



# Status of avifauna at Taranga Hill-forest, Gujarat, India

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**Author Contribution:** CDP conducted fieldwork for two years, identified birds and conducted population counts. He has contributed towards writing and analysis of field data. MIP formulated and conceptualized the project, research design and plan of work.

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**Abstract:** Taranga is one of the famous pilgrim places of northern Gujarat. It is located (24° 00'N & 72°46'E) at starting point of Aravalli ranges. Climate of this area is semi-arid with irregular rainfall. Variable width line transect method was adapted to study the avifaunal diversity. Taranga Hill-forest has atleast 90 species of birds belonging to 11 orders, 33 families and 68 genera. Passeriformes being the largest family. All common residents appear to be adapted to the prevailing conditions. Red-vented Bulbul and Rock Pigeon were most abundant while Asian Paradise-flycatcher, Crested Bunting and European Roller were rare. White-naped Tit a globally threatened and endemic resident has been found as local migrant, scarce in number, common in occurrence and breeder in the tropical thorn-scrub habitat of THf. Plum-headed Parakeet may be a breeding possible species. In comparison to other places, the avian diversity is observed poor, because Aravallis are not on the migratory route or landing site of migratory birds. In addition, anthropogenic factors, presence of predators and loss of vegetation may be having a telling effect.

**Keywords:** Aravalli ranges, avifauna, breeding possible, breeding probable, migrant, omnivores.

## INTRODUCTION

Avian community studies are effective tools for monitoring a forest ecosystem. Birds are widely recognized as good bio-indicators of the quality of the ecosystems (Gill 1994) and health of the environment. They are responsive to change; their diversity and abundance can reflect ecological trends in other biodiversity (Furness & Greenwood 1993). Because of their highly specific habitat requirements, birds become increasingly intolerant of even slight ecosystem disturbance (Schwartz & Schwartz 1951).

Work on forest bird community has been done in other parts of the country time to time. Ramakrishnan (1983) examined several parameters of the bird communities in the forests of northern Kerala. Diversity and community structure of birds were also studied by Johnsingh et al. (1987), Johnsingh & Joshua (1994), Katti (1989), Daniels (1989, 1996 & 1997), Gokula & Vijayan (1996) and Sundaramoorthy (1991). In similar lines an attempt has been made to study and assess the present status of birds in the Taranga Hill-forest.

## STUDY AREA

Taranga is one of the famous pilgrim places of northern Gujarat. The Taranga Hill-forest (THf) is located at starting point of Aravalli ranges and situated at 24°00'N & 72°46'E (365.76m) in the northern Gujarat region, India. The THf is one of the unclassified reserve forests (under section-IV) with total area of 18.12km<sup>2</sup>. According to Champion & Seth (1968), the THf falls in to forest type 5/E2 (*Boswellia* type of forest) of northern Gujarat.

Climate of the area is semi-arid with irregular rainfall. It is strongly periodical and seasonal. There are three main seasons: Winter (November-February), Summer (March-June) and Monsoon (July-October). Winter is the period of cold weather. Warm dry weather remains during summer. The hottest month of the year is May. Westerly to south-westerly winds prevails during monsoon. Variable climate has experienced through out the year, which mainly affects on vegetation and arthropod abundance.

Taranga Hill-forest experiences a prolonged dry season. Average temperature remains 19.80°C to 30.73°C. The dry season is characteristic by low and erratic rain received primarily during the monsoon (months of July to September). It gets most of its rain from the south-west monsoon, which usually sets in by the middle of June or the beginning of July and continues until September and at times until the beginning of October. Heavy rain occurs during July and August but usually remains light during June and September. Average annual rainfall remains 663.60mm with about 40 rainy days.



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Table 1. Systematic list and status of avifauna at Taranga Hill-forest

Order, Family & Common name	Scientific name	Status				
		Resident	Abundant	Occurrence	Breeding	Primarily feeding habit
<b>Galliformes</b>						
<b>Phasianide</b>						
1. Grey Francolin	<i>Francolinus pondicerianus</i>	R	F	FC	B	GR
2. Indian Peafowl	<i>Pavo cristatus</i>	R	Lf	FC	B	OM
<b>Piciformes</b>						
<b>Picidae</b>						
3. Yellow-crowned Woodpecker	<i>Dendrocopos mahrattensis</i>	R	Sc	FC	BP	IN
4. Black-rumped Flameback	<i>Dinopium benghalense</i>	LM	Sc	FC	?	IN
<b>Megalaimidae</b>						
5. Coppersmith Barbet	<i>Megalaima haemacephala</i>	LM	Sc	FC	BP	FR
<b>Upupiformes</b>						
<b>Upupidae</b>						
6. Common Hoopoe	<i>Upupa epops</i>	WM	Lf	O	NB	IN
<b>Coraciiformes</b>						
<b>Coraciidae</b>						
7. Indian Roller	<i>Coracias benghalensis</i>	R	Lf	FC	B	IN
8. European Roller	<i>Coracias garrulus</i>	PM	Sc	r	NB	IN
<b>Dacelonidae</b>						
9. White-throated Kingfisher	<i>Halcyon smyrnensis</i>	R	Sc	FC	B	PI
<b>Meropidae</b>						
10. Green Bee-eater	<i>Merops orientalis</i>	R	F	FC	B	IN
11. Blue-cheeked Bee-eater	<i>Merops persicus</i>	WM	Lf	O	NB	IN
<b>Cuculiformes</b>						
<b>Cuculidae</b>						
12. Asian Koel	<i>Eudynamys scolopacea</i>	R	Lf	FC	B	FR
13. Pied Cuckoo	<i>Clamator jacobinus</i>	MM	Lf	O	NB	IN
<b>Centropodidae</b>						
14. Greater Coucal	<i>Centropus sinensis</i>	R	Lf	FC	B	CR
<b>Psittaciformes</b>						
<b>Psittacidae</b>						
15. Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	R	F	FC	PB	FR
16. Rose-ringed Parakeet	<i>Psittacula krameri</i>	R	La	FC	B	FR
<b>Apodiiformes</b>						
<b>Apodidae</b>						
17. House Swift	<i>Apus affinis</i>	R	La	FC	B	IN
<b>Strigiformes</b>						
<b>Strigidae</b>						
18. Spotted Owlet	<i>Athene brama</i>	R	Lf	FC	B	CR
<b>Columbiformes</b>						
<b>Columbidae</b>						
19. Rock Pigeon	<i>Columba livia</i>	R	A	FC	B	GR
20. Eurasian Collared Dove	<i>Streptopelia decaocto</i>	R	F	FC	B	GR
21. Laughing Dove	<i>Streptopelia senegalensis</i>	R	F	FC	B	GR
22. Yellow-footed Green Pigeon	<i>Treron phoenicoptera</i>	R	F	FC	NB	FR
<b>Ciconiiformes</b>						
<b>Burhinidae</b>						
23. Eurasian Thick-knee	<i>Burhinus oediconemus</i>	LM	Sc	FC	BP	CR
<b>Charadriidae</b>						
24. Red-Wattled Lapwing	<i>Vanellus indicus</i>	R	Lf	FC	B	IN
<b>Accipitridae</b>						
25. Shikra	<i>Accipiter badius</i>	R	Lf	FC	B	CR
26. White-eyed Buzzard	<i>Butastur teesa</i>	LM	Sc	C	BP	CR
27. Black-Shouldered Kite	<i>Elanus caeruleus</i>	R	Lf	FC	B	CR
28. Black Kite	<i>Milvus migrans</i>	LM	Sc	C	B	OM
29. Oriental Honey-buzzard	<i>Pernis ptilorhyncus</i>	R	Lf	FC	B	IN (?)*
<b>Podicipedidae</b>						
30. Little Grebe	<i>Tachybaptus ruficollis</i>	LM	Sc	O	BP	IN (?)*
<b>Ardeidae</b>						
31. Indian Pond Heron	<i>Ardeola grayii</i>	LM	Sc	O	BP	PI (?)*
32. Cattle Egret	<i>Bubulcus ibis</i>	R	Lf	FC	B	IN
33. Great Egret	<i>Casmerodius albus</i>	LM	Sc	O	BP	PI
34. Intermediate Egret	<i>Mesophoyx intermedia</i>	LM	Sc	O	BP	PI
<b>Threskiornithidae</b>						
35. Black Ibis	<i>Pseudibis papillosa</i>	LM	Sc	C	B	IN
36. Black-headed Ibis	<i>Threskiornis melanocephalus</i>	LM	Sc	O	B	IN (?)*

Order, Family & Common name	Scientific name	Status				
		Resident	Abundant	Occurrence	Breeding	Primarily feeding habit
<b>Passeriformes</b>						
<b>Laniidae</b>						
37. Southern Grey Shrike	<i>Lanius meridionalis</i>	R	F	FC	B	IN (?)*
38. Long-tailed Shrike	<i>Lanius schach</i>	R	Lf	FC	B	IN (?)*
<b>Corvidae</b>						
39. Marshall's Lora	<i>Aegithina nigrolutea</i>	R	Lf	FC	B	IN
40. Common Lora	<i>Aegithina tiphia</i>	R	Lf	FC	?	IN
41. Large-billed Crow	<i>Corvus macrorhynchos</i>	R	Lf	FC	NB	OM
42. House Crow	<i>Corvus splendens</i>	R	F	FC	B	OM
43. Rufous Treepie	<i>Dendrocitta vagabunda</i>	R	Lf	FC	B	OM
44. White-bellied Drongo	<i>Dicrurus caerulescens</i>	R	Lf	FC	NB	IN
45. Black Drongo	<i>Dicrurus macrocercus</i>	R	F	FC	B	IN
46. Eurasian Golden Oriole	<i>Oriolus oriolus</i>	LM	Lf	O	NB	FR (?)*
47. Small Minivet	<i>Pericrocotus cinnamomeus</i>	R	F	FC	B	IN
48. White-throated Fantail	<i>Rhipidura albicollis</i>	R	Lf	FC	NB	IN
49. White-browed Fantail	<i>Rhipidura aureola</i>	R	Lf	FC	NB	IN
50. Asian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	V	Sc	r	NB	IN
<b>Muscicapidae</b>						
51. Brown Rockchat	<i>Cercomela fusca</i>	R	F	FC	NB	IN
52. Oriental Magpie Robin	<i>Copsychus saularis</i>	R	Lf	FC	NB	IN
53. Isabelline Wheatear	<i>Oenanthe isabellina</i>	WM	Sc	O	NB	IN
54. Black Redstart	<i>Phoenicurus ochruros</i>	WM	Lf	O	NB	IN
55. Common Redstart	<i>Phoenicurus phoenicurus</i>	WM	Sc	O	NB	IN
56. Jerdon's Bushchat	<i>Saxicola jerdoni</i>	R	Sc	FC	NB	IN
57. Common Stonechat	<i>Saxicola torquata</i>	WM	Sc	O	NB	IN
58. Indian Robin	<i>Saxicoloides fulicata</i>	R	F	FC	B	IN
<b>Sturnidae</b>						
59. Bank Myna	<i>Acridotheres ginginianus</i>	R	F	FC	B	OM
60. Common Myna	<i>Acridotheres tristis</i>	R	F	FC	B	OM
61. Brahminy Starling	<i>Sturnus pagodarum</i>	R	F	FC	B	OM
<b>Paridae</b>						
62. Great Tit	<i>Parus major</i>	R	Lf	FC	?	IN
63. White-naped Tit	<i>Parus nuchalis</i>	LM	Sc	C	B	IN
<b>Hirundinidae</b>						
64. Red-rumped Swallow	<i>Hirundo daurica</i>	R	La	FC	B	IN
65. Wire-tailed Swallow	<i>Hirundo smithii</i>	R	Lf	FC	B	IN
66. Plain Martin	<i>Riparia paludicola</i>	R	Lf	FC	?	IN
<b>Pycnonotidae</b>						
67. Red-vented Bulbul	<i>Pycnonotus cafer</i>	R	A	FC	B	FR
68. White-eared Bulbul	<i>Pycnonotus leucotis</i>	R	Lf	FC	B	IN (?)*
<b>Cisticolidae</b>						
69. Rufous-fronted Prinia	<i>Prinia buchanani</i>	R	Lf	FC	B	IN
70. Grey-breasted Prinia	<i>Prinia hodgsonii</i>	R	F	FC	B	IN
71. Plain Prinia	<i>Prinia inornata</i>	R	F	FC	B	IN
72. Ashy Prinia	<i>Prinia socialis</i>	R	F	FC	B	IN
<b>Zosteropidae</b>						
73. Oriental White-eye	<i>Zosterops palpebrosus</i>	R	Lf	FC	?	IN
<b>Sylviidae</b>						
74. Paddyfield Warbler	<i>Acrocephalus agricola</i>	WM	Lf	O	NB	IN
75. Common Tailorbird	<i>Orthotomus sutorius</i>	R	F	FC	B	IN
76. Lesser Whitethroat	<i>Sylvia curruca</i>	WM	Lf	O	NB	IN
77. Yellow-billed Babbler	<i>Turdoides affinis</i>	R	Lf	FC	NB	IN
78. Common Babbler	<i>Turdoides caudatus</i>	R	F	FC	B	IN
79. Large Grey Babbler	<i>Turdoides malcolmi</i>	R	La	FC	B	IN
80. Jungle Babbler	<i>Turdoides striatus</i>	R	F	FC	B	IN
<b>Alaudidae</b>						
81. Ashy-crowned Sparrow Lark	<i>Eremopterix grisea</i>	R	F	FC	B	IN (?)*
82. Indian Bushlark	<i>Mirafra erythroptera</i>	R	Lf	FC	BP	IN
<b>Nectariniidae</b>						
83. Purple Sunbird	<i>Nectarinia asiatica</i>	R	La	FC	B	NR
<b>Passeridae</b>						
84. Indian Silverbill	<i>Lonchura malabarica</i>	R	Lf	FC	B	GR
85. White Wagtail	<i>Motacilla alba</i>	WM	Sc	O	NB	IN
86. White-browed Wagtail	<i>Motacilla maderaspatensis</i>	R	Lf	FC	?	IN
87. House Sparrow	<i>Passer domesticus</i>	R	F	FC	B	GR
88. Chestnut-shouldered Petronia	<i>Petronia xanthocollis</i>	R	F	FC	B	GR
89. Baya Weaver	<i>Ploceus philippinus</i>	R	F	FC	B	GR
<b>Fringillidae</b>						
90. Crested Bunting	<i>Melophus lathami</i>	V	Sc	r	NB	GR

(?)\* - authors are not sure of feeding habit.

**Common Vegetation**

The THf covers mainly tropical thorn-scrub type vegetation. It is characterized by low altitude hill vegetation. Scrubs are dominant species of this forest. One grassland occasionally present on small part of plain areas. Shrub species are mainly mixed thorny type, which is dominantly present in all parts of the forest. Xerophyte vegetation is dominant. Agro-ecosystems exist at the peripheral areas of the forest. *Anogeissus latifolia*, *Acacia chundra*, *Bauhinia recemosa*, *Butea monosperma* and *Sterculia urens* are major trees. *Achyranthus aspera*, *Adhatoda vasica*, *Calotropis gigantea*, *Maytenus emarginata*, *Zizyphus mauritiana* and *Abrus precatorius*, *Asparagus racemosus*, *Cuscuta reflexa*, *Pedalium murex* are common shrubs and climbers. Among the herbs *Andrographis paniculata*, *Bergia capensis*, *Cassia auriculata*, *Enicostemma hyssopifolium*, *Datura metel* are common.

**METHODS**

The study was conducted from early December 2006 to late November 2008. Birds were observed from early morning 0600hr till noon and approximately total 576 man hours were spent. Field work was conducted weekly during the study period in four sites within the THf.

After considering all the available methods, the variable width line transect method described by Burnham et al. (1981) was adopted, in which, the observer walks along a predetermined route at 0.58km/hr fixed speed, counting the birds seen or heard 10m on both sides of the path. Whenever a bird was sighted, it was identified up to species and details like the number of birds, and habitat type were recorded. Birds were identified using binoculars (8X40) and with the help of field guide (Grimmett et al. 1999; Ali 2002). Bird taxonomy and names follows Grimmett et al. (1998) and characteristic and specific calls of the birds described by Whistler (1940), Dharamkumarsinhji (1954), Woodcock (1980) and Ali & Ripley (1987) were followed for locating and identifying bird species.

**Status**

**Resident:** Resident (R) - Resident throughout the year, Local Migrant (LM) - Resident with some local movement, WM - Winter Migrant, MM - Monsoon Migrant, PM - Passage Migrant, Vagrant (V) - Vagrant with only a single or a couple of records, depending on movement and seasonality of occurrence.

**Abundance:** Abundant (A) - Mean population is more than 100, Less abundant (La) - Mean population is 50 to 100, Frequent (F) - Mean population is 25 to 50, Less frequent (Lf) - Mean population is 5 to 25, Scarce (Sc) - Mean population is less than 5.

**Occurrence:** Out of 24 visits: Fairly Common (FC) - Sighted on 22 to 24 visits, Common (C) - Sighted on 14 to 21 visits, Occasional (O) - Sighted on 7 to 13 visits, Rare (r) - Sighted on less than 7 visits.

**Breeding:** Breeder (B) - Birds observed to breed or showing evidence (nests or newly fledged chick(s) recorded) of breeding in THf. Non-breeder (NB), Breeding Probable (BP) - Birds that were observed to breed throughout Gujarat yet no evidence of their breeding observed in THf, Breeding Possible (PB) and (?) - Not confirmed.

**Feeding habit:** Based on observation: Insectivore (IN), Frugivore (FR), Granivore (GR), Piscivore (PI), Omnivore (OM), Carnivore (CR).

**Table 2. Distribution of number of species with genus, families and orders, and status of avifauna recorded at Taranga Hill-forest**

Orders	No. of fa- milies	No. of genus sp.	Status																												
			Resident			Abundance			Occurrence			Breeding			Feeding habit																
			R	LM	WM	MM	PM	V	A	La	F	Lf	Sc	FC	C	O	r	B	NB	BP	PB	(?)	IN	FR	GR	PI	OM	CR	NR		
Galliformes	1	3	2								1	1		2				2							1						
Piciformes	2	3	1	2								3			3									2	1						
Upupiformes	1	1			1							1																			
Coraciiformes	3	3	3		1		1				1	2	2		3		1	3	2							1					
Cuculiformes	2	3	2			1						3			2			2	1					1	1			1			
Psittaciformes	1	1	2								1	1			2			1						2							
Apodiformes	1	1	1								1				1			1													
Strigiformes	1	1	1								1				1			1													
Columbiformes	1	3	4						1		3				4			3	1					1		3			1		
Ciconiiformes	6	14	5	9							5	9			6	3	5	8					6			3		1	4		
Passeriformes	14	36	43	2	7			2	1	3	19	23	8	43	1	8	2	30	18	1		5		40	2	5		6		1	
<b>Total</b>	<b>33</b>	<b>68</b>	<b>90</b>	<b>64</b>	<b>13</b>	<b>09</b>	<b>01</b>	<b>01</b>	<b>02</b>	<b>02</b>	<b>05</b>	<b>36</b>	<b>22</b>	<b>67</b>	<b>04</b>	<b>16</b>	<b>03</b>	<b>51</b>	<b>23</b>	<b>09</b>	<b>01</b>	<b>06</b>	<b>55</b>	<b>07</b>	<b>09</b>	<b>04</b>	<b>08</b>	<b>06</b>	<b>01</b>		

**Resident Status:** R - Resident; LM - Local Migrant; WM - Winter Migrant; MM - Monsoon Migrant; PM - Passage Migrant and V - Vagrant. **Abundance Status:** A - Abundant; La - Less abundant; F - Frequent; Lf - Less frequent and Sc - Scarce. **Occurrence Status:** FC - Fairly Common; C - Common; O - Occasional and r - Rare. **Breeding Status:** B - Breeder; NB - Non-breeder; BP - Breeding Probable; PB - Breeding Possible and (?) - Not confirmed. **Feeding habit Status:** IN - Insectivorous; FR - Frugivore; GR - Granivore; PI - Piscivore; OM - Omnivore; CR - Carnivore.

## RESULTS

Taranga Hill-forest has atleast 90 species of birds belonging to 11 orders, 33 families and 68 genera (Table 1). Common Hoopoe, Blue-cheeked Bee-eater, Isabelline Wheatear, Black Redstart, Common Redstart, Common Stonechat, Paddyfield Warbler, Lesser Whitethroat and White Wagtail were winter migrants; Pied-crested Cuckoo was monsoon migrant and European Roller was passage migrant, whereas Asian Paradise-flycatcher and Crested Bunting were vagrants. Red-vented Bulbul and Rock Pigeon were most abundant. Passage migrant and vagrant species were rare. According to Grimmett et al. (1998), White-naped Tit (*Parus nuchalis*) a globally threatened and endemic resident has been found as local migrant, scarce in number, common in occurrence and breeder in the tropical thorn-scrub forest habitat of THf. Plum-headed Parakeet may be a breeding possible species. Passeriformes was the largest family the next being Ciconiiformes. Distribution of number of species with genus, families and orders, and status of avifauna recorded at Taranga Hill-forest is presented in Table 2.

## DISCUSSION

So far, 146 bird species only have been recorded in Aravallis by different authors. In comparison to other places studied during last decades avian diversity is observed poor, because Aravallis are not on the migratory route or landing site of migratory birds (Prakash & Singh 1995). In addition, anthropogenic factors, presence of predators and loss of vegetation may be having a telling effect. In Abu hill (Aravalli ranges) area also, Prakash & Singh (1995) reported a similar condition. All common residents appear to be adapted to the prevailing conditions. Insectivorous birds were recorded more throughout the year.

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