoor (Dewar 1904). Davidar (1991) described the bird fishing in Sigur Nullah (lower elevation), a jungle stream that courses through the Sigur Reserve Forest.

ROSY STARLING
Sturnus roseus

Rare winter visitor to the Upper Nilgiris, a single sub-adult sighted perched on a low wattle branch at Avalanche near bridge on two consecutive days in January 2003. Common around lower elevation and the Nilgiri plains.

JUNGLE MYNA
Acridotheres fuscus

Common resident, seen all over the Upper Nilgiris, usually in small flocks. Nests usually in gaps

between roof tiles, under the tin ceiling in houses, a hole in a tree, under a bridge, in fact almost everywhere. Once four birds were seen in a fierce pair-wise fight (for unknown reasons) on the lawn of our field station at Avalanche. Both pairs were beak in beak and talons in talons, as several dozen other mynas and other birds watched them in curiosity from the fence posts, till a domestic cat dashed in and ran away with one bird. It becomes uncommon during peak southwest monsoon, when it perhaps moves eastward to avoid the harsh cold and strong winds. Two birds ringed on 7 February 2003 at Avalanche.

EURASIAN GOLDEN ORIOLE
Oriolus oriolus

Uncommon winter visitor in the Upper Nilgiris, its slopes and plains. Four records during our three years study: one male in a tea plantation near Bikkatti village at 2000 m (9 January 2002); another male bird at Bangitappal at 2200 m (12 December 2002); one bird in flight at Bangitappal (23 December 2002); one male in a wattle plantation in Avalanche at 2100 m (5 February 2003). Jameson (1967) recorded that they barely reach Coonoor (1,800 m), thus our records are quite significant.

BLACK-HEADED ORIOLE
Oriolus xanthornus

None recorded during the present study. Davison (1883) described it as *O. melanocephalus,* and said, "This oriole ascends the hills somewhat higher and I have on more than one occasion seen and shot it near Ooty".

ASHY DRONGO
Dicrurus leucophaeus

Common winter visitor and widespread in the Upper Nilgiris. Records from Avalanche include: two individuals sighted on separate dates in March 2002, two in December 2002, one in February 2003 and two in December 2003. One bird observed mimicking Black Bulbul at Ooty Botanical Garden on 12 December 2003. There are more records from other sites in the western Upper Nilgiris. Davison (1883) recorded "I have not infrequently procured it in the neighbourhood of Nilgiris". However, Stairmand (1971b) reported it as well spread and common in Ooty Botanical Garden.

BRONZED DRONGO
Dicrurus aeneus

We did not come across this species anywhere in our study area. Davison (1883) writes that it ascends to the hills to a much greater height and he frequently saw and shot it in the vicinity of Ooty.

GREATER RACKET-TAILED DRONGO
Dicrurus paradiseus

None recorded during this study. The only single record of from Upper Nilgiris was by Davison (1883), who shot a specimen on the Kotagiri road near Ooty. No other record known to us.

ASHY WOODSWALLOW
Artamus fuscus

Rare resident, with only a single record in four years of study. We saw a bird on 13 January 2002 on a short tree near Kotogiri (1,900 m). Stonor (1946) also recorded a pair, perched on a dead *Eucalyptus* tree at Kotagiri 2,032 m and presumed that they may have been breeding, since they were very pugnacious and chased away all the crows and kites that came near. Stonor (1946) as well as our records from Kotagiri are significant, as it has not been recorded above 1,600 m.

HOUSE CROW *Corvus splendens*

Fairly common resident, indefatigable commensal of man, uncommon to the west of Avalanche except near habitations. Almost a pest around Kotagiri Longwood Shola. Davison (1883) reported "it does not ascend the hills, and even in

some parts of the low country at the foot of the hills it does not occur, or is rare, for instance from Gudalur to Nellacotta, though on reaching Nellacotta it suddenly appeared, and it swarms the low country wherever there are human habitations." This indicated tremendous population growth in House Cross with the opening up of these hills.

JUNGLE CROW *Corvus macrorhynchos*

Very common resident throughout the study area, two nests recorded on 22 April 2002 atop a 15 m *Pinus* tree at Avalanche and another in a wattle stand at Emerald. Flocks of up to 50 birds could be observed near roosts. Observed mobbing a Brahminy Kite during nesting, a flock of four chased away a Common Buzzard on 16 April 2002. Also observed probing dung of feral buffalo to dig out insects sometimes seen in large flocks of up to 50 birds during the winter.

Other records

S. Sounderrajan (pers. comm. 2003) stated having photographed a Black-necked Stork *Ephippiorhynchus asiaticus* near Cairnhill in 1990, Ferruginous Pochard *Aythya nyroca* at Ooty Lake in 1995 and Black-winged Stilt *Himantopus himantopus*

at Ooty Lake in 1995.

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APPENDIX 1

Gazetteer of localities mentioned in the text

Locality	Coordinates	Altitude (m)
Avalanche	11°.29'884 N 76°.59'163 E	2,100
Bangitappal	11°.25'880 N 76°.51'765 E	2,200
Bembatti	11°.33'358 N 76°.65'445 E	2,000
Bikkatti	11°.26'948 N 76°.62'239 E	2,050
Bison Swamp	11°.21'360 N 76°.53'020 E	2,300
Cairn Hill	11°.38'717 N 76°.67'808 E	2,100
Coonoor	11°.33'715 N 76°.79'918 E	1,800
Devar Betta	11°.25'912 N 76°.57'343 E	2,300
Dodabetta	11°.40'156 N 76°.73'738 E	2,634
Emerald	11°.31'483 N 76°.62'595 E	1,950
Governor Shola	11°.39'221 N 76°.64'279 E	2,100
Kolari Betta	11°.28'354 N 76°.56'518 E	2,550
Ittalar	11°.34'102 N 76°.63'707 E	2,130
Kotagiri	11°.43'287 N 76°.87'476 E	1,850
Kodanadu	11°.51'222 N 76°.40'221 E	1,700
Kundha	Not available	1,900
Lakkedi	11°.26'789 N 76°.55'497 E	2,150
Mukurti Peak	11°.37'005 N 76°.51'893 E	2,500
Naduvattam	11°.48'641 N 76°.54'308 E	1,750
Nadukani	11°.22'579 N 76°.46'710 E	2,150
Parson's Valley	Not available	2,100
Sispara	11°.20'059 N 76°.44'018 E	2,000
Snowdon	11°.43'115 N 76°.72'084 E	2,200
Taishola Tea Estate	11°.21'223 N 76°.61'246 E	2,000
Udhagamandalam (Ooty)	11°.40'344 N 76°.69'734 E	2,000
Upper Bhavani	11°.22'256 N 76°.53'086 E	2,200
Western Catchment II	11°.31'833 N 76°.54'483 E	2,200
Western Catchment III	11°.33'407 N 76°.55'381 E	2,300

Localities nomenclature follows Survey of India Toposheets, except for Ooty (replacing Udhagamandalam and Ootacamund).

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