

Bird Diversity and Their Habitat Status at Raja Rani Community Forest Bhogteny, Morang, Nepal



Final Report Submitted to
Oriental Bird Club (UK)
2005

By
Yub Raj Basnet
Bijay Tamang
Gautam Benu



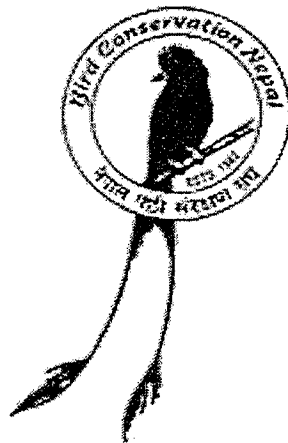
Bird Conservation Nepal

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SUMMARY

Raja Rani Community Forest is located at Siwalik Hills, the smallest and youngest part of the Himalayas, in Morang district north of eastern Dharan forest, one of the Important Bird Areas (IBA) in Nepal. The forest is mixed type dominated by *Sal Shorea robusta*. An exploration of bird diversity was done in that area from October 2003 to July 2004. About 250-hectare was surveyed during the study period. Forest covers approximately 170 (68%) hectare, aquatic habitat covers 20 (8%) hectare, agricultural area covers 25 (10%) hectare and scrubland covers 35 (14%) hectare. Species discovery curve was calculated using Mackinnon list, with seventeen species in each list. Altogether 40 lists were prepared, 10 in each season. A total four visits were made, once in each season (i.e. autumn, winter, spring and summer).

A total of 110 bird species were recorded from the area. Hundred were resident, eight were winter visitors and two were summer visitors. Eight were nationally threatened species. Two globally near threatened species, i.e. Great Hornbill *Buceros bicornis* and probable Wedge-billed Wren Babbler *Sphenocichla humei* were recorded. Approximately 48.23% bird species were recorded from forest areas followed by 10.46% from aquatic habitat, 15.33% from agricultural area and 25.98% species from scrubland.

Although hunting is prohibited in the area by community forest management committee, collection of young chicks and illegal hunting on game bird is still prevalent. Awareness among local people might help reduce such activities.

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INTRODUCTION

Background

Nepal has exceptionally rich and diverse avifauna. An important factor for such diverse avifauna is Nepal's varied topography and climate. The varied physiographic zones of Nepal have facilitated the country to support a high diversity of fauna and flora. In Nepal 861 species of birds are recorded (BCN 2004). Out of this, 30 species are considered globally threatened (BirdLife International 2001, 2004) and 133 species (15%) are identified as nationally threatened. Furthermore, 72 species are thought to be critically threatened or endangered (Baral and Inskipp 2004). Furthermore, 11 species are considered extinct (Inskipp and Inskipp 1991) and 78 species (59% of the total threatened) depend on forests (Baral and Inskipp 2004).

Siwaliks, the smallest and youngest part of the Himalayas, consist of a series of parallel ridges that run along the length of the country and enclose some elongated valleys (Dun). Siwalik Hills (also called Churia); has the highest percent forest cover (76%) and in terms of biogeography, least percent area in Nepal, i.e. 1,886,000 hectares (13%); are ecologically fragile and comprised of soft, very erodible sediments with steep terrain, mostly poor porous soil lacking perennial water courses (FRISP 1994).

The Siwalik region of Nepal is one of the richest areas in terms of biological diversity. The area is at the confluence of the Himalayas and the tropics, and is home to many animals and plants, and fossils, which traveled upwards from the tropics and downwards from the Himalayas. This unique area of world heritage has come under increasing threat. Humans are converting areas such as vast forest resources into agricultural and degraded land with little or no biological diversity and productivity. Valuable species are at risk (Oli 1999). Poor socio-economic condition of local communities in the Siwaliks is one of the main reasons of forest degradation and the subsequent decline in local fauna and flora.

The early Siwalik settlers had indigenous knowledge for the resource use. The traditional ecological balance between natural environment and the Siwalik Hills has changed completely (Oli 1999). It is now under threat due to the occurrence of biotic pressure, including the high population growth and high percentage of poverty (Joshi *et al.* 1996). The conservation of biodiversity in the context of socio-economic development of the people needs a comprehensive study of the biodiversity.

The Raja Rani Forest lies in the Morang Siwalik and its bird habitat is diverse due to presence of aquatic habitat in dense Sal *Shorea robusta* forest where almost all trees are covered by epiphytes. Three ponds at the southern part of forest are choked by some woody aquatic vegetation and approximately 10% of the water area is open. The area harbors many types of

aquatic as well as forest birds (Basnet 2002). People of Bhogteni, Kerabari and Letang depend on forest products for their subsistence economy. As such, forest area is gradually degrading with negative impact on bird diversity.

Objectives

The main aim of carrying out this study at Raja Rani Community Forest is to explore the avian diversity of the area. Presence of threatened as well as protected bird species in the area further signifies the study.

The broad objective is to prepare an inventory of avian diversity at Raja Rani Community Forest. The specific objectives are:

1. To determine the seasonal avian diversity in the area and
2. To assess the habitat quality of community forest for bird conservation

STUDY AREA

Location

Raja Rani Community Forest, named after Raja Rani Pokhari (pond) is situated in the Siwalik region at Bhogteny Village Development Committee in Morang district of eastern Nepal. The area located between 26°47'N and 87°26'E is situated at the height of 300-650 meters. The area is located north of eastern part of Dharan Forest, which is an Important Bird Area in Nepal (Baral and Inskipp 2001). The area lies in the west of Chisang stream, which is one of the largest streams of Morang District. Raja Rani Community Forest covers the area of about 170 hectares. Forest user groups (FUGs) have divided the forest area into four blocks for convenience, each block demarcated by brooks. The blocks were not classified according to habitat type; actually it is based on area. All the blocks have similar type of vegetation dominated by Sal. The first block lies in the northern part and is contiguous with Murchunge village. Second and third blocks are located between first and fourth block. Fourth block lies in the southern part, which is adjacent to agricultural area of Dhobi village. Three ponds that cover about 20 hectares are located between the fourth block and the agricultural area. Southern part of the Raja Rani Community Forest is contiguous with Raja Community Forest, which is separated by Bhalu Khola, a brook. Similarly, eastern part of the Raja Rani Community Forest communicates with two proposed community forests; i.e. Akashe Community Forest and Jalkaini Community Forest. Bhalu Khola, a seasonal stream separate these proposed community forests from the Raja Rani Community Forest. Northern part of Raja Rani Community Forest is surrounded by agricultural area with the two vicinity of village named as Murchunge and Kagate. Dhobi and Lokhara are the two settlements of FUGs of the Raja Rani Community Forest that lies in the southeast of the forest area.

Climate

The area has tropical climate. Monsoon starts from June and reaches peak in July and continues through mid-September. Total mean annual precipitation was estimated to be about 2211.1 mm from 1998 to 2004 at Dharan, the nearest Metrological station from the study area. Average monthly rainfall of 621.2 mm was recorded in July, while the least 3.9 mm was recorded in December during 1998-2004. Highest monthly rainfall of 929.6 mm was recorded in July 2001. Summer days are quite hot; the mean maximum temperature was recorded to be 32.7°C in May during 1998-2004. Winter is relatively cold with mean minimum temperature of 10.2°C recorded in January during 1998-2004. The absolute maximum of 34.6°C was recorded in April 1998 while the absolute minimum of 7.6°C was in January 1999. Mean monthly relative humidity varies from 74.4% to 90.8%. Annual mean maximum and mean minimum temperature, annual mean monthly rainfall and relative humidity recorded from 1998 - 2004 are shown in figure (1, 2 and 3).

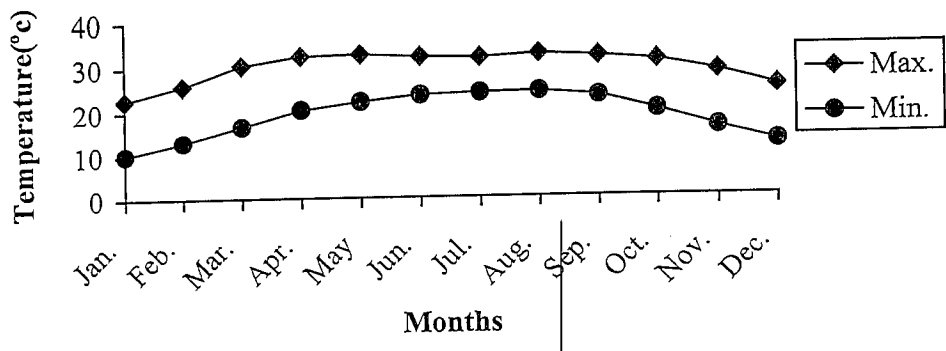


Figure 1: Mean monthly temperature recorded at Dharan from 1998 to 2004

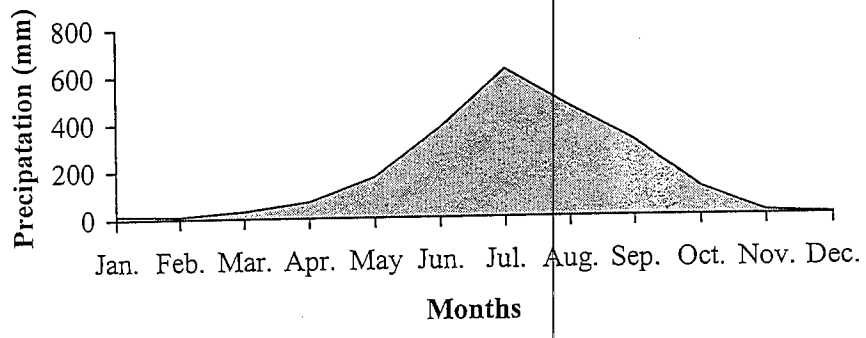


Figure 2: Mean Monthly rainfall recorded at Dharan from 1998 to 2004

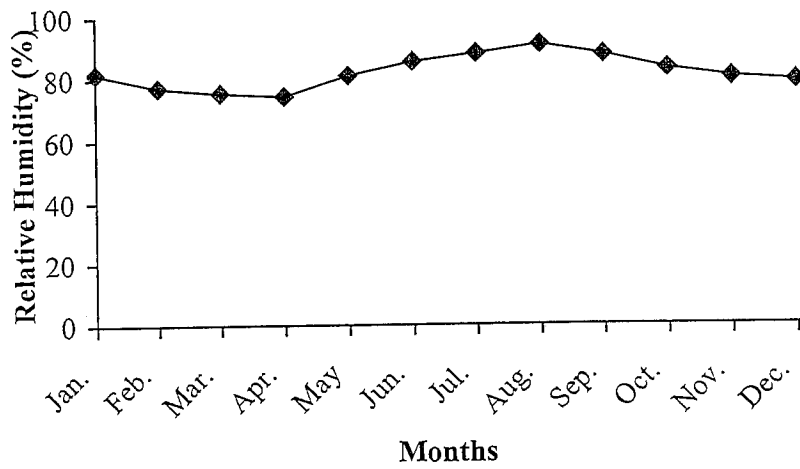


Figure 3: Mean monthly relative humidity recorded at Dharan (8:45 AM) from 1998 to 2004

Biological diversity

Flora

The principal vegetation of the area comprises of tropical evergreen forest. The tropical evergreen forest is characterized by dense vegetation with large sized trees and comparatively warm and heavy rainfall during summer. Local differences in rock types are often responsible for the tremendous variability in vegetation cover in the Siwaliks (Carson 1992).

The Community forest is mainly dominated by matured Sal *Shorea robusta* forest. Most of the trees are covered by epiphytes. Total of 43 types of orchids are recorded from the area (Basnet 2003a). The associated species with Sal are Karma *Adina cardifolia*, Amla *Embllica officinalis*, Satisal *Dalbergia latifolia*, Bel *Aegel marmelos*, Rajbrikshya *Cassia fistula* and Sahaj *Terminalia alata*.

Fauna

Wild animals found in the area are Wild Boar *Sus scrofa*, Jungle Cat *Felis chaus*, Clouded Leopard *Pardofelis nebulosa*, Common Langur *Semnopithecus entellus*, Hare *Lepus nigricolis* and Rhesus Monkey *Macaca mulata*, Black Giant Squirrel *Ratufa bicolor* and Indian Palm Squirrel *Funambulus palmarum*. The area is very important to birds such as Hornbills, Drongos, Woodpeckers, Peacock, Jungle fowl as well as Waterhen and Froktil.

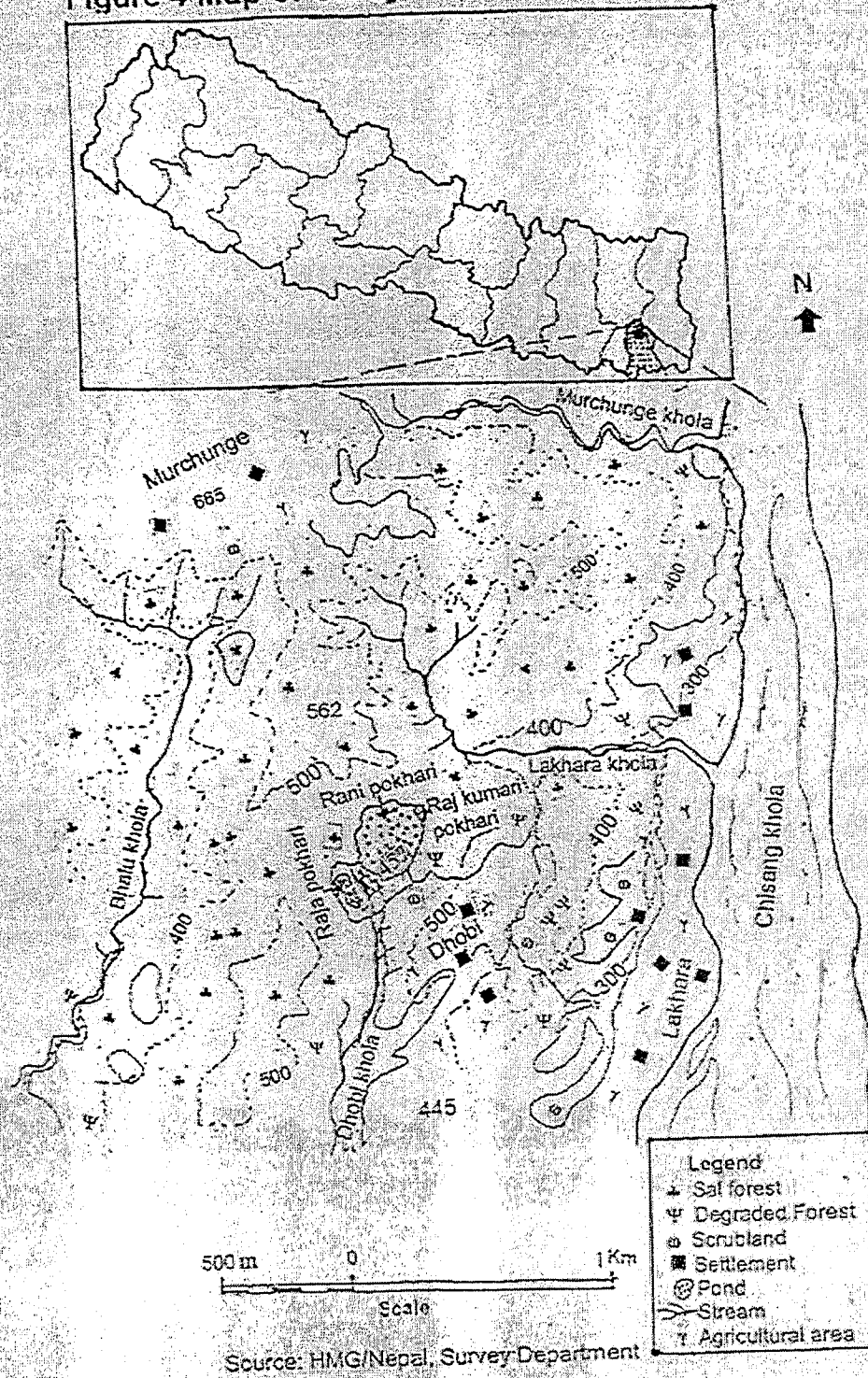
Socio-economic aspect

The study area is surrounded by villages inhabited by Brahman along with other ethnic groups such as Rai, Magar and Tamang. A total of 106 households depend on the community forest for firewood, cattle grazing, thatch grass, fodder and timber. Most of the people are uneducated and their main occupation is agriculture, animal husbandry and harvesting of forest products (Basnet 2002).

Rice *Oryza sativa*, wheat, corn and millet are major crops in the area whereas mustard *Brassica campestris*, potato *Solanum tuberosum*, legumes and sugarcane *Saccharum spp.* are grown in minor crops. Mewa *Carica papaya*, Amp *Magnifera indica*, Amba *Psidium guajava*, Kera *Musa paradisica*, Nariwal *Cocos mucifera* and Supari *Areca catechu* are the main fruits in the area.

Livestock is the major component of the agricultural system in the area. The main livestock are cattle, goat, buffalo, pig and poultry. Part of day-to-day expenditures for basic commodities, children's education and other miscellaneous expenses are borne by income generated from the sale of livestock and their products in the area.

Figure 4 Map of Study Area



Note: Shaded area in inset map shows Morang district and the black spot indicates study area.

MATERIAL AND METHODS

Bird Survey

Bird survey at Raja Rani Community Forest was carried out from October 2003 through July 2004. Survey was done four times once in each season (i.e. autumn, winter, spring and summer). Data were collected from different sections of community forest and its surrounding areas. Although some observations were done from dawn to dusk, concentration was given early in the morning (06:00-10:00 hrs.) and late afternoon (15:00-18:00 hrs.) when most birds are active. All types of habitats: Sal forests, bushes and bamboo clumps, water canals, ponds and agricultural areas were covered during the survey. All the four blocks of community forest were equally visited during the survey period. Furthermore, some observations were made along the temple area and Chisang khola (stream). Total 29 days spent in study area. Number of days spent in each season is shown in table 1.

Table 1: Total number of days spent in each season

Season	Months	Date	Days spent
Autumn	Mid Aug - Mid Nov.	October 4,6,9-13, 2003	7
Winter	Mid Nov - Mid Feb.	January 13-20, 2004	8
Spring	Mid Feb - Mid May	May 3-6,10-12, 2004	7
Summer	Mid May - Mid Aug	July 4-7,17-19, 2004	7

*Seasons according to Nepali Calendar

Survey was based on direct observation. Sites concentrating bird activity, particularly water canals, fruiting trees, forests edges were watched for prolonged period. Some birds such as Blue-throated Barbet *Megalaima asiatica*, Hill Myna *Gracula religiosa*, and Red Jungle Fowl *Gallus gallus* were also identified by their calls. Binoculars were used for observation.

Observed species were recorded using Mackinnon's list. Index of relative abundance was calculated using Mackinnon's species richness counting method (Mackinnon and Phillips, 1993). A list of 17 different encountered bird species was made. This was considered as the first list. After that another new list (second list) was prepared with 17 species. Similarly, ten separate bird lists were prepared in each season. Thus, a total 40 bird lists were prepared during the whole study period. During the survey much care was taken not to repeat same species in the same list, but it was listed in subsequent lists. Observed birds were identified following handbooks Grimmett *et. al.* (2000) and Ali (1996). Finally a complete checklist was made using the observed data. Nomenclature and systematic orders of birds followed Bird Conservation Nepal (BCN) official checklist (2004).

Data analysis

Species discovery curve was plotted using Mackinnon's species-richness counting method (Bibby *et al.* 2000). The relative abundance of each species was estimated using Mackinnon's lists. Index of relative abundance was estimated based on species occurrence. The relative abundance of each species is equivalent to the fraction of lists on which a species occurs. Species occurrence was categorized into five different categories according to Index of relative abundance.

Table 2: Categories of species occurrence

Categories	Number of Observations	Index of relative abundance
Uncommon	≤ 5	≤ 0.125
Occasional	6 –10	0.15-0.25
Fairly common	11-15	0.275-0.375
Common	16-20	0.4-0.5
Abundant	> 20	> 0.5

The species were classified upto orders. Threatened status of the observed birds was also identified with the help of key books, i.e. The State of Nepal's birds 2004 (Baral and Inskipp 2004). All the birds were analyzed according to its occurrence in their particular habitat type (e.g. forest type, ponds and water canals, agricultural area and open habitat of bushes with bamboo clumps i.e. scrubland).

RESULTS AND DISCUSSION

Bird Survey

Bird survey was done four times from October 2003 through July 2004. A formal discussion was done with Tej Prasad Rai, the President of Raja Rani Community Forest prior to fieldwork. Formal permission was taken for the work in the community forest. All the four blocks of the community forest were visited with the help of two local assistants. Both direct observation and call identification methods were employed to record the birds. Observation was also done at agricultural area, ponds and forest edges.

A total of 110 species were recorded that belonged to 12 orders and 36 families during a year long study period. Among the observed bird 100 species were resident, 8 were winter visitor and 2 were summer visitor. Altogether 40 birds survey list were prepared with 17 species in each list.

List number and running species

First survey was done in autumn, 2003. A total of 10-bird survey lists were prepared in seven days observation during first visit, with 17 species in each list. A total of 63 species belonging to 27 families and 11 orders were recorded from the area. An endangered species, Great Hornbill *Buceros bicornis*, was observed from third and fourth block of the community forest. Similarly three vulnerable species, Long-tailed Broadbill *Psarisomus dalhousiae*, Barred Cuckoo Dove *Macropigea unchall* and Hill myna *Gracula religiosa* were observed at fourth block of the forest. A flock of 12 Black Storks *Ciconia nigra* was also observed soaring above the fourth block near agricultural area.

Second bird survey was done in winter, 2004. A total of 71 species belonging to 26 families and 11 orders were recorded during the eight-day survey. Among them 30 species were new, which were not observed during the first visit. An endangered species; W edge-billed Wren Babbler *Sphenocichla humei* was observed from scrubland in the eastern part near Chisang khola. This might be the second record from Nepal, the first being reported from Dharan forest in 1996 (Karki and Chaudhari 1997). The bird is rare (Inskipp 2001) and also considered probable but requiring further confirmation by the Nepal Rare Birds Committee (Carol Inskipp *pres.comm.* 2005). Calls of Red Junglefowl *Gallus gallus* was recorded from third block of the forest area.

Third survey was done in late spring, 2004. A total of 64 species belonging to 29 families and 11 orders were recorded during this period. Among them 11 species were new, which were not observed during the first and second field visits. Two Great Hornbills were observed on a fruiting Banyan tree *Ficus benghalensis* in the third block of the community forest. Again a flying individual of the same species was observed in the eastern side of Rani Pokhari, near the forest

edge of the fourth block. Three Spiny Babblers *Turdoides nipalensis* were seen in bushes in the western side of Rani Pokhari. Similarly, a Jerdon's Baza *Aviceda jerdoni* was seen in the western part of the forest near Bhalu khola. The bird is considered critically endangered (Baral and Inskipp 2004). The bird was previously reported from Patnali area of Dharan forest (Basnet *et al.* 1999, Baral *et al.* 2000, GC *et al.* 2001) and Royal Chitwan National Park near Tiger Tops Jungle Lodge (McDougal *et al.* 2000, Chaudhary 2000).

Fourth survey was done in summer, 2004. A total of 61 species belonging to 27 families and 11 orders were recorded. Among them 6 species were new, which were not observed during the first, second and third visits. Two threatened species, i.e. Red Junglefowl and Long-tailed Broadbill were recorded from second and third block of the community forest.

Table 3: List number and running species

First survey		Second survey		Third survey		Fourth survey	
List number	Running species	List number	Running species	List number	Running species	List number	Running species
1	17	11	67	21	95	31	107
2	27	12	74	22	96	32	107
3	35	13	79	23	97	33	107
4	41	14	82	24	101	34	108
5	50	15	83	25	101	35	109
6	54	16	86	26	101	36	110
7	59	17	89	27	102	37	110
8	60	18	89	28	102	38	110
9	61	19	90	29	103	39	110
10	63	20	93	30	104	40	110

The list of birds according to orders and families as well as habitat and migratory status are shown in table 6 and appendix-I respectively. Running species was calculated with the help of list number, where number of species may increase in subsequent list. Occurrence of birds according to list is shown in table 3 and figure 5.

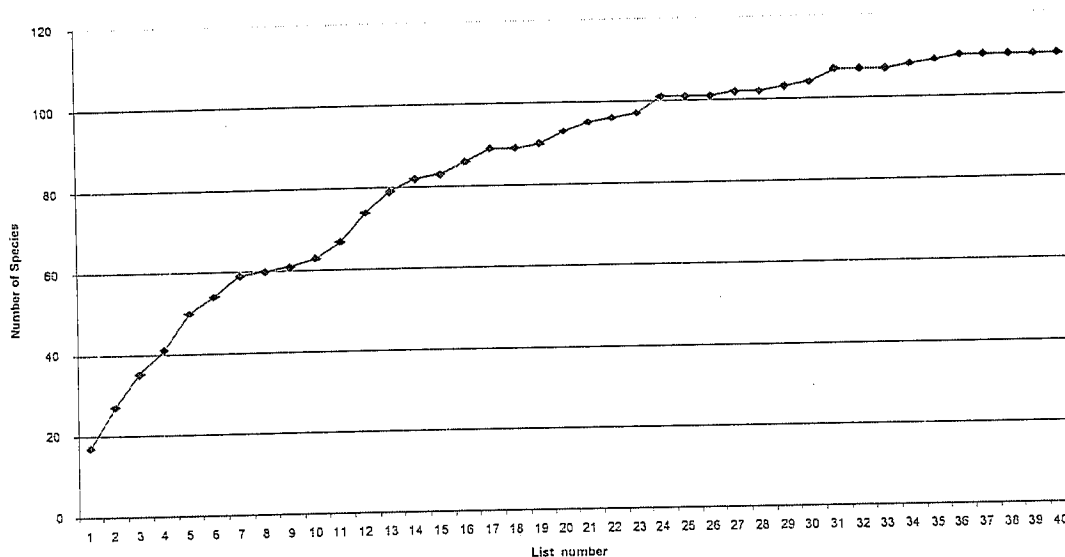


Figure 5: Species discovery curve

Bird diversity in different habitats

During autumn survey highest bird species (24 species) were recorded in scrubland that was adjacent to forested areas and bamboo clumps. Similarly 23 species were recorded from forest areas, 8 species each were observed from aquatic as well as agricultural area.

A total of 26 species were recorded from forest area followed by 25 species from scrubland, 13 species from agricultural area and 7 species from aquatic habitat in winter survey.

In spring 41 bird species were recorded from forest area, 11 species from agricultural area, 7 species from scrubland and 5 species from aquatic habitat.

Similarly, a total of 34 bird species were recorded from forest area, 12 species from scrubland, 8 species from agricultural area and 7 species from aquatic habitat in summer.

The number of birds in Scrubland was more in autumn and winter as compared to summer and spring. In Sal forest highest number of birds were recorded in summer. Whereas in other habitats the number of birds recorded remain almost the same.

Table 4: Bird species recorded from different habitats

Habitat type	No of species				Mean %
	Autumn, 2003	Winter, 2004	Spring, 2004	Summer, 2004	
Sal forest	23(36.51%)	26(36.62%)	41(64.06%)	34(55.74%)	48.23
Aquatic habitat	8(12.70%)	7(9.86%)	5(7.81%)	7(11.48%)	10.46
Agricultural area	8(12.70%)	13(18.31%)	11(17.19%)	8(13.11%)	15.33
Scrubland	24(38.09%)	25(35.21%)	7(10.94%)	12(19.67%)	25.98
Total	63	71	64	61	100.00

Approximately 48% species were recorded from forest area. It may be due to large habitat that covers about 170 hectares. Similarly 10.46% birds were recorded from aquatic habitat. 15.33% birds were recorded from the agricultural area and 25.98% birds were recorded from scrubland.

Habitat Analysis

Four major bird habitats were identified in the study area. Total 65 trees and woody vegetation were listed from the area, which were identified with the help of flora of Nepal (Shrestha 1998). Name of the major woody vegetation is given in appendix-II.

Table 5: Area, % coverage and percentage of species in different habitat.

Habitat type	Area (in ha.)	Coverage (%)
Sal forest	170	68
Aquatic habitat (ponds and streams)	20	8
Agricultural area	25	10
Scrubland	35	14

Forest Area

Mature Sal forest with low understory covers 170 hectares in the study area. Although southern and eastern part of the forest is degraded, it is dense in other areas. Bushes have replaced most of the degraded areas and are turned into scrubland with bamboo clumps. A total of fifty birds species were recorded in dense forest areas. Among them six were threatened species. One critical species i.e. Jerdon's Baza was recorded in the western part of the fourth block during the third visit.

Similarly, 13 species were observed from more than one habitat. e.g. Blue Whistling Thrush *Myiophonus caeruleus* and Black-backed Forktail *Enicurus immaculatus* were observed from

water canals in the forest. Similarly, six species were recorded both from agricultural area and forest. Six more species were listed from scrubland (bushes with bamboo clumps) as well as dense forest. 71 species utilized forest areas in total.

The southwestern part of the community forest is contiguous with proposed Raja Community Forest, Akase Community Forest and Jalkaini Community Forest, which may provide a good habitat for forest birds. All these forest areas have mature mixed Sal dominated forest. Total twenty-two *Ficus* trees also provide good fruiting trees for Hornbills.

Aquatic Habitat

Three ponds, which covers about 20-hectare provide aquatic habitat in the area. Furthermore, four rocky brooks (Bhalu khola, Dhobi khola, Lokara khola and Murchunge Khola) and one large sandy stream (Chisang Khola) provide additional aquatic habitat especially for Little Ringed Plover *Charadrius dubius*, Black-backed Forktail and White-capped Water Redstart *Chaimarrornis leucocephalus* in the area. Two species White-breasted Waterhen *Amaurornis phoenicurus* and Little Cormorant *Phalacrocorax niger* were observed mainly from aquatic habitat. Similarly, seven species such as Cattle Egret *Bubulcus ibis*, White-throated Kingfisher *Halcyon smyrnensis*, Red-wattled Lapwing *Vanellus indicus* and Indian Pond Heron *Ardeola grayii* were observed from aquatic as well as agricultural habitat.

Agricultural Area

Southeast part of the forest continues into a agricultural area and human habitation, where the FUGs live. Some patches of trees are present in the area. Approximately, 25-hectare agricultural area, which is closely associated with the forest, was surveyed during the study period. Nineteen species were recorded from the agricultural area.

Scrubland

About, 35-hectare area is covered by bushes and bamboo clumps. Such areas are mostly found at the edges of south-east part of the forest. Seven species were recorded from scrubland. A probable very rare species, Wedge-billed Wren Babbler was recorded in the eastern slope of the community forest during the second visit.

Relative abundance

Index of relative abundance was calculated using Machhinon's list. In this method, the relative abundance of each species is equivalent to the fraction of lists on which a species occurs. Among 110 bird species, three species were abundant, seven were common, fifteen were fairly common, thirty-three were occasional and fifty-two species were uncommon. During the study

period the frequency of observation of Scarlet Minivet *Pericrocotus flammeus*, Black Drongo *Dicrurus macrocercus* and Crested Serpent Eagle *Spilornis cheela* was the highest followed by Chestnut-bellied Nuthatch *Sitta castanea*, Spotted Dove *Streptopelia chinensis*, Lineated Barbet *Megalaima lineata*, Blue-throated Barbet *M. asiatica* and Red-vented Bulbul *Pycnonotus cafer*. The relative abundance of the species is shown in Table 6.

Table 6: Relative abundance of species according to order and family.

S.N	Scientific Name	Frequency	Relative abundance
	GALLIFORMES		
	Phasianidae		
1	<i>Gallus gallus</i>	3	0.075
2	<i>Pavo cristatus</i>	8	0.2
	PICIFORMES		
	Picidae		
3	<i>Dendrocopos conicapillus</i>	11	0.275
4	<i>Dendrocopos macei</i>	6	0.15
5	<i>Picus clavinucha</i>	12	0.3
6	<i>Dinopium shorii</i>	8	0.2
7	<i>Dinopium benghalense</i>	3	0.075
8	<i>Chrysocolaptes lucidus</i>	4	0.1
	Megalaimidae		
9	<i>Megalaima lineata</i>	16	0.4
10	<i>Megalaima asiatica</i>	16	0.4
	BUCEROTIFORMES		
	Bucerotidae		
11	<i>Anthracoceros albirostris</i>	9	0.225
12	<i>Buceros bicornis</i>	4	0.1
	CORACIIFORMES		
	Coraciidae		
13	<i>Coracias benghalensis</i>	6	0.15
14	<i>Eurystomus orientalis</i>	11	0.275
	Dacelonidae		
15	<i>Halcyon smyrnensis</i>	12	0.3
	CUCULIFORMES		
	Cuculidae		
16	<i>Hierococcyx varius</i>	6	0.15
17	<i>Cuculus micropterus</i>	3	0.075
18	<i>Eudynamis scolopacea</i>	6	0.15
19	<i>Phaenicophaeus tristis</i>	3	0.075
	Centropodidae		
20	<i>Centropus sinensis</i>	8	0.2
21	<i>Centropus bengalensis</i>	1	0.025

	PSITTACIFORMES		
	Psittacidae		
22	<i>Psittacula krameri</i>	2	0.05
	APODIFORMES		
	Apodidae		
23	<i>Apus affinis</i>	4	0.1
	STRIGIFORMES		
	Strigidae		
24	<i>Glaucidium radiatum</i>	1	0.025
25	<i>Athene brama</i>	3	0.075
26	<i>Ninox scutulata</i>	2	0.05
	Caprimulgidae		
27	<i>Caprimulgus macrurus</i>	1	0.025
	COLUMBIFORMES		
	Columbidae		
28	<i>Streptopelia orientalis</i>	8	0.2
29	<i>Streptopelia chinensis</i>	16	0.4
30	<i>Streptopelia decaocto</i>	6	0.15
31	<i>Macropygia unchall</i>	1	0.025
	GRUIFORMES		
	Rallidae		
32	<i>Amaurornis phoenicurus</i>	11	0.275
	CICONIFORMES		
	Charadriidae		
33	<i>Charadrius dubius</i>	2	0.05
34	<i>Vanellus indicus</i>	2	0.05
	Accipitridae		
35	<i>Aviceda jerdoni</i>	1	0.025
36	<i>Elanus caeruleus</i>	1	0.025
37	<i>Spilornis cheela</i>	21	0.525
38	<i>Buteo buteo</i>	1	0.025
39	<i>Ictinaetus malayensis</i>	2	0.05
40	<i>Spizaetus nipalensis</i>	2	0.05
	Falconidae		
41	<i>Microhierax caerulescens</i>	11	0.275
42	<i>Falco tinnunculus</i>	7	0.175
	Phalacrocoracidae		
43	<i>Phalacrocorax niger</i>	4	0.1
	Ardeidae		
44	<i>Bubulcus ibis</i>	6	0.15
45	<i>Ardeola grayii</i>	11	0.275
	Ciconiidae		
46	<i>Ciconia nigra</i>	2	0.05

47	<i>Ciconia episcopus</i>	1	0.025
	PASSERIFORMES		
	Eurylaimidae		
48	<i>Psarisomus dalhousiae</i>	7	0.175
	Irenidae		
49	<i>Chloropsis aurifrons</i>	7	0.175
	Laniidae		
50	<i>Lanius cristatus</i>	4	0.1
51	<i>Lanius schach</i>	6	0.15
52	<i>Lanius tephronotus</i>	6	0.15
	Corvidae		
53	<i>Urocissa erythrorhyncha</i>	2	0.05
54	<i>Dendrocitta vagabunda</i>	12	0.3
55	<i>Corvus macrorhynchos</i>	6	0.15
56	<i>Oriolus tenuirostris</i>	3	0.075
57	<i>Oriolus xanthornus</i>	6	0.15
58	<i>Oriolus traillii</i>	4	0.1
59	<i>Coracina macei</i>	12	0.3
60	<i>Coracina melaschistos</i>	3	0.075
61	<i>Pericrocotus ethologus</i>	6	0.15
62	<i>Pericrocotus flammeus</i>	21	0.525
63	<i>Dicrurus macrocercus</i>	21	0.525
64	<i>Dicrurus leucophaeus</i>	6	0.15
65	<i>Dicrurus caerulescens</i>	6	0.15
66	<i>Dicrurus aeneus</i>	4	0.1
67	<i>Dicrurus remifer</i>	7	0.175
68	<i>Dicrurus hottentottus</i>	6	0.15
69	<i>Dicrurus paradiseus</i>	12	0.3
70	<i>Aegithina tiphia</i>	3	0.075
	Muscipapidae		
71	<i>Monticola solitarius</i>	3	0.075
72	<i>Myiophonus caeruleus</i>	2	0.05
73	<i>Cyornis poliogenys</i>	6	0.15
74	<i>Culicicapa ceylonensis</i>	6	0.15
75	<i>Copsychus saularis</i>	7	0.175
76	<i>Copsychus malabaricus</i>	11	0.275
77	<i>Chaimarrornis laucocephalus</i>	3	0.075
78	<i>Enicurus immaculatus</i>	6	0.15
79	<i>Saxicola torquata</i>	7	0.175
80	<i>Saxicola caprata</i>	6	0.15
81	<i>Saxicola ferrea</i>	3	0.075
	Sturnidae		
82	<i>Sturnus malabaricus</i>	1	0.025

83	<i>Acridotheres tristis</i>	11	0.275
84	<i>Acridotheres fuscus</i>	6	0.15
85	<i>Gracula religiosa</i>	12	0.3
	Sittidae		
86	<i>Sitta castanea</i>	17	0.425
87	<i>Sitta frontalis</i>	4	0.1
	Paridae		
88	<i>Parus major</i>	9	0.225
	Hirundinidae		
89	<i>Hirundo daurica</i>	3	0.075
	Pycnonotidae		
90	<i>Pycnonotus melanicterus</i>	12	0.3
91	<i>Pycnonotus leucogenys</i>	16	0.4
92	<i>Pycnonotus cafer</i>	17	0.425
	Cisticolidae		
93	<i>Prinia hodgsonii</i>	6	0.15
94	<i>Prinia inornata</i>	2	0.05
	Zosteropidae		
95	<i>Zosterops palpebrosus</i>	6	0.15
	Sylviidae		
96	<i>Cettia flavolivacea</i>	1	0.025
97	<i>Acrocephalus dumetorum</i>	1	0.025
98	<i>Orthotomus sutorius</i>	16	0.4
99	<i>Phylloscopus fuscatus</i>	1	0.025
100	<i>Phylloscopus trochiloids</i>	1	0.025
101	<i>Seicercus xanthoschistos</i>	2	0.05
102	<i>Sphenocichla humei</i>	1	0.025
103	<i>Turdoides nipalensis</i>	1	0.025
104	<i>Turdoides striatus</i>	11	0.275
	Nectariniidae		
105	<i>Nectarinia asiatica</i>	1	0.025
106	<i>Aethopyga siparaja</i>	3	0.075
	Passeridae		
107	<i>Motacilla alba</i>	1	0.025
108	<i>Motacilla flava</i>	1	0.025
109	<i>Anthus rufulus</i>	1	0.025
	Fringillidae		
110	<i>Carpodacus erythrinus</i>	1	0.025

Threatened Status

Eight species recorded were threatened according to the state of Nepal's birds 2004 (Baral and Inskipp 2004). Among them Jerdon's Baza is considered critical, Great Hornbill and Wedge-billed Wren Babbler (Globally near threatened species, IUCN 2004) are in endangered category and Black Stork, Barred Cuckoo Dove, Long-tailed Broadbill, Red Junglefowl and Hill myna are Vulnerable. Both Great Hornbill and Long-tailed Broadbill were previously recorded from the area (Khanal and Yonzon 2000).

Table 7: List of threatened birds recorded in the study (based on Baral and Inskipp, 2004).

No.	Scientific Name	Categories	Block	Habitat
1.	<i>Aviceda jerdoni</i>	Critical	Fourth	Forest
2.	<i>Buceros bicornis</i> *	Endangered	Third, Fourth	Forest
3.	<i>Sphenocichla humei</i> *	Endangered	Degraded forest of the eastern slope of Fourth block	
4.	<i>Psarisomus dalhousiae</i>	Vulnerable	Second, Third, Fourth	Forest
5.	<i>Macropigia unchall</i>	Vulnerable	Fourth	Forest
6.	<i>Ciconia nigra</i>	Vulnerable	Fourth	Forest
7.	<i>Gallus gallus</i>	Vulnerable	Second, Third	Forest
8.	<i>Gracula religiosa</i>	Vulnerable	Fourth	Forest

* Globally near threatened species

Threats

a) Pesticides (e.g. BHC, Metacid) and chemical fertilizers are used in the agricultural areas (Man Kumar Magar, President Raja Rani Pokari conservation committee, *Pers. Comm.* 2004). Birds are particularly susceptible to insecticide damage (Baral, 2000). Ingesting pesticides directly or indirectly by eating pesticide-contaminated grains, fruits, worms and insects may adversely affect them. Uses of pesticides in agricultural areas not only kill the pests but also the useful invertebrates that are the food sources of various types of birds. Some pesticides have a long term damaging effect on the reproductive process of raptors as well as aquatic birds. The sharp fall in raptor population with the increase in the use of pesticide is well known (Ratcliff 1967, Hickey and Anderson 1968, Hickey 1969). Persistent, high fat solubility and sub lethal effects are the main qualities, which lead organochlorine pesticides to cause decline in bird population. Predator and scavengers at the top of the food chain are among the most affected species (Newton 1984) as they are especially liable to accumulate organochlorines in large amounts.

b) Hunting and trapping of wild animals is prohibited. However due to lack of awareness about the importance of wildlife, it is hardly implemented. A nesting tree of Great Hornbill was cut down

in the south of Raja Pokhari during breeding period by three local people to get the beak of the female. (Lila Magar, *pers. Comm.* 2003)

Such activities are a widely observed in the western part of Siwalik Hills of Morang. Collection of young chicks of Parrots, Mynas, Peafowl, Hornbills and Woodpecker are also practiced by the local people (Basnet 2003). People from Kagate and Murchunge village, who do not permitted to utilize the forest resources, are illegally doing such activities. During the third field visit, five chicks of Indian Peafowl were seen in Dhobi village. It was taken out from its nest by herdsmen of the village to domesticate it.

c) The area is slowly developing into local tourist destination. Now the area is a popular picnic spot for the surrounding people. As such number of people visit this forested area every year. It may have adverse effect on birds' activity.

d) The forest area is the major grazing area of the cattle. So random use of forest resources may adversely effect bird population.

CONCLUSION

An exploration of bird diversity was done in the Raja Rani Community Forest area from October 2003 to July 2004 according to Mackinnon's lists. Total four visits were made in that area once in each season. Ten bird lists were made in each season which consists of seventeen species in each list. Therefore total 40 lists were prepared during whole study period.

A total of 110 species were recorded from the area. Among them 100 were resident and 10 were migratory. Bird habitats in the area were categorized according to vegetation structure and habitat types. The forest area is Sal dominated and covers approximately 170 (68%) hectares. Aquatic habitat covers 20 (8%) hectares, agricultural area covers 25 (10%) hectares and scrubland covers 35 (14%) hectares. Approximately 48.23% species were recorded from forest area. Similarly, 10.46% were recorded from aquatic habitat, 15.33% from adjacent agricultural area and 25.98% were recorded from scrubland.

The area is an important habitat for birds. Eight species of the observed birds were threatened including two Globally near threatened species. Although hunting and poaching of wild animals is prohibited in the area, collection of young chicks and illegal hunting on game birds is still prevalent.

RECOMMENDATION

The Raja Rani Community forest is an important bird site as eight nationally threatened birds including two Globally near threatened species have been recorded from the area. Therefore, the area has potential to develop into favorable site for the birds.

An inventory of bird diversity on a regular basis to find out fluctuation will help to understand the state of birds in the area.

The Great Hornbill used to nest in that area previously but now is regularly visited by Great Hornbill during fruiting period of Banyan only. Thus biological study of such species is recommended.

The flow of people into the community forest has an adverse effect on birds, so it has to be managed.

Although hunting is prohibited in the area by community forest management committee, collection of young chicks and illegal hunting on game bird is still prevalent. Awareness among local people might help reduce such activities.

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Appendix-I List of birds from Raja Rani Community Forest, Morang Siwaliks

S.N	Common Name	Scientific Name	Habitat	Status
	Order: GALLIFORMES			
	Family: Phasianidae			
1	Red Junglefowl	<i>Gallus gallus</i>	F	R
2	Indian Peafowl	<i>Pavo cristatus</i>	F	R
	PICIFORMES			
	Picidae			
3	Grey-capped Pygmy Woodpecker	<i>Dendrocopos conicapillus</i>	F	R
4	Fulvous-breasted Woodpecker	<i>Dendrocopos macei</i>	F	R
5	Greater Yellownape	<i>Picus clavinucha</i>	F	R
6	Himalayan Flameback	<i>Dinopium shorii</i>	F	R
7	Black-rumped Flameback	<i>Dinopium benghalense</i>	F	R
8	Greater Flameback	<i>Chrysocolaptes lucidus</i>	F	R
	Megalaimidae			
9	Lineated barbet	<i>Megalaima lineata</i>	F	R
10	Blue-throated Barbet	<i>Megalaima asiatica</i>	F	R
	BUCEROTIFORMES			
	Bucerotidae			
11	Oriental Pied Hornbill	<i>Anthracoceros albirostris</i>	F	R
12	Great Hornbill	<i>Buceros bicornis</i>	F	R
	CORACIIFORMES			
	Coraciidae			
13	Indian Roller	<i>Coracias benghalensis</i>	F	R
14	Dollarbird	<i>Eurystomus orientalis</i>	F	R
	Dacelonidae			
15	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	A, W	R
	CUCULIFORMES			
	Cuculidae			
16	Common Hawk Cuckoo	<i>Hierococcyx varius</i>	F	R
17	Indian Cuckoo	<i>Cuculus micropterus</i>	F	S
18	Asian Koel	<i>Eudynamys scolopacea</i>	F	R
19	Green-billed Malkoha	<i>Phaenicophaeus tristis</i>	F	R
	Centropodidae			
20	Greater Coucal	<i>Centropus sinensis</i>	F, S	R
21	Lesser Coucal	<i>Centropus bengalensis</i>	F, S	R
	PSITTACIFORMES			

	Psittacidae			
22	Rose-ringed Parakeet	<i>Psittacula krameri</i>	A, F	R
	APODIFORMES			
	Apodidae			
23	House Swift	<i>Apus affinis</i>	A	R
	STRIGIFORMES			
	Strigidae			
24	Jungle Owlet	<i>Glaucidium radiatum</i>	F	R
25	Spotted Owlet	<i>Athene brama</i>	F, A	R
26	Brown Hawk Owl	<i>Ninox scutulata</i>	F	R
	Caprimulgidae			
27	Large-tailed Nightjar	<i>Caprimulgus macrurus</i>	A	R
	COLUMBIFORMES			
	Columbidae			
28	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	F	R
29	Spotted Dove	<i>Streptopelia chinensis</i>	A	R
30	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	A	R
31	Barred Cuckoo Dove	<i>Macropygia unchall</i>	F	R
	GRUIFORMES			
	Rallidae			
32	White-breasted Waterhen	<i>Amauornis phoenicurus</i>	W	R
	CICONIFORMES			
	Charadriidae			
33	Little Ringed Plover	<i>Charadrius dubius</i>	W	R
34	Red-wattled Lapwing	<i>Vanellus indicus</i>	W, A	R
	Accipitridae			
35	Jerdon's Baza	<i>Aviceda jerdoni</i>	F	R
36	Black-shouldered Kite	<i>Elanus caeruleus</i>	A	R
37	Crested Serpent Eagle	<i>Spilornis cheela</i>	F	R
38	Common Buzzard	<i>Buteo buteo</i>	F	W
39	Black Eagle	<i>Ictinaetus malayensis</i>	F	R
40	Mountain Hawk Eagle	<i>Spizaetus nipalensis</i>	F	R
	Falconidae			
41	Collared Falconet	<i>Microhierax caerulescens</i>	F, A	R
42	Common Kestrel	<i>Falco tinnunculus</i>	A	R
	Phalacrocoracidae			
43	Little Cormorant	<i>Phalacrocorax niger</i>	W	S

	Ardeidae			
44	Cattle Egret	<i>Bubulcus ibis</i>	W, A	R
45	Indian Pond Heron	<i>Ardeola grayii</i>	W, A	R
	Ciconiidae			
46	Black Stork	<i>Ciconia nigra</i>	W, A	W
47	Woolly-necked Stork	<i>Ciconia episcopus</i>	A	W
	PASSERIFORMES			
	Eurylaimidae			
48	Long-tailed Broadbill	<i>Psarisomus dalhousiae</i>	F	R
	Irenidae			
49	Golden-fronted Leafbird	<i>Chloropsis aurifrons</i>	F	R
	Laniidae			
50	Brown Shrike	<i>Lanius cristatus</i>	A	W
51	Long-tailed Shrike	<i>Lanius schach</i>	A	R
52	Grey-backed Shrike	<i>Lanius tephronotus</i>	A	R
	Corvidae			
53	Red-billed Blue Magpie	<i>Urocissa erythrorhyncha</i>	F	R
54	Rufous Treepie	<i>Dendrocitta vagabunda</i>	S, F	R
55	Large-billed Crow	<i>Corvus macrorhynchos</i>	F	R
56	Slender-billed Oriole	<i>Oriolus tenuirostris</i>	F	R
57	Black-hooded Oriole	<i>Oriolus xanthornus</i>	F	R
58	Maroon Oriole	<i>Oriolus traillii</i>	F	R
59	Large Cuckooshrike	<i>Coracina macei</i>	F	R
60	Black-winged Cuckooshrike	<i>Coracina melaschistos</i>	F	R
61	Long-tailed Minivet	<i>Pericrocotus ethologus</i>	F	R
62	Scarlet Minivet	<i>Pericrocotus flammeus</i>	F	R
63	Black Drongo	<i>Dicrurus macrocercus</i>	F, A	R
64	Ashy Drongo	<i>Dicrurus leucophaeus</i>	A	R
65	White-bellied Drongo	<i>Dicrurus caeruleus</i>	A, F	R
66	Bronzed Drongo	<i>Dicrurus aeneus</i>	F	R
67	Lesser Racket-tailed Drongo	<i>Dicrurus remifer</i>	F	R
68	Spangled Drongo	<i>Dicrurus hottentottus</i>	F	R
69	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	F	R
70	Common Iora	<i>Aegithina tiphia</i>	F, S	R
	Muscipapidae			
71	Blue Rock Thrush	<i>Monticola solitarius</i>	A, W	R
72	Blue Whistling Thrush	<i>Myiophonus caeruleus</i>	W, F	R

73	Pale-chinned Flycatcher	<i>Cyornis poliogenys</i>	F	R
74	Grey-headed Canary Flycatcher	<i>Culicicapa ceylonensis</i>	F, S	R
75	Oriental Magpie Robin	<i>Copsychus saularis</i>	A	R
76	White-rumped Shama	<i>Copsychus malabaricus</i>	F	R
77	White-capped Water Redstart	<i>Chaimarrornis laucocephalus</i>	F, W	R
78	Black-backed Forktail	<i>Enicurus immaculatus</i>	F, W	R
79	Common Stonechat	<i>Saxicola torquata</i>	A	R
80	Pied Bushchat	<i>Saxicola caprata</i>	A	R
81	Grey Bushchat	<i>Saxicola ferrea</i>	F	R
	Sturnidae			
82	Chestnut-tailed Starling	<i>Sturnus malabaricus</i>	A	R
83	Common Myna	<i>Acridotheres tristis</i>	A, F	R
84	Jungle Myna	<i>Acridotheres fuscus</i>	A	R
85	Hill Myna	<i>Gracula religiosa</i>	F	R
	Sittidae			
86	Chestnut-bellied Nuthatch	<i>Sitta castanea</i>	F	R
87	Velvet-fronted Nuthatch	<i>Sitta frontalis</i>	F	R
	Paridae			
88	Great Tit	<i>Parus major</i>	F	R
	Hirundinidae			
89	Red-rumped Swallow	<i>Hirundo daurica</i>	A	R
	Pycnonotidae			
90	Black-crested Bulbul	<i>Pycnonotus melanicterus</i>	F	R
91	Himalayan Bulbul	<i>Pycnonotus leucogenys</i>	F	R
92	Red-vented Bulbul	<i>Pycnonotus cafer</i>	F	R
	Cisticolidae			
93	Grey-breasted Prinia	<i>Prinia hodgsonii</i>	S	R
94	Plain Prinia	<i>Prinia inornata</i>	S	R
	Zosteropidae			
95	Oriental White-eye	<i>Zosterops palpebrosus</i>	F	R
	Sylviidae			
96	Aberrant Bush Warbler	<i>Cettia flavolivacea</i>	S	R
97	Blyth's Reed Warbler	<i>Acrocephalus dumetorum</i>	S	R
98	Common Tailorbird	<i>Orthotomus sutorius</i>	S	R
99	Dusky Warbler	<i>Phylloscopus fuscatus</i>	F	R
100	Greenish Warbler	<i>Phylloscopus trochiloids</i>	F	W
101	Grey-hooded Warbler	<i>Seicercus xanthoschistos</i>	F	R

102	Wedge-billed Wren Babbler	<i>Sphenocichla humei</i>	S	R
103	Spiny Babbler	<i>Turdoides nipalensis</i>	F, S	R
104	Jungle Babbler	<i>Turdoides striatus</i>	F	R
	Nectariniidae			
105	Purple Sunbird	<i>Nectarinia asiatica</i>	A	R
106	Crimson Sunbird	<i>Aethopyga siparaja</i>	F	R
	Passeridae			
107	White Wagtail	<i>Motacilla alba</i>	W, A	W
108	Yellow Wagtail	<i>Motacilla flava</i>	W, A	W
109	Paddyfield Pipit	<i>Anthus rufulus</i>	A	R
	Fringillidae			
110	Common Rosefinch	<i>Carpodacus erythrinus</i>	S	W

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Status

R Resident, W Winter Visitor, S Summer Visitor

Habitat

A Agricultural area, F Forest,
W Water canals, S Scrubland

Appendix- II Trees and woody vegetation of study area.

S. No.	Scientific Name	Local Name	Family
1	<i>Acacia catechu</i>	Khayar	Leguminosae
2	<i>Acacia pennata</i>	Arari	Leguminosae
3	<i>Adina cardifolia</i>	Karma	Rubiaceae
4	<i>Aegle marmelos</i>	Bel	Rutaceae
5	<i>Anthocephalus chinensis</i>	Kadam	Rubiaceae
6	<i>Antidesma acidum</i>	Archal	Euphorbiaceae
7	<i>Artocarpus lakoocha</i>	Badhar	Moraceae
8	<i>Asltonia scholaris</i>	Chhatiwan	Apocynaceae
9	<i>Azadirachta indica</i>	Nim	Meliaceae
10	<i>Bauhinia purpurea</i>	Tanki	Leguminosae
11	<i>Bauhinia vahlii</i>	Bhorla	Leguminosae
12	<i>Bombax ceiba</i>	Simal	Bombacaceae
13	<i>Butea minor</i>	Bhuletro	Leguminosae
14	<i>Butea monosperma</i>	Palas	Leguminosae
15	<i>Callicarpa arborea</i>	Kharane	Verbenaceae
16	<i>Careya arborea</i>	Kumbhi	Lecythidaceae
17	<i>Cassia fistula</i>	Rajbrikshya	Leguminosae
18	<i>Celtis australis</i>	Khari	Ulmaceae
19	<i>Citrus medica</i>	Bimiro	Rutaceae
20	<i>Colebrookea oppositifolia</i>	Dhasure	Labiatae
21	<i>Cornus oblonga</i>	Latikath	Cornaceae
22	<i>Dalbergia latifolia</i>	Satisal	Leguminosae
23	<i>Dalbergia sissoo</i>	Sisaw	Leguminosae
24	<i>Dillenia indica</i>	Kumbi	Dilleniaceae
25	<i>Dillenia pentagyna</i>	Tatari	Dilleniaceae
26	<i>Duabanga grandiflora</i>	Lampate	Lythraceae
27	<i>Ficus benghalensis</i>	Bar	Moraceae
28	<i>Ficus carica</i>	Nebaro	Moraceae
29	<i>Ficus hispida</i>	Khasre	Moraceae
30	<i>Ficus lacor</i>	Kabhro	Moraceae
31	<i>Ficus neriifolia</i>	Dudhilo	Moraceae
32	<i>Ficus racemosa</i>	Dumri	Moraceae
33	<i>Ficus religiosa</i>	Pipal	Moraceae
34	<i>Ficus semicordata</i>	Khanyu	Moraceae
35	<i>Garuga pinnata</i>	Dabdabe	Burseraceae
36	<i>Gmelina arborea</i>	Khamari	Verbenaceae

37	<i>Grewia elastica</i>	Shylphushre	Tilaceae
38	<i>Lagerstroemia parviflora</i>	Bot dhayaro	Lythraceae
39	<i>Lannea coromandelica</i>	Hallunde	Anacardiaceae
40	<i>Leea macrophylla</i>	Galeni	Leeaceae
41	<i>Maesa chisia</i>	Bilaune	Myrsinaceae
42	<i>Magnifera indica</i>	Amp	Anacardiaceae
43	<i>Mallotus philippensis</i>	Sindhure	Euphorbiaceae
44	<i>Mimosa rubicaulis</i>	Arharikanda	Leguminosae
45	<i>Morus rubra</i>	Kimbu	Moraceae
46	<i>Nyctanthes arbor-tristis</i>	Parijat	Oleaceae
47	<i>Origanum vulgare</i>	Sajwan	Labiatae
48	<i>Phyllanthus emblica</i>	Amala	Euphorbiaceae
49	<i>Pilea symmeria</i>	Kamle	Urticaceae
50	<i>Premna integrifolia</i>	Gidari	Verbenaceae
51	<i>Salix tetrasperma</i>	Bains	Salicaceae
52	<i>Sapindus mukorossi</i>	Rittha	Sapindaceae
53	<i>Sapium insigne</i>	Khirro	Euphorbiaceae
54	<i>Semecarpus anacardium</i>	Bhalayo	Anacardiaceae
55	<i>Shorea robusta</i>	Sal	Dipterocarpaceae
56	<i>Spatholobus parviflorus</i>	Debrelahara	Leguminosae
57	<i>Syzygium cumini</i>	Jamun	Myrtaceae
58	<i>Tamarindus indica</i>	Imli	Leguminosae
59	<i>Terminalia alata</i>	Saj	Combretaceae
60	<i>Terminalia bellirica</i>	Barro	Combretaceae
61	<i>Terminalia chebula</i>	Harro	Combretaceae
62	<i>Trewia nudiflora</i>	Pithari	Euphorbiaceae
63	<i>Vitex negundo</i>	Simali	Verbenaceae
64	<i>Woodfordia fruticosa</i>	Dhanero	Lythraceae
65	<i>Zizypus mauritiana</i>	Bayar	Rhamnaceae

Appendix-III List of threatened birds recorded in Raja Rani Community Forest (based on Baral and Inskipp, 2004).

No	Common Name	Scientific Name	Order	Family
1	Jerdon's Baza	<i>Aviceda jerdoni</i> *	Ciconiformes	Accipitridae
2	Great Hornbill	<i>Buceros bicornis</i> **	Bucerotiformes	Bucerotidae
3	Wedge-billed Wren Babbler	<i>Sphenocichla humei</i> **	Passeriformes	Sylviidae
4	Long-tailed Broadbill	<i>Psarisomus dalhousiae</i> +	Passeriformes	Eurylaimidae
5	Barred Cuckoo Dove	<i>Macropygia unchall</i> +	Columbiformes	Columbidae
6	Black Stork	<i>Coconia nigra</i> +	Ciconiformes	Ciconiidae
7	Red Junglefowl	<i>Gallus gallus</i> +	Galliformes	Phasianidae
8	Hill Myna	<i>Gracula religiosa</i> +	Passeriformes	Sturnidae

*CR – Critical, **EN – Endangered as well as Globally near threatened, +VU - Vulnerable