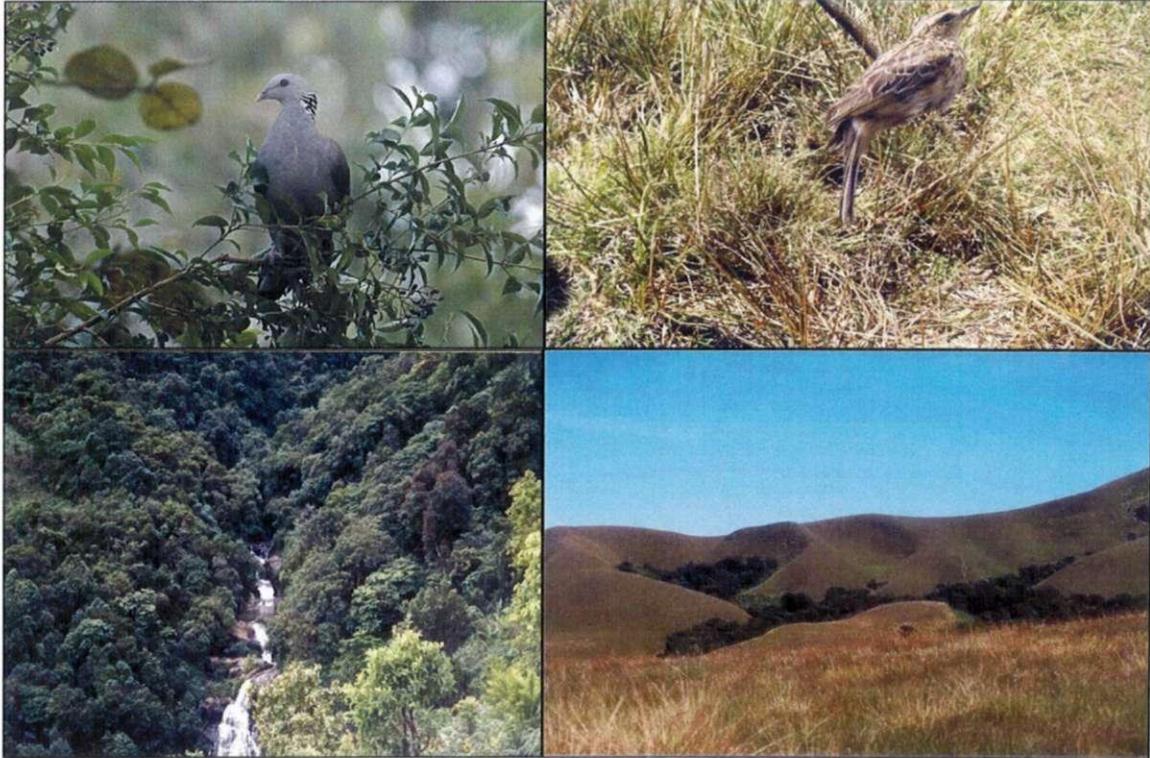


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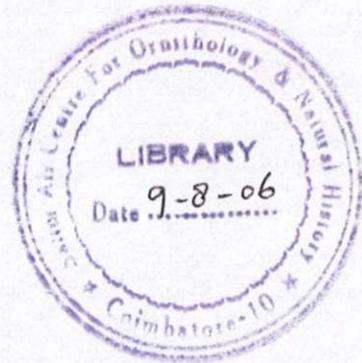


**SÁLIM ALI CENTRE FOR ORNITHOLOGY  
AND NATURAL HISTORY, COIMBATORE**

**STATUS AND ECOLOGY OF THE  
NILGIRI WOOD PIGEON & NILGIRI PIPIT IN THE  
WESTERN GHATS**

*(Project funded by the Ministry of Environment & Forests,  
Government of India)*

**FINAL REPORT**



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**2005**

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# EXECUTIVE SUMMARY

## INTRODUCTION

Avifauna of the Indian subcontinent is very rich with 1295 species, which is about 13% of the birds of the world. About 12 % of the birds of the world face extinction because of habitat loss. At the global level, 664 (c.25%) species in Asia are of conservation concern (Bird Life International 2001) of which 20% are in India including 75 globally threatened, two data deficient, one conservation dependent and 52 near threatened. Species which have restricted range distribution have more chances of getting endangered or extinct. Such endemics are mostly forest dwellers. Western Ghats is one of the hotspots of biodiversity and Endemic Bird Areas of the world. Sixteen bird species are endemic out of the 508 species occurring in this region and four of these 16 are globally threatened including one endangered (Nilgiri Laughingthrush *Garrulax cachinnans*), three vulnerable (Nilgiri Wood Pigeon *Columba elphistonii*, White-bellied Shortwing *Brachypterix major*, Broad-tailed Grassbird *Schoenicola platyura*) and four near-threatened Nilgiri Pipit *Anthus nilghiriensis*, Grey-breasted Laughingthrush *Garrulax jerdoni*, Black-and-Orange Flycatcher *Ficedula nigrorufa*, Nilgiri Flycatcher *Eumyias albicaudata*).

The ever increasing pressures on the tropical forests from various sources, mainly the human population and development processes have adversely affected the natural habitats and many endemics. Conservation of the species requires not only knowledge on their status, but the ecological requirements for feeding, breeding and other vital activities. However, ecological studies on most of the endemics have not been conducted. Hence, a study on two of these rare endemics, namely the Nilgiri Wood Pigeon and Nilgiri Pipit was taken up with the following objectives:

1. Determine the status of the rare endemic birds of the Western Ghats, namely the Nilgiri Wood Pigeon and Nilgiri Pipit.
2. Identify the key factors affecting the survival of these species and suggest management options for their conservation.

## STUDY AREA

Studies on the Nilgiri Wood Pigeon was conducted in the southern part of the Western Ghats, namely Upper Palni hills and, seasonally in Silent Valley National Park in Nilgiris with intensive studies at Kukkal in the Kodaikanal forest division. Nilgiri Pipit was studied in the Upper Nilgiris with intensive observations in Upper Bhavani and Bangithapal (Mukurthi National Park).

## METHODS

1. Population: Unlimited - distance point counts in selected areas in different months for general bird abundance and the specific species. Population was monitored from April 2002 to April 2004.



## *Status and Ecology of Nilgiri Wood Pigeon & Nilgiri Pipit*



7. The maximum number of birds (51) was recorded in May 2004 and minimum (8) in September 2002 in the intensive study area.
8. During the breeding season 32 breeding pairs were observed in 40 ha of the intensive study area.
9. Nilgiri Wood Pigeon was very rarely recorded in the plantations, only on the edges of the shola.

### **FORAGING ECOLOGY**

1. Plant community and phenology: 97 species of plants including 63 species of trees, 19 shrubs, and 15 stragglers were recorded.
2. Totally 23 species of trees were with fruits during the study period; 85 individuals of 6 species in the peak fruiting period (August).
3. The number of fruiting species and fruit abundance correlated significantly with rainfall in the intensive study area ( $R=0.012$ ;  $p=0.95$ ).
4. In total 1520 foraging observations were made.
5. It fed on the fruits of 34 species of 26 families of plants, four species of flower and leaf buds and, ground invertebrates (3).
6. Nine species of plants were used more often, 47% of observation in all the seasons; 12 species were used very rarely. Major food plants were *Olea glandulifera*, *Trichillia connaroides*, *Viburnum cylindricum*, *Syzygium jambolanum*, *Daphniphyllum nelgherrense*, *Casearia zeylanica*, *Ilex wightiana*, *Bellschmiedia wightii*, *Syzygium tamlnadensis*.
7. Fruits of the Lauraceae family were the most preferred.
8. In the 134 faecal samples collected during the study period, 13 species of seeds were identified.
9. Seventy percent of the diet of the Nilgiri Wood Pigeon was fruits, mainly black.
10. Nilgiri Wood Pigeon fed on ground invertebrates during monsoon. Significant correlation ( $r=0.65$ ,  $p<0.01$ ) existed between the abundance of ground invertebrates and feeding frequency.
11. The fruit abundance and the frequency of the sightings of the Nilgiri Wood Pigeon correlated significantly ( $r=0.49$ ,  $p<0.01$ ).



#### 4. Nesting cycle

- a) Clutch size was only one
- b) Both the parents took part in nest-building and feeding chicks.
- c) Incubation period  $15.89 \pm 2.3$ , nestling period 15-19 days ( $16.89 \pm 4.4$ ; n = 12).
- d) Nesting success was 14.43 %; productivity was very low (one chick for 7 pairs) mainly because of predation, natural and human (mainly egg collection by local people). Nests nearer to the forest edge had more chances of human predation.
- e) Thickness of nesting branch and climber cover on the nest tree and, distance to trek path significantly influenced the nesting success.

#### ACTIVITY BUDGET AND PATTERN

1. The Nilgiri Wood Pigeon's activity pattern was very similar to many tropical birds. It spends maximum time for foraging (45.5 %) followed by maintenance (30 %). Resting (16.25 %) and territorial behaviour was low (6.75 %).
2. Territorial behaviour was seen in summer, first monsoon and winter. During late winter the pre nesting activities such as pair formation, calling, display were noted. Foraging was high in the morning and maintenance in the afternoon.

## II. NILGIRI PIPIT

#### STATUS AND DISTRIBUTION

1. Surveys were conducted in Silent Valley, Siruvani, Munnar, Eravikulam National Park, Chinnar Wildlife Sanctuary in Kerala; Upper Nilgiris and Upper Palni hills in Tamil Nadu; Castle rock and Belgaum in Karnataka; Catigao Wildlife Sanctuary, Bhagwan Mahavir National Park, Bondla Wild Life Sanctuary in Goa.
2. The Nilgiri Pipits were recorded in Siruvani, Silent Valley National Park, Munnar and Eravikulam National Park, the maximum encounter rate was 0.4/ha in Upper Bhavani and minimum in Upper Palnis 0.04/ ha.
3. Pipits were encountered between 1000-2300msl; significant correlation with altitude ( $Z = 0.489$ ;  $P > 0.018$ ).
4. Present in marshy grass slopes with creeping grasses and herbs, *Eragrostis nigra*, *Isachnae kunthiana*, *Myriactis whightii*, *Gentiana quadrifaria*, *Anaphalis* spp., *Eriocaulon* sp.



#### Other disturbances

1. Local people collect the firewood and lichen from shola forests. Lichens are used as spices.
2. People use *Ventilago* climber to tie the firewood. This climber was one of the important features of the successful nests.
3. Cattle grazing and thereby destruction of breeding habitat and nests of the Nilgiri Pipit was a major disturbance in the intensive study area.
4. Use of nesting habitat by people and cutting the nesting grass for covering the tea have become major threats for the breeding pipits.
5. Reclamation of wetlands for agricultural purposes poses a threat to the Nilgiri Pipit.

#### MEASURES PROPOSED

1. Taking into consideration of the low population, restricted range of distribution and the rarity of the habitat, especially for breeding, the Nilgiri Pipit needs to be included under the 'vulnerable' category of the IUCN.
2. With the data already collected during the project and with the help of GIS & Remote Sensing data, a habitat modelling for both the species could be made which would make the monitoring easy, time saving and less expensive.
3. Such a programme would help conserve almost all other endemic species of birds of the Western Ghats, as it include shola, evergreen forests and the grass lands.
4. Sholas in the Upper Palnis have to be fully protected for the endangered Nilgiri Wood Pigeon and other endemic birds.
5. Increasing the extend of the existing protected area in the Upper Nilgiris has already been recommended by us for the conservation of the endangered Nilgiri Laughingthrush; this will also help the Nilgiri Pipit.
6. Restoration of natural habitats through community participation, reduction of cattle population through eco-development programmes a complete ban on the expansion of the plantations; need to be taken up immediately. These recommendations were already in our earlier studies.
7. Production of habitat from fire and control of grazing at least during the breeding season. (February to June) of the Nilgiri Pipit and other grassland birds.



## **BREEDING BIOLOGY**

### **1. Breeding season**

Nilgiri Pipit nests between March and June with a peak in April, a second brood is observed once.

### **2. Nest and Nest-site selection**

- a) Nilgiri Pipits bred in short grasslands in marshy area.
- b) Mean nest height was 17.44cm above ground; mean length 11.12cm; width 6.44cm; and the height 5.16cm.
- c) Distance to water (river/stream), grass and herb cover over nest and grass height over nest were the significant factors in selecting a site.

### **3. Territory**

Nilgiri Pipit is strictly monogamous and is territorial with small range; 9 territories were measured; smallest was 30m<sup>2</sup>.

### **4. Nesting cycle**

- a) Nests were built inside the depressions under the grass tussocks *Andropogon* spp. Platform of the nest was with grass roots and lined with smooth grass blades and roots (*Flmbristyllis*).
- b) Mean clutch size was two, rarely three and one; incubation only by female, mean incubation period 14-15 days; nestling period 15-16 days, brooding mainly by female, by both parents feeding from within the territory.
- c) Nesting success was 16.66%, 72.22% and 37.50% in 2002, 2003 and 2004 respectively. Cattle grazing and fire affected the success adversely; Predator such as crows and snakes were also responsible.

## **ACTIVITY BUDGET AND PATTERN**

1. Feeding was the most performed behaviour followed by parental care and flight maintenance; higher feeding was in winter.
2. Nilgiri Pipit woke up before sunrise and roosted before sunset varying with season corresponding with sunrise/ sunset. Roosting area was inside the marshy grasslands (stream banks) with high density of grasses and herbs.



## CONSERVATION PROBLEMS & SUGGESTIONS

### MAJOR THREATS

Four major threats were identified: 1). Habitat loss and degradation, 2). Fire, Hunting and 3). Other disturbances.

#### Habitat loss and degradation

1. Habitat loss and degradation due to human activities have been the most important factors in the decline of the population of the endemics by conversion of the forests and grasslands into monoculture plantations, crops, reservoirs and settlements. As per National Remote Sensing Agency (NRSA), 25% of the forest cover in the Palnis disappeared during an eight years period (1972 – 80). In the Nilgiris the reported loss of natural habitats during 1800s is about 50%.
2. In the recent decades, the human population has increased more than double which in turn has caused the increase in pressure on the natural habitats by various activities such as collection of timber, firewood, building materials, non-timber forest products. The associated problem of grazing by cattle, sheep/goat also adds to the problem. It also brings in crows increasing nest predation. The lack of protected area in the Palni hills and inadequate areas in the Nilgiri hills might have caused higher fragmentation and degradation.
3. The crucial breeding habitat of the Nilgiri Pipit is the marshy grassland mostly >1500m which are reclaimed or disturbed by people and cattle

#### Fire

1. Fire during the breeding season is a major threat to Nilgiri Pipit and other grassland birds.
2. Even if the area is burnt before breeding, dried tuft of grass which is required for nesting will be affected.

#### Hunting

1. As these birds are protected under the Wildlife Protection Act (2002) and the Nilgiri Wood Pigeon is rare and threatened species, hunting in general is uncommon.
2. Illegal hunting of the Nilgiri Wood Pigeon and collection of eggs by the local people/tribals were reported in various parts of Western Ghats during our survey. This is mainly because of their so called medicinal properties for Rheumatism.