

An Ornithological Survey of Reshunga Forest, Potential IBA, West Nepal



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Oriental Bird Club, United Kingdom**



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Cover picture: Reshunga Forest and Tamghas Bazar

All photographs are by project leader (except mentioned), taken during the field visit.

SUMMARY

Reshunga Forest is a potential Important Bird Area, located in Gulmi district in western part of Nepal. The birdlife of this area was unknown previously due to lack of proper study. The present study was carried out to find out the species richness, seasonal diversity and existing threats to birds of Reshunga Forest. The Mackinnon's species richness method, direct observation and informal interviews were the field methods used to determine the seasonal and overall bird diversity, distribution of birds in the Reshunga forest, to assess the habitat structure and to establish the recommendations needed to upgrade the Reshunga forest to an Important Bird Area.

Four visits were made in November 2010, and in February, March and June 2011. The survey was made along fixed 5 walking trails on each visit.

A total of 91 lists were prepared from 20 days survey, which resulted in a total of 194 bird species. The Mackinnon's list method showed that the third visit (in March) was richest in bird diversity with 125 species recorded from 26 lists, followed by the second visit, fourth visit and first visit.

All the trails were found to support 100 or more bird species. Among them Trail number 3 was the richest in bird diversity with 112 bird species recorded, followed by 3, 4, 5 and 1 with 112, 109, 103 and 99 bird species respectively.

Birds recorded that are in the globally threatened category were Egyptian Vulture *Neophron percnopterus*, White-rumped Vulture *Gyps bengalensis* and Red-headed Vulture *Sacrogyps calvus*. A total of 56 biome-restricted bird species and only 2 Restricted-range species were recorded.

Forest is the main habitat in Reshunga Forest which contains pine and broadleaved forest. *Pinus roxburghii*, *Alnus nepalensis*, *Schima wallichii*, *Castanopsis indica*, *Pinus roxburghii*, *Alnus nepalensis*, *Acer oblongum* and *Quercus semicarpifolia* are the main vegetation of Reshunga Forest.

Road construction, hunting overuse of resources and excess plastics thrown by visitors were found to be the major threats to birds of the Reshunga Forest.

Since Reshunga Forest supports significant number of birds under category A1, A2 and A3 it should be upgraded to Important Bird Area of Nepal.

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BACKGROUND

Bird diversity of Nepal

Nepal the small mountainous country has been blessed with high biodiversity. The great biodiversity of Nepalese fauna is revealed by the recording of 869 bird species (BCN 2009, Giri and Choudhary 2009, 2010, 2010a and 2011). Recording of 869 bird species in Nepal, over 8% at global level is considered exceptionally high. This is the reflection of Nepal's unique geographical position, altitudinal variation and climatic differences (Grimmett *et al.*2000). These are the factors for creating the remarkable diversity of habitats ranging from bare rock and scrub in the alpine zone to tropical rainforest in the lowlands except marine habitat. Alpine habitat, forest and scrub, wetlands, grassland, agricultural land and human settlements are the key habitat found in Nepal (Grimmett *et.al.* 2000 and Baral and Inskipp 2005).

Forest and scrubland hold the high proportion of 77% of the country's breeding birds (Inskipp 1989). Subalpine, Upper temperate and Lower temperate within Sino-Himalayan Temperate forest Biome, Subtropical in Sino-Himalayan Subtropical Forest Biome and tropical forest in the Indochinese Tropical Moist Forest Biome and Indo-Malayan Tropical Dry Zone Biome are the forest type found in Nepal (Baral and Inskipp 2005). Low grassland of protected area is important for 10 globally threatened bird species. Wetland, lakes and rivers covering just 2.8% of Nepal's land are important for threatened birds, 14 globally threatened and 10 near threatened bird species regularly Inhibits wetlands. Similarly, agricultural land and human settlements are manmade habitat modified from natural habitat which supports may common birds. 16% of all the forest birds which have adapted in habitats heavily modified or created by man such as grooves, gardens, shrubs and trees, and bushes at the edge of cultivation (Inskipp 1989). Around 611 species breed here in Nepal, 62 species are summer visitors or partial migrants and 150 species are winter migratory (Grimmett *et.al.*2000). Spiny Babbler *Turdoides nipalensis* is the only endemic bird species recorded for Nepal. Avifaunal diversity generally decreases with increase in altitude (Inskipp1989, Inskipp and Inskipp 1991).The richest area for Nepalese birdlife lies in the tropical lowlands below 300m where more than 500 species have

been recorded. In the sharp contrast, only about 80 species have been found above 4,270m in alpine zone (Inskipp and Inskipp 1991).

Of the total Nepalese bird 33 species are listed in IUCN Red List which are considered as globally threatened (BLI 2001,2004, BLI 2009a, 2009b, 2011a, 2011b, 2011c and Anon 2011) among these 5 species are Critically Endangered, 5 Endangered and 23 are listed as Vulnerable. In a recent assessment of the status of Nepal's birds (BCN and DNPWC 2011) 16 more bird species were found to be nationally threatened than in a similar study carried out in 2004 (Baral and Inskipp 2004). The number of nationally threatened birds in 2010 reached the high total of 149 species: 61 species were considered Critically Endangered, 38 Endangered and 50 Vulnerable at the national level (BCN and DNPWC 2011). A total of nine species were considered regionally extinct (BCN and DNPWC 2011). The following nine species are protected by National Parks and Wild Life Conservation Act 1973, Government of Nepal i.e. White Stork *Ciconia ciconia*, Black Stork *Ciconia nigra*, Himalayan Monal *Lophophorus impejanus*, Satyr Tragopan *Tragopan satrya*, Cheer pheasant *Catreus wallichii*, Bengal florican *Houbaropsis bengalensis*, Lesser Florican *Sypheotides indicia*, Sarus Crane *Grus antigone* and Great Hornbill *Buceros bicornis* (Baral & Inskipp 2004)

Important Bird Areas

Important Bird Areas (IBAs) are places of International significance for the conservation of birds at the global level. The IBA programme is a worldwide initiative by BirdLife International aimed at identifying, documenting, monitoring and working towards the conservation and sustainable development of a network of critical sites for the world's birds and other biodiversity.

The IBA criteria are internationally agreed, standardised, quantitative and scientifically defensible. The criteria are simple and robust enough that they can be applied uniformly and cost-effectively. Any area to be included under IBA should qualify the following Criterion and category.

Category	Criterion
A1: Globally threatened species	The site regularly holds significant numbers of a globally threatened species,

A2: Restricted-range species	The site is known or thought to hold a significant component of the restricted-range species whose breeding distributions (less than 50,000km ²) define an Endemic Bird Area (EBA) or Secondary Area (SA).
A3: Biome-restricted assemblage	The site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome.
A4: Congregations	(l) The site is known or thought to hold, on a regular basis, $\geq 1\%$ or $\geq 20,000$ water birds of a biogeographic population of a congregatory waterbird species.

Bird Conservation Nepal (BCN) is leading this initiative in Nepal. BCN together with BirdLife International have been identified total 27 IBAs in Nepal, covering about 18% of the country's land area. 24 IBAs support globally threatened species, 13 have restricted-range species, 24 have biome-restricted species and eight qualify as IBAs because they hold large congregations of waterbirds (Baral and Inskipp 2005). A total of 13 IBAs are within protected areas, two are partially protected and 12 are unprotected. Similarly, 5 sites are identified as potential IBAs including Reshunga Forest which may fulfill these criteria.

Due to a lack of baseline information on birdlife, the potential IBA at Reshunga Forest is still in the shadow and remaining behind in conservation measures. A long time has elapsed since the declaration of this area as a potential IBA, but no conservation measures or research have been initiated to date. This project was conducted with an aim to fulfill the gap in field study. Further there is no evidence for evaluation of this potential IBA. There was an immediate need for detailed survey work to determine the status of bird diversity and existing habitat condition.

OBJECTIVES

The anticipated aim and objectives of the proposed project are as follow,

- To determine the seasonal and overall bird diversity of the Reshunga forest.
- To determine the bird species richness and distribution of birds in the Reshunga forest.
- To assess the habitat structure of Reshunga forest.
- To establish the recommendation to upgraded Reshunga forest to IBA.

STUDY AREA

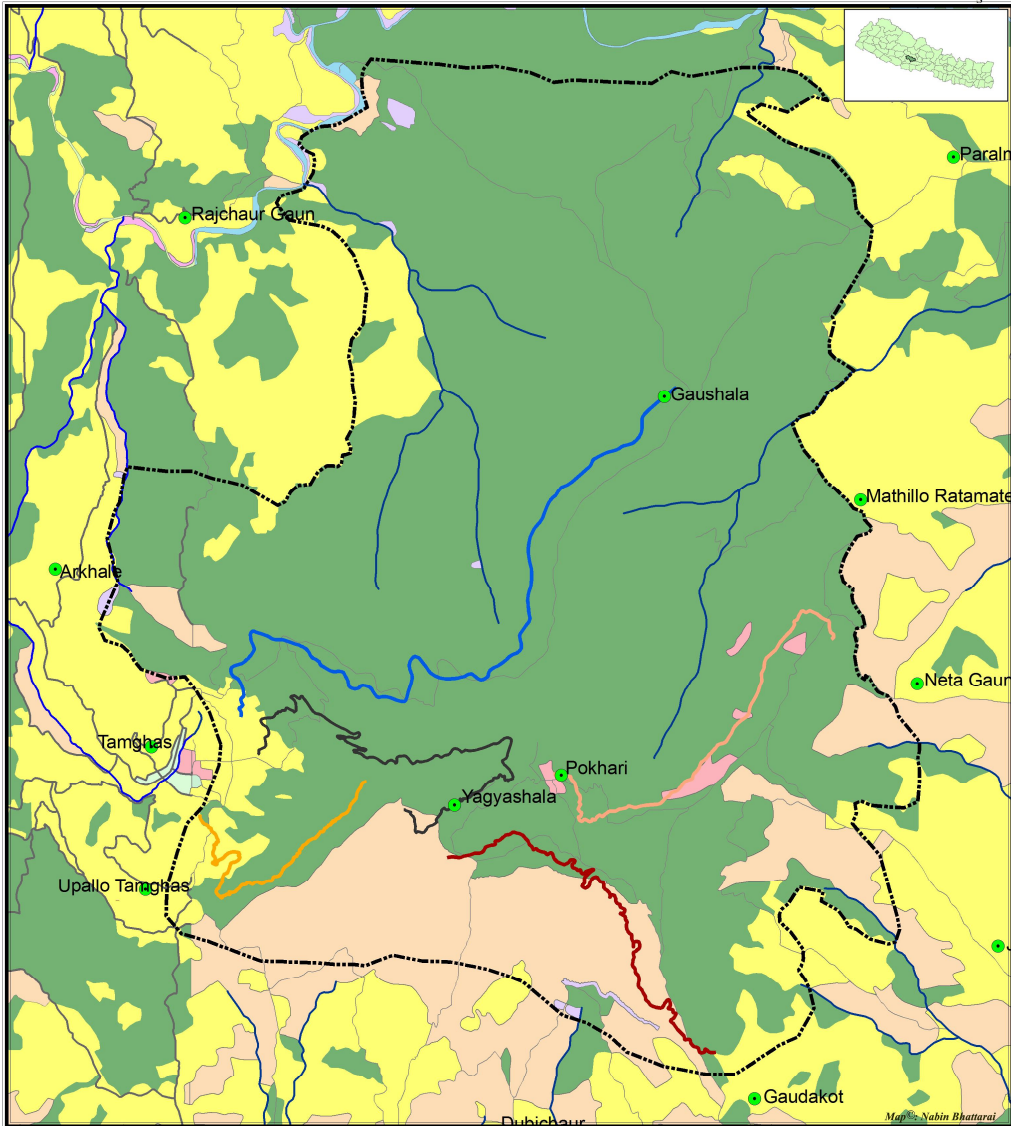
The Reshunga Forest, Potential IBA

The study area (28° 16'N / 83 °22' E) lies in Gulmi District of Lumbini Zone of Nepal. It covers an area of 3400ha of 10 Village Development Committee (Badagaun, Paralmi, Balithum, Jughum (Jubhung), Gaudakot, Gaudakot, Dubichaur, Simichaur, Tamghas, Arkhale and Hastichaur) with an altitudinal range of 800m- 2330m (see map). It is located in eastern side of Tamghas bazaar, the district headquarter of Gulmi district. It lies outside the protected area system of Nepal but the core area 675ha is maintained by Department of Forest, the rest of the forest around the hills is managed by more than 7 community forest under groups. Reshunga forest is part of an important watershed and includes nearly 40 small brooks and streams. On the lower slope there is lower temperate mixed broadleaved forest and on the higher slope rhododendron forest still exists in good condition (Baral and Inskipp 2005). At the lowest altitudes, annual temperature remains at 20°C and higher up, at Reshunga, the top maximum temperature is 20°C and minimum Temperature is - 5°C. Most of the rain falls in the monsoon season.

Biodiversity

Barking Deer *Muntiacus muntjak*, Asiatic Golden Jackal *Canis aureus*, Jungle Cat *Felis chaus*, Yellow-throated Marten *Martes flavigula*, Common Leopard *Panthera pardus*, Porcupine *Hystrix indica*, Indian Hare *Lepus nigricollis* and Langur Monkey *Semnopithecus entellus* are some mammals recorded from this area (Baral and Inskipp 2005).

Map of Resunga Forest



Legend

- Potential IBA boundary
- Village Name
- Trail 1
- Trail 2
- Trail 3
- Trail 4
- Trail 5



Map by Nabin Bhattarai

METHODOLOGY

Site selection

A preliminary survey was made from November 8, 2010 to November 10, 2010 before the actual survey to select the sites with the members of the Reshunga Conservation Committee. Reshunga Conservation committee was formed to develop and manage the Reshunga forest and religious sites in the forest. This committee is formed by the local people and government official representatives. An Inception meeting held at Tamghas Bazar on November 9, 2010 with local stake-holders was helpful for finalizing the survey sites and routes. Five sites were selected for this survey and future repeated surveys, representing all types of Habitats present in Reshunga Forest. They are as follow,

Survey Sites	Followed Route/ Trail
Site 1:	Bhagwati Temple -Sukhha Pokhari-Rehuunga Top
Site 2:	Tamghas Bazar - Gausala-Tamghas Bazar
Site 3:	Tamghas Bazar - Reshunga Top – Tamghas Bazar
Site 4:	Reshunga Top-Jughum-Reshunga Top
Site 5:	Reshunga Top-Gaudakot

Species richness, Seasonal Diversity and distribution

Mackinnon's listing method: The Mackinnon's species richness counting method, Mackinnon and Phillips (1993) was used as described by Bibby *et al.* (2000) to estimate the species richness of the potential IBA.

Species richness counting method will as follows:

1. Each new encountered (seen and heard) species was recorded until a list of 20 species reach.
2. Then a new list (number 2) was started and another 20 species were recorded. Each list contained 20 different species, but subsequent lists could include species previously listed. During the survey much care was taken not to repeat same species in the same list, but to list the species in subsequent lists.
3. Then list number 3 was recorded.

4. A final running species total was obtained by extracting the number of species in list 2 that were not in list 1 and so on throughout all the recorded for that area.
5. Same process, 1-4 was repeated for all four visits separately and collectively.

By plotting the cumulative total of species detected against the number of lists, a species richness curve was produced. This species richness curve is a measure of species diversity

The number of time a species reappears in subsequent lists can be converted into a frequency of occurrence, which gives some idea about relative abundance of that species when compared with other species.

Relative Abundance = Frequency of occurrence in Lists

Direct observation Method

Direct counting of each species was also used as secondary method during bird survey. A recording of the names of all encountered birds with the number was made throughout the survey on a daily basis. This method ensured the recording of bird species that were excluded in Mackinnon's listing method. For raptors flying long distances or having big home ranges, the highest number counted in one day was assumed to be the population. For birds making indistinct calls in a flock eg White-crested Laughing thrush the number of birds was estimated as 1 for every recording. For other birds the number from all sites was summed.

Likewise the vegetation name encountered along trails, the habitat condition and existing threats were assessed by direct observation and informal interviews with local people.

Grimmett *et al* (2000 and 2003) and Grimmett *et al* (1998) were used as field guides to identify birds in the field.

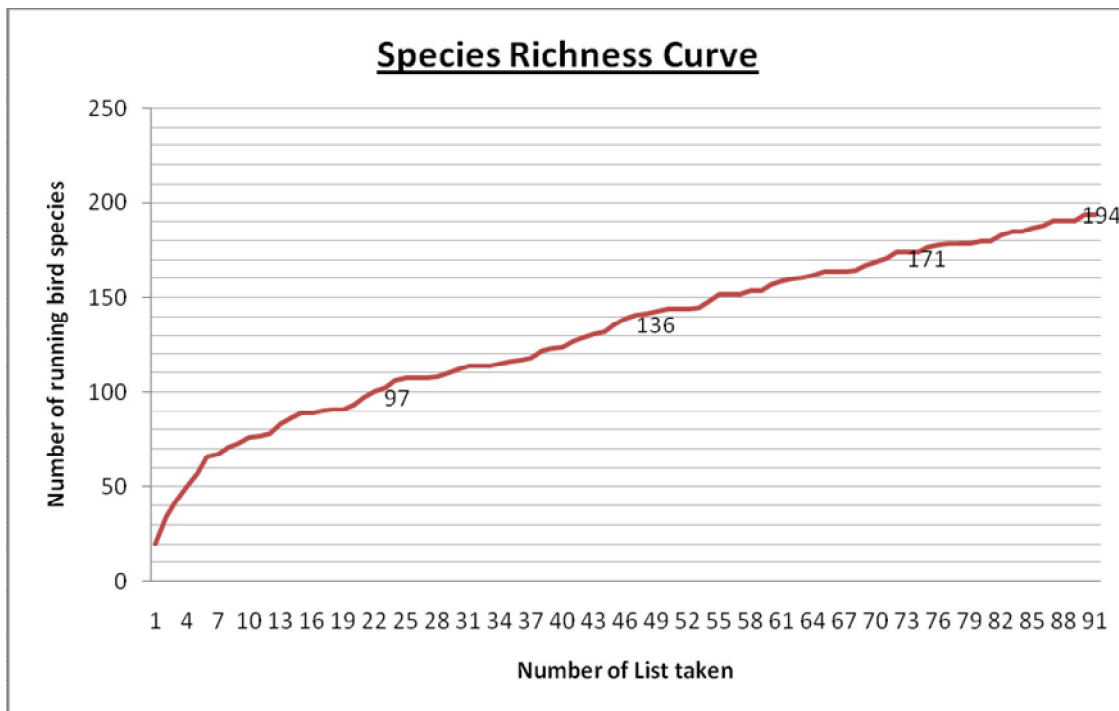
Timetable

Surveys were made from November 2010 to August 2011, so covering all four season as follows: autumn season (September October and **November**), winter season (December, January and **February**), spring (**March**, April and May) and summer (**June**, July and August). The itinerary followed is given in Annex II.

RESULTS

Bird Diversity

A total of 201 bird species was recorded during 20 days survey work covering four seasons. A total 91 Mackinnon's lists were prepared resulting in the recording of 194 bird species. Barn Owl *Tyto alba*, Mountain Hawk Eagle *Spizaetus nipalensis*, White Wagtail *Motacilla alba*, Purple Sunbird *Aethopyga gouldiae*, Spotted Forktail *Enicurus maculatus*, Plumbeous Water Redstart *Rhyacornis fuliginosus* and White-capped Water Redstart *Chaimarrornis leucocephalus* were observed, but not during the compilation of the Mackinnon's lists.



A total of 87 bird species was recorded during the first visit, 39 species were added from the second visit, 35 from the third and 22 species from the fourth visit.

White-rumped Vulture *Gyps bengalensis*, Egyptian Vulture *Neophron percnopterus* and Red-headed Vulture *Sarcogyps calvus* are the recorded globally threatened raptors and Spiny Babbler *Turdoides nipalensis*, the only Nepal bird endemic recorded in Reshunga Forest.

The commonest species were Large-billed Crow *Corvus macrorhynchos*, Great Barbet *Megalaima virens*, Green-backed Tit *Parus monticolus*, Himalayan Bulbul *Pycnonotus leucogenys*, Fire-breasted Flowerpecker *Dicaeum cruentatum*, Oriental



Speckled Piculet *Picumnus innominatus*



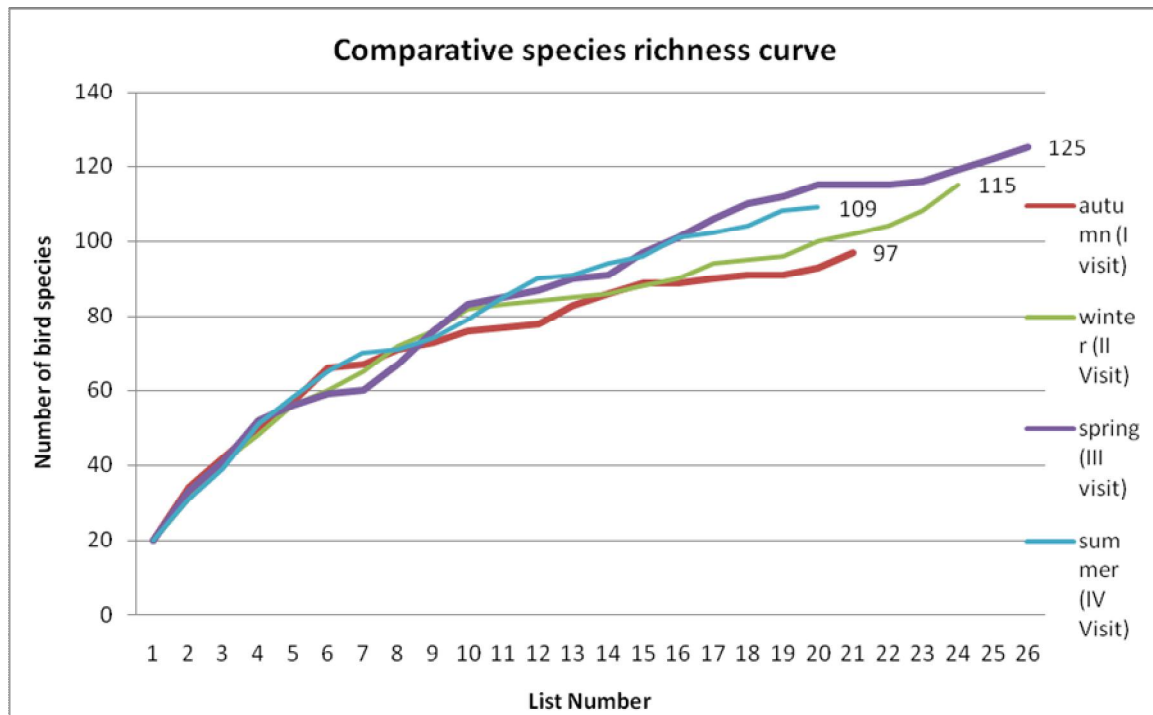
Green-backed Tit *Parus monticolus*

White-eye *Zosterops palpebrosus*, Grey-hooded Warbler *Seicercus xanthoschistos*, Black-chinned Babbler *Stachyris pyrrhops* and Rufous Sibia *Heterophasia capistrata*. These were recorded throughout the season with high relative abundance and number. Other birds with high populations were Slaty-headed Parakeet *Psittacula himalayana*, Common Rosefinch *Carpodacus erythrinus* and Fire-tailed Sunbird *Arachnothera longirostra* but these were not seen in all visits (Annex I).

Seasonal bird diversity

Species richness curve resulted from Mackinnon's List shows that highest number of birds species was recorded from spring season with 125 species followed by winter with 115 species, Summer with 109 species and least species from autumn with 98 bird species.

From autumn visit 20 lists were prepared followed by 24 from winter, 26 from spring and 20 from summer Visit.





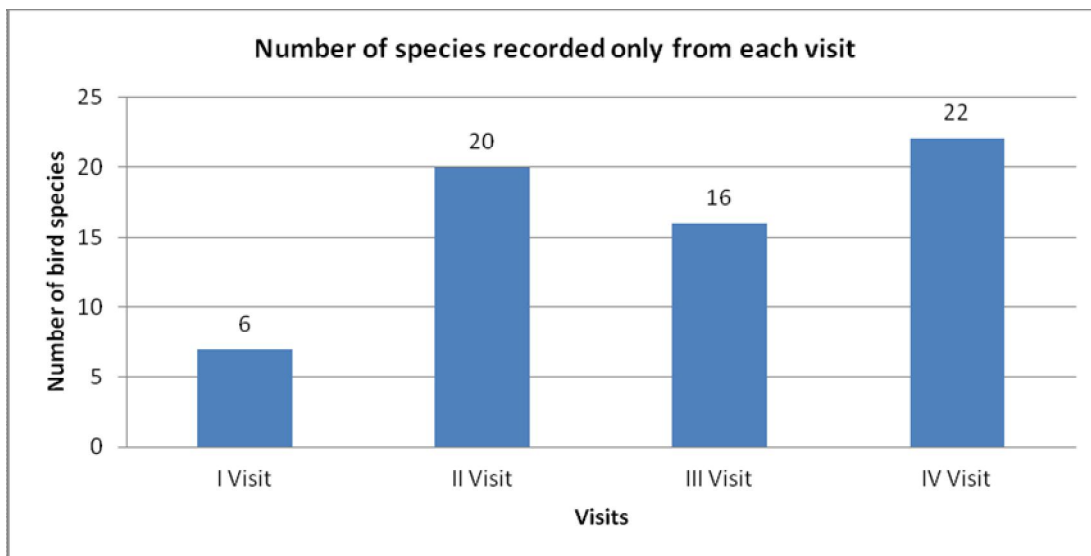
Blue-fronted Redstart *Phoenicurus frontalis*



Russet Sparrow *Passer rutilans*

The birds, White-capped Water Redstart *Chaimarrornis leucocephalus*, Plumbeous Water Redstart *Rhyacornis fuliginosus* Spotted Forktail *Enicurus maculates* and White Wagtail *Motacilla alba* were recorded only from one visit which were not included in Mackinnon's list. Including these four birds, the species diversity of I visit results to 102 species. Adding Barn Owl *Tyto alba* and Mountain Hawk Eagle *Spizaetus nipalensis* results 117 bird species in spring visit similarly, Purple Sunbird *Aethopyga gouldiae* totals 110 bird species from summer Visit.

The following seven birds; Yellow-billed Blue Magpie *Urocissa flavirostris*, White-browed Fulvetta *Alcippe vinipectus*, Grey Wagtail *Motacilla cinerea*, Blue-winged Minla *Minla cyanouroptera* Rufous-breasted Accentor *Prunella strophciata* Rosy Pipit *Anthus roseatus* and White-rumped Munia *Lonchura striata* were seen on only one visit.



20 species were seen only during second visit; most of them were altitudinal migrant and winter visitor birds. Likewise, 16 species from spring, during this visit both winter and summer altitudinal migrant and summer visitor birds were recorded. Highest number of birds i.e. 23 species were seen only from summer visit including Spiny Babbler *Turdoides nipalensis* (Annex I).



Golden Bush Robin *Tarsiger chrysaeus*



Himalayan Griffon *Gyps himalayensis*, roosting

Distribution of birds, bird rich areas

Site	Number of List taken / Number of bird species				Total
	I Visit (autumn)	II Visit (winter)	III Visit (spring)	IV Visit (summer)	
1	4/49	4/47	4/53	4/50	16/99
2	6/62	6/68	6/66	3/40	21/108
3	4/47	5/54	7/72	5/59	21/112
4	4/41	6/62	7/59	4/57	21/109
5	3/43	3/44	3/48	4/52	13/103

Analysing the Mackinnon's Lists the above table shows that site number 3 seems richest in bird diversity. From site 1 total 16 list were prepared, likewise 21 list from 2, 3 & 4 each and 13 from site 5.

Total 44 birds were seen from all site some of them are, Kalij Pheasant *Lophura leucomelanos*, Great Barbet *Megalaima virens*, Blue-throated Barbet *Megalaima asiatica*, Black Kite *Milvus migrans*, Himalayan Griffon *Gyps himalayensis*, Grey Treepie *Dendrocitta formosae*, Long-tailed Minivet *Pericrocotus ethologus*, White-throated Fantail *Rhipidura albicollis*, Blue Whistling Thrush *Myophonus caeruleus*, Dark-throated Thrush *Turdus ruficollis*, Rufous-gorgeted Flycatcher *Ficedula strophiatea*, Verditer Flycatcher *Eumyias thalassina*, Grey-headed Canary Flycatcher *Culicicapa ceylonensis*, Golden Bush Robin *Tarsiger chrysaeus*, Blue-fronted Redstart *Phoenicurus frontalis*, Grey Bushchat *Saxicola ferrea* Green-backed Tit *Parus monticolus* etc.

Coppersmith Barbet *Megalaima haemacephala*, Lesser Cuckoo *Cuculus poliocephalus*, Rose-ringed Parakeet *Psittacula krameri*, Northern Goshawk *Accipiter gentilis*, Black-headed Jay *Garrulus lanceolatus*, Grey-sided Bush Warbler *Cettia brunnifrons*, Upland Pipit *Anthus sylvanus* and Gold-naped Finch *Pyrrhoptes epauletta* were distributed in Trail 1. Fire-tailed sunbird *Arachnothera longirostra* and Slaty-headed Parakeet *Psittacula himalayana* were seen from Tail 1 with high number of individuals in comparison to other sites.

The following 9 species i.e. Grey-capped Pygmy Woodpecker *Dendrocopos canicapillus*, Brown-fronted Woodpecker *Dendrocopos auriceps*, Bonelli's Eagle *Hieraaetus fasciatus*, Eurasian Golden Oriole *Oriolus oriolus*, Dark-sided Flycatcher *Muscicapa sibirica*, Rusty-flanked Tree-creeper *Certhia nipalensis*, Grey-bellied Tesia *Tesia cyaniventer*, Russet Sparrow *Passer rutilans* and Rufous-breasted Accentor *Prunella strophia* were seen from only in trail 2.

Distribution of Tawny Owl *Strix aluco*, Eurasian Sparrowhawk *Accipiter nisus*, Eurasian Hobby *Falco subbuteo*, Brown Shrike *Lanius cristatus*, White-collared Blackbird *Turdus albocinctus*, White-tailed Robin *Myiomela leucura*, White-tailed Nuthatch *Sitta himalayensis*, Black-crested Bulbul *Pycnonotus melanicterus*, Grey-cheeked Warbler *Seicercus poliogenys* and Rusty-fronted Barwing *Actinodura egertoni* was only along Trail 3.

Bay Woodpecker *Blythipicus pyrrhotis*, Jungle Owlet *Glaucidium radiatum*, Spotted Owlet *Athene brama*, Grey Nightjar *Caprimulgus indicus*, Ashy Wood Pigeon *Columba pulchricollis*, Common Green Magpie *Cissa chinensis*, Black-winged Cuckooshrike *Coracina melaschistos*, Mistle Thrush *Turdus viscivorus*, Red-throated Flycatcher *Ficedula parva*, Rufous-bellied Niltava *Niltava sundara*, Chestnut-tailed Starling *Sturnus malabaricus*, Kashmir Nuthatch *Sitta cashmirensis*, Red-tailed Minla *Minla ignotincta*, White-browed Fulvetta *Alcippe vinipectus* and Scarlet Finch *Haematospiza sipahi* were distributed only along Trail 4.

Distribution of Mountain Scops Owl *Otus spilocephalus*, Rock Pigeon *Columba livia*, Common Buzzard *Buteo buteo*, Steppe Eagle *Aquila nipalensis*, Mountain Hawk Eagle *Spizaetus nipalensis*, Slaty-blue Flycatcher *Ficedula tricolor*, Pygmy Blue Flycatcher *Muscicapella hodgsoni*, Blue-capped Redstart *Phoenicurus coeruleocephalus*, Common Stonechat *Saxicola torquata*, Plain Martin *Riparia paludicola*, Scaly-breasted Wren Babbler *Pnoepyga albiventer*, Spiny Babbler *Turdoides nipalensis*, Blue-winged Minla *Minla cyanouroptera*, Plain Mountain Finch *Leucosticte nemoricola* and Crested Bunting *Melophus lathamii* were found only along Trail 5 (Annex I).

Birds under IBA Criteria

A1: Globally threatened species

Globally threatened birds seen soaring over the Reshunga Forest area were Egyptian Vulture *Neophron percnopterus*, White-rumped Vulture *Gyps bengalensis* and Red-headed Vulture *Sarcogyps calvus* which comes under A1 criteria.

Egyptian Vulture *Neophron percnopterus*: One was seen during autumn season visit, 4 in winter Visit, 5 in spring and 5 in IV visit. Frequency of occurrence was 1, 2, 3 and 8 from autumn, winter, spring and summer visit respectively seen from all trails except trail 3.

White-rumped Vulture *Gyps bengalensis*: Two soaring flocks of 5 and 4 birds were seen during spring and summer visit. Both flocks were seen at the sky of Gaudakot, coming toward the Reshunga Forest from eastern side and flying toward the Gaushala area.

Red-headed Vulture *Sarcogyps calvus*: Estimated population of Red-headed Vulture *Sarcogyps calvus* was 6, 4 and 3 individuals from I, II and III visit with 4, 1 and 5 frequency of occurrence. These birds were seen from 2, 3 and 5 number trail.

A2: Restricted-range species

Two restricted-range species were recorded from the area. Three individuals of Spiny Babbler *Turdoides nipalensis* were directly counted during IV visit from Gaudakot side. Similarly 3 White-tailed Nuthatch *Sitta himalayensis* were seen from trail 3 during fourth visit.

A3: Biome-restricted assemblage:

A total of 56 bird species belonging to 4 biomes was seen. Among them highest numbers of birds were recorded belonging to Biome 07: Sino-Himalayan Temperate Forest followed by 19 species from Biome 08: Sino-Himalayan Subtropical Forest, 6 species from Biome 05: Eurasian High Montane and lease birds i.e. 3 species were from Biome 11: Indo-Malayan Tropical Dry Zone.

S.N.	BIOME 05: EURASIAN HIGH MONTANE(ALPINE AND TIBETIAN)	
1.	Hill Partridge	<i>Arborophila torqueola</i>
2.	Himalayan Griffon	<i>Gyps himalayensis</i>
3.	Grey-backed Shrike	<i>Lanius tephronotus</i>
4.	Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>
5.	Tickell's Leaf Warbler	<i>Phylloscopus affinis</i>
6.	Rosy Pipit	<i>Anthus roseatus</i>
7.	Plain Mountain Finch	<i>Leucosticte nemoricola</i>
	BIOME 07: SINO-HIMALAYAN TEMPERATE FOREST	
8.	Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>
9.	Rufous-gorgeted Flycatcher	<i>Ficedula strophciata</i>
10.	Slaty-blue Flycatcher	<i>Ficedula tricolor</i>
11.	Rufous-bellied Niltava	<i>Niltava sundara</i>
12.	Golden Bush Robin	<i>Tarsiger chrysaesus</i>
13.	Blue-capped Redstart	<i>Phoenicurus coeruleocephalus</i>
14.	White-tailed Nuthatch	<i>Sitta himalayensis</i>
15.	Rusty-flanked Tree-creeper	<i>Certhia nipalensis</i>
16.	Green-backed Tit	<i>Parus monticolus</i>
17.	Chestnut-headed Tesia	<i>Tesia castaneocoronata</i>
18.	Grey-bellied Tesia	<i>Tesia cyaniventer</i>
19.	Grey-sided Bush Warbler	<i>Cettia brunnifrons</i>
20.	Buff-barred Warbler	<i>Phylloscopus pulcher</i>
21.	Ashy-throated Warbler	<i>Phylloscopus maculipennis</i>
22.	Grey-cheeked Warbler	<i>Seicercus poliogenys</i>
23.	White-throated Laughingthrush	<i>Garrulax albogularis</i>
24.	Striated Laughingthrush	<i>Garrulax striatus</i>
25.	Streaked Laughingthrush	<i>Garrulax lineatus</i>
26.	Scaly-breasted Wren Babbler	<i>Pnoepyga albiventer</i>
27.	White-browed Fulvetta	<i>Alcippe vinipectus</i>
28.	Fire-tailed Sunbird	<i>Arachnothera longirostra</i>
29.	Rufous-breasted Accentor	<i>Prunella strophciata</i>
30.	Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>
31.	Dark-breasted Rosefinch	<i>Carpodacus nipalensis</i>

32.	Spot-winged Rosefinch	<i>Carpodacus rodopeplus</i>
33.	Scarlet Finch	<i>Haematospiza sipahi</i>
34.	Gold-naped Finch	<i>Pyrrhoplectes epauletta</i>
BIOME 08: SINO-HIMALAYAN SUBTROPICAL FOREST		
35.	Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
36.	Golden-throated Barbet	<i>Megalaima franklinii</i>
37.	Blue-throated Barbet	<i>Megalaima asiatica</i>
38.	Slaty-headed Parakeet	<i>Psittacula himalayana</i>
39.	Orange-bellied Leafbird	<i>Chloropsis hardwickii</i>
40.	Black-headed Jay	<i>Garrulus lanceolatus</i>
41.	Grey Treepie	<i>Dendrocitta formosae</i>
42.	Black-winged Cuckooshrike	<i>Coracina melaschistos</i>
43.	Blue-capped Rock Thrush	<i>Monticola cinclorhynchus</i>
44.	Tickell's Thrush	<i>Turdus unicolor</i>
45.	Grey-winged Blackbird	<i>Turdus boulboul</i>
46.	Small Niltava	<i>Niltava macgrigoriae</i>
47.	White-tailed Robin	<i>Myiomela leucura</i>
48.	Black-throated Tit	<i>Aegithalos concinnus</i>
49.	Striated Bulbul	<i>Pycnonotus striatus</i>
50.	Himalayan Bulbul	<i>Pycnonotus leucogenys</i>
51.	Mountain Bulbul	<i>Hypsipetes mcclllandii</i>
52.	Black Bulbul	<i>Hypsipetes leucocephalus</i>
53.	Striated Prinia	<i>Prinia criniger</i>
BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE		
54.	White-rumped Vulture	<i>Gyps bengalensis</i>
55.	Red-headed Vulture	<i>Sarcogyps calvus</i>
56.	Chestnut-tailed Starling	<i>Sturnus malabaricus</i>

Habitat

Forest: Forest is the major habitat present in the Reshunga Forest area. At the lower elevation there is assemblage of *Pinus roxburghii*, *Alnus nepalensis*, *Schima wallichii*, *Castanopsis indica*. Dry ridges at the lower elevation there found *Pinus roxburghii* and *Alnus nepalensis* with Banmara found at the wet places. At middle elevation there is dense mix broadleaved forest, at wet places *Acer oblongum* and at dry ridges there is *Quercus semicarpifolia* patches. And at the top there is mossy *Quercus* sps dominant forest. Total 64 plant species were seen during bird survey (Annex III).

Water or wetland: Reshunga forest is an important watershed area and provides water for domestic use. A total 40 springs is registered in District Drinking Water Corporation. Since most of the water is tapped for domestic use, there is no water available for wild animals and birds to drink during the dry season except a little outflow at Thulokhola on trail 2. But during the rainy season many springs and waterfalls can be seen on southern face.

Agricultural land and human settlements: Reshunga forest is surrounded by agricultural land and human settlement at Tamghas, Gaudakot, Simichaur and Dubichaur Village Development Committee face.



Southern face of Reshunga from trail 5



Dense forest at higher elevation



Dense forest at middle elevation



Pinus roxburghii forest at lower elevation



Schima - Castanopsis forest at lower elevation

Threats

- **Development:** The construction of a dirt road inside Reshunga forest seems a major threat for birds. Roads from Tamghas to Reshunga top and Gaushala, Reshunga top to Jughum and Gudakot to Jughum are the roads. Since all roads are dirt, erosion up and down and mud slides on the road are common during rainy season. Further clearance of mud and stone on the road has been found destroying feeding and breeding habitats for ground dwelling birds. Fallen big trees during the road construction still can be seen in many places. People said after the opening of roads inside the forest the water level of springs has reduced.
- **Over-harvesting of natural resources:** Reshunga forest is the only mountain having forest in good condition in the district. Each Wednesday used to be free for the local to collect fodder for cattle and fire wood. But people were seen collecting fodder and fire wood every day and in all seasons. People were found collecting more resources from the core area than from the community forest. The sound of cutting fire wood and people communicating with each other were found to be common during daytime. Further this forest was used as free cattle grazing area especially ox during the off season were found abandoned in the forest.
- **Hunting:** From informal talks with local people hunting and snaring of Barking Deer and Kalij Pheasant was found to be common in this forest. During the inception meeting some Governmental officers said they were offered deer and Kalij Pheasant meat in a nearby restaurant. The hotel owner where I was staying also said that local hunters can bring killed or live Kalij Pheasant and Hill Partridge. People said unavailability of drinking water inside the forest attracts wild animals to a nearby pond which makes them easy targets for hunters. Crop raiding by the wildlife at the forest edge is another cause of hunting of wildlife. During my survey one snare targeted at large mammals and school children hunting with catapults were seen.
- **Pollution:** Abundant rubbish and vehicle (excavator) noise are other threats to birds. Mostly plastic packs of dried foods and plastic bags thrown by visitors were found abandoned. Reshunga is the main attraction for picnics in the area. During

I and II visits many picnic groups were seen who were responsible for polluting the forest and creating loud noise from morning to evening. Such rubbish was found in higher concentrations at Kunda and the View tower area.

Large-billed Crow was seen dispersing the bag of noodles' pack up to a long distance from the picnic spot.



Local people collecting firewood



Local people collecting fodder and firewood

INCEPTION MEETING

An Inception meeting was organised at Tamghas Bazar on November 9, 2010 with local stake holders. Participants were from different background including member of Community Forest Users groups, Chief District Forest Officer, Chief District Officer, Local Development Officer, Chief of District Police Office, Chef of District Drinking Water supply Corporation, school and college students, media persons and executive members of Reshunga Conservation Committee. A total of 39 individuals were present in this meeting. The main aim of the meeting was to make them aware about the objectives of the project, to acquire information that was needed about Reshunga Forest and to know their views towards birds and biodiversity conservation collectively.

This bird survey project was very much welcomed by the local stakeholders and received wide range of media coverage in local FM radios for up to three days, as well as in local and national newspapers.



Kunjarmani Gautam, Secretary of Reshunga Conservation committee facilitating the meeting

DISCUSSION

Important Bird Areas are places of international significance for the conservation of birds at the global level. The IBA programme is a worldwide initiative by BirdLife International aimed at identifying, documenting, monitoring and working towards the conservation and sustainable development of a network of critical sites for the world's birds and other biodiversity. Bird Conservation Nepal is leading this initiative in Nepal under the support of Royal Society for the Protection of Birds. A total of 27 sites are identified as IBA in Nepal including 5 potential IBA including Reshunga Forest. (Baral and Inskipp 2005).

Although Reshunga forest is known as a pilgrimage site having forest in good condition in the vicinity, biodiversity assessment including avian fauna was needed. Since all criteria of IBA are related to detail on birds, a survey of birds was considered important to assess Reshunga Forest as an IBA. Reshunga Forest has previously been poorly visited by ornithologists.

The documentation of 201 bird species during a nine month survey covering all seasons shows the area has high bird diversity. Other highly explored IBAs representing the mid hill of Nepal for example in Phulchowki Mountain Forest as many as 300 species and 318 species in Shivapuri National Park (Baral 2007 and SNP and BCN 2007) Increasing trend of the species richness curve even toward the end of each survey and final survey shows that more species could be found by further repeated survey.

The highest numbers of species were recorded from the third visit i.e. 125 followed by 115, 109 and 98 from second visit, fourth visit and first visit respectively. From I visit 20 list were prepared followed by 24 from II, 26 from III and 20 from IV Visit. It is assumed that highest number of birds from III visit may be due to the augmentation of resident bird by altitudinal migrant birds which breed in higher altitude and early summer migrant birds; 36% of Nepal's breeding birds are altitudinal migrants (Inskipp 1989). The variation in number of bird species and list taken from each visit was due to familiarity with birding route, number of survey hour and existed weather conditions.

Trail 2, 3 and 4 seems rich in bird diversity with equal 21 lists and more or less similar bird diversity; these sites are long in comparison to remaining sites and exhibits good and variation in forest habitat. Since site 1 and 5 are short and steep seems poor in bird diversity with 16 and 13 lists.

The high proportion of 77 % of Nepal's breeding birds utilises forest or shrub (Inskipp 1989) bird community of Reshunga Forest is also dominated by forest birds. White-capped Water Redstart *Chaimarrornis leucocephalus*, Plumbeous Water Redstart *Rhyacornis fuliginosus* Spotted Forktail *Enicurus maculates* and White Wagtail *Motacilla alba* are only birds primarily dependent on water bodies. Reshunga is dominated by broadleaved forest, only 63 species of plant species were recorded but more species may occur by detail study.

Since the Reshunga Forest supports significant number of Biome-restricted bird species under A3 Criteria and 2 species and Restricted range species under A2 criteria it can be upgraded as an IBA of Nepal. A further three species of endangered vultures were encountered regularly but nesting of these species was not observed. The altitudinal distribution of globally threatened birds in Nepal and availability of habitat shows very few globally threatened birds species can be expected at the Reshunga Forest (BCN and DNPWC 2011). The Gaushala which can hold about 160 cows lies inside the Reshunga Forest was found attracting vultures to feed on carcass. According to community members, 60 cows died in this winter season and only this can be responsible for a high availability of food for vultures. But the carcass management did not help the vultures to feed. The caretakers simply throw the carcasses down to a deep gorge having dense bushes and so vultures probably cannot feed easily.

According to local people before running the survey project hunting and trapping of Kalij Pheasant and Hill Partridge were very common. But interestingly, evidence of hunting of these birds was not seen through out the survey. The people who were witness to these activities assumed the wide media coverage of the single inception meeting should have played a positive role reducing such activity.

The core area of Reshunga Forest has been managed as a religious forest by the Reshunga Conservation Committee under the District Forest Officer of Gulmi District and is surrounded by seven community Forests. But developmental activities inside the forest and resources collection are at odds with sustainable conservation. Members of the Community Forest User Groups invade the religious forest instead of their own Community Forests for cattle grazing, and fodder and fire wood collection. Further Reshunga Forest is the main grazing land for the cows of Gaushala.

For the conservation of this forest member of Reshunga Conservation Committee seem to be on one side and the general public on the other side. According to members of Reshunga Conservation Committee guard system was adopted to manage the haphazard resource collection but was unsuccessful due to discouragement of people.

Ruru-Reshunga is already a renowned and highly treasured pilgrimage site in Gulmi district and all over Nepal having many shrines, temples and hermitages. In Gai/cow puja (Tihar), every first day of Shrawan (15 to 17 of July) and first day of Maghe (14 or 15 of January) hundred of devotees visit this area. Reshunga is a highly respected place and many businesses and educational institutions are named after it in Gulmi district, Butwal and even in Kathmandu. The results of this bird survey show that Reshunga is not only pilgrimage site but also could be good destination for nature tourism, and birdwatching tourism could be especially important. Further tourism promotion of the area can attract more tourists. The top of Reshunga, because of its height and geographical setting facilitates a wide range of view. The view tower located at the top enhancing the view of Himalayas and 3600 view of chains of mountains and villages.

Arjuni Dada (Mountain) and Bichitra Cave, 133 m long and 5 terraced near the Reshunga are other tourism attractions.

RECOMMENDATIONS

- **Listing as an Important Bird Area:** This Project is successful to locate the sufficient Category for any area to be included in Important Bird Area. Among the Four categories, category A2 and A3 are significant. Although the endangered birds under category A1 were sighted, regularly breeding colony of the species was not recorded.
- **Awareness:** Birds and wildlife conservation awareness education programmes among the peoples and stakeholders are urgently needed.
Conservation awareness activities like producing colourful posters of birds, brochures with short and important messages, talk programmes on importance of birds on environment, school teaching activities and radio programmes would be useful. Such conservation awareness activities will create positive impact working with local schools, government officials, Reshunga conservation committee, community forest users groups, general public and priests.
Participatory conservation approach: Local people's willingness is necessary for the proper conservation of the forest. Alternative income generating activities and capacity build up training can help to reduce the excess pressure in the forest.
- **Designate as a Watershed area requiring management:** Reshunga Forest is not only important as a pilgrimage site, but also an important source for drinking water for the people of Gulmi district. Around 150,000 peoples of 23 out of 89 Village Development Committees are benefitting from the springs and brooks of Reshunga Forest. Considering its importance for as a prime drinking water source this area should declared as a watershed area. Standard scientific approaches should be adopted for the long term and sustainable availability of drinking water for the people of the Gulmi district.
- **Further research:** This project was the scientific research only on birds of Reshunga Forest. Further visits can add more birds to the present list. Detailed studies on vegetation and other fauna can add to the value of Reshunga Forest.
- **Pasture Management:** It is recommended that agro forestry be practiced in order to produce sufficient fodder trees for cattle from Gaushala and surrounding villages which can reduce the over grazing and excess fodder collection inside the forest.

- **Tourism advocacy:** Reshunga Forest should be promoted as ecotourism especially a bird watching destination nationally and internationally. This area supports good variety of residential and migratory birds.
- **Manage Gaushala as a Vulture safe feeding site:** Selection and development of a site for carcass management as near the Gausala is recommended to provided the food for the Vultures like Vultures safe feeding sites known as vulture restaurant run by Bird Conservation Nepal in other parts of the country



Yagyashala



Siddhanath temple by Lilamani Marasini

Glimpses of some attractions at Reshunga



View tower at the top



Pond

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ANNEXES

Annex I: Checklist of birds

Order/Family/Common Name/ Scientific Name		Relative Abundance in each visit				Number of birds in each visit				Distribution of birds in trail in each visit			
		I	II	III	IV	I	II	III	IV	I	II	III	IV
GALLIFORMES													
Phasianidae													
Black Francolin	<i>Francolinus francolinus</i>			1	3			1	3			5	1,4&5
Hill Partridge	<i>Arborophila torqueola</i>	1	1	3	4	2	2	5	9	4	5	4	3,4&5
Kalij Pheasant	<i>Lophura leucomelanos</i>		6	6	3		13	9	7	2,3&4	1,3,4&5	1,3,4&5	1,4&5
PICIFORMES													
Picidae													
Speckled Piculet	<i>Picumnus innominatus</i>	1	3		5	2	8		10	4	1&5		2,4&5
Grey-capped Pygmy Woodpecker	<i>Dendrocopos canicapillus</i>			1				1				2	
Brown-fronted Woodpecker	<i>Dendrocopos auriceps</i>	2		1		2				2		2	
Fulvous-breasted Woodpecker	<i>Dendrocopos macei</i>	2		2		2				1&3		1&2	1&4
Greater Yellownape	<i>Picus flavinucha</i>				2								3
Grey-headed Woodpecker	<i>Picus canus</i>		1	8	4		1	8	6		5	1,3&4	2,3,4&5
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>				1				1				4
Megalaimidae													
Great Barbet	<i>Megalaima virens</i>	12	13	14	12	79	68	52	47	1,2,3,4&5	1,2,3,4&5	1,2,3,4&5	2,3&4
Golden-throated Barbet	<i>Megalaima franklinii</i>	2	3	9	4	2	33	31	34	3&5	3&4	2,3&4	2,3&4
Blue-throated Barbet	<i>Megalaima asiatica</i>	5	3	11	6	14	3	25	12	1,2&3	1&2	1,2,3,4&5	1,2,3&5

Coppersmith Barbet	<i>Megalaima haemacephala</i>				1				1				1
CORACIIFORMES													
Dacelonidae													
White-throated Kingfisher	<i>Halcyon smyrnensis</i>				2				1				1&3
CUCULIFORMES													
Cuculidae													
Large Hawk Cuckoo	<i>Hierococcyx sparveroides</i>				3				3				3&4
Common Hawk Cuckoo	<i>Hierococcyx varius</i>			1	3			3	3			2	1,2&5
Eurasian Cuckoo	<i>Cuculus canorus</i>				1				1				4
Oriental Cuckoo	<i>Cuculus saturatus</i>			4				6				2&3	
Lesser Cuckoo	<i>Cuculus poliocephalus</i>				1				1				1
Grey-bellied Cuckoo	<i>Cacomantis passerinus</i>				2				2				1&5
Asian Koel	<i>Eudynamis scolopacea</i>			2	2			1	2			1	1&3
Green-billed Malkoha	<i>Phaenicophaeus tristis</i>				2				2				2&4
PSITTACIFORMES													
Psittacidae													
Rose-ringed Parakeet	<i>Psittacula krameri</i>				1				2				1
Slaty-headed Parakeet	<i>Psittacula himalayana</i>	2	2			27 5	35 0			1&2	2		
STRIGIFORMES													
Tytonidae													
Barn Owl	<i>Tyto alba</i>								1				
Strigidae													
Mountain Scops Owl	<i>Otus spilocephalus</i>		1				1				5		
Tawny Owl	<i>Strix aluco</i>			1				1				3	
Collared Owlet	<i>Glaucidium brodiei</i>			2	2			2	3			2&4	3&4
Asian Barred Owlet	<i>Glaucidium cuculoides</i>	1	2		1	1	2		1	1	2&3		5
Jungle Owlet	<i>Glaucidium radiatum</i>				1				1				4

Spotted Owlet	<i>Athene brama</i>				1				3				4
Caprimulgidae													
Grey Nightjar	<i>Caprimulgus indicus</i>			1				1				4	
COLUMBIFORMES													
Columbidae													
Rock Pigeon	<i>Columba livia</i>				1				5				5
Ashy Wood Pigeon	<i>Columba pulchricollis</i>			1				1				4	
Oriental Turtle Dove	<i>Streptopelia orientalis</i>		8	15	2		14	35	5		1,2,3&4	1,2,3&4	1&4
Spotted Dove	<i>Streptopelia chinensis</i>	1		3	3	2		5	7	2		1&3	1,3&5
Wedge-tailed Green Pigeon	<i>Treron sphenura</i>			1	5			3	8			4	2,3&4
CICONIIFORMES													
Accipitridae													
Black Kite	<i>Milvus migrans</i>	5	4	1	7	7	4	2	7	1,2&5	1,4&5	5	1,3,4&5
Lammergeier	<i>Gypaetus barbatus</i>			3	3			2	4			3&4	5
Egyptian Vulture	<i>Neophron percnopterus</i>	1	2	3	8	1	4	5	5	5	1&5	1&5	1,3,4&5
White-rumped Vulture	<i>Gyps bengalensis</i>			1	1			5	4			5	5
Himalayan Griffon	<i>Gyps himalayensis</i>	4	11	9	2	35	62	17	6	2,3 &4	1,2,3,4 &5	2,3,4&5	3&5
Red-headed Vulture	<i>Sarcogyps calvus</i>	4	1	5		6	4	3		2,3 &5	5	3&5	
Crested Serpent Eagle	<i>Spilornis cheela</i>			4	3			3	4			2,3,4&5	2&4
Shikra	<i>Accipiter badius</i>			1	2			1	2			5	1&2
Besra	<i>Accipiter virgatus</i>	1	1	1		1	1	1		5	2	2	
Eurasian Sparrowhawk	<i>Accipiter nisus</i>		1								3		
Northern Goshawk	<i>Accipiter gentilis</i>		1								1		
Common Buzzard	<i>Buteo buteo</i>	2	1			1	1			5	5		
Black Eagle	<i>Ictinaetus malayensis</i>	1	3	3		2	3	2		5	2,3&4	2&4	
Steppe Eagle	<i>Aquila nipalensis</i>		1				3				5		
Bonelli's Eagle	<i>Hieraaetus fasciatus</i>			1				1				2	
Booted Eagle	<i>Hieraaetus pennatus</i>			1				1				3	

Mountain Hawk Eagle	<i>Spizaetus nipalensis</i>							1				5		
Falconidae														
Common Kestrel	<i>Falco tinnunculus</i>	2		2	4	2		2	4	1&5		1&4	2,3,4&5	
Eurasian Hobby	<i>Falco subbuteo</i>			1				1				3		
PASSERIFORMES														
Irenidae														
Orange-bellied Leafbird	<i>Chloropsis hardwickii</i>	2	3	5	4	6	8	7	6	2	2,3&4	2,3&4	2,3&4	
Laniidae														
Brown Shrike	<i>Lanius cristatus</i>			1								3		
Long-tailed Shrike	<i>Lanius schach</i>	2	3	3	1	2	3	2	1	1&3	1&3	3&5	3	
Grey-backed Shrike	<i>Lanius tephronotus</i>		1	1				1			4	5		
Corvidae														
Black-headed Jay	<i>Garrulus lanceolatus</i>				1				1					1
Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>	1				1	1			3				
Red-billed Blue Magpie	<i>Urocissa erythrorhyncha</i>	5	7	3	5	12	19	8	7	1,2&3	1,2,3&4	2&3	1,2,3&4	
Common Green Magpie	<i>Cissa chinensis</i>			2				1				4		
Grey Treepie	<i>Dendrocitta formosae</i>	9	11	4	7	67	87	25	30	1,2,3,4&5	1,2,3,4 &5	1,2&4	1,4&5	
House Crow	<i>Corvus splendens</i>	7	3	1	2	11	14	3	5	1,2,3&4	2&3	1	1&3	
Large-billed Crow	<i>Corvus macrorhynchos</i>	18	17	12	13	88	92	35	29	1,2,3,4&5	1,2,3,4 &5	1,2,3&5	1,2,3,4&5	
Eurasian Golden Oriole	<i>Oriolus oriolus</i>			2	1			2				2	2	
Large Cuckooshrike	<i>Coracina macei</i>	1			2	1			2	2			5	
Black-winged Cuckooshrike	<i>Coracina melaschistos</i>				1				1				4	
Grey-chinned Minivet	<i>Pericrocotus solaris</i>			1	2			1	3			1	2&4	
Long-tailed Minivet	<i>Pericrocotus ethologus</i>	5	8	7	2	26	29	22	21	2,3&4	1,2,3,4 &5	1,2,3,4& 5	1&4	
Scarlet Minivet	<i>Pericrocotus flammeus</i>	2	3	1	3	3	7	2	6	1	1,3&4	1	3,4&5	
White-throated Fantail	<i>Rhipidura albicollis</i>	4	4	4	7	6	5	4	9	1,2&4	1,2&3	1,2,3&4	1,2,3,4&5	

Black Drongo	<i>Dicrurus macrocercus</i>			2	3			2				1&5	1,3&5
Ashy Drongo	<i>Dicrurus leucophaeus</i>	1	1	6	7	1	3	7	7	2	4	2,3&4	1,2,3,4&5
Asian Paradise-flycatcher	<i>Terpsiphone paradisi</i>			1	2			4	6			1	1
Large Woodshrike	<i>Tephrodornis gularis</i>		1	3	1		2	4	1		4	2&4	1
Muscicapidae													
Blue-capped Rock Thrush	<i>Monticola cinclorhynchus</i>			10	9			17	21			2,3,4&5	1,2,3,4&5
Chestnut-bellied Rock Thrush	<i>Monticola rufiventris</i>		2		1		2		3		2&5		
Blue Whistling Thrush	<i>Myophonus caeruleus</i>	8	7	5	5	19	16	6	8	1,2,3,4&5	1,2&3	1,2,3&4	2,3,4&5
Orange-headed Thrush	<i>Zoothera citrina</i>				2				2				4&5
Dark-sided Thrush	<i>Zoothera marginata</i>			1				1				4	
Tickell's Thrush	<i>Turdus unicolor</i>			4				1				1,3&4	
White-collared Blackbird	<i>Turdus albocinctus</i>		1				2				3		
Grey-winged Blackbird	<i>Turdus boulboul</i>		3								2&4		
Dark-throated Thrush	<i>Turdus ruficollis</i>	7	9			18	14			1,2,3,4&5	1,2,3,4 &5		
Mistle Thrush	<i>Turdus viscivorus</i>		1								4		
Dark-sided Flycatcher	<i>Muscicapa sibirica</i>			1				1				2	
Red-throated Flycatcher	<i>Ficedula parva</i>		1				1				4		
Rufous-gorgeted Flycatcher	<i>Ficedula strophiatea</i>	4	8	2		9	12	3		1,2,3&5	2,3&4	3&5	
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>			2				2				5	
Verditer Flycatcher	<i>Eumyias thalassina</i>			17	11			24	34			1,2,3,4& 5	1,2,3,4&5
Small Niltava	<i>Niltava macgrigoriae</i>	1		6	6	2		14	15	2		2,3&4	1,2&3
Rufous-bellied Niltava	<i>Niltava sundara</i>		2	1			4	1			4	4	
Blue-throated Flycatcher	<i>Cyornis rubeculoides</i>			4	3			4	6			1&4	1,4&5
Pygmy Blue Flycatcher	<i>Muscicapella hodgsoni</i>			1				1				5	
Grey-headed Canary Flycatcher	<i>Culicicapa ceylonensis</i>		3	11	7		8	21	19		1	1,2,3,4& 5	1,3,4&5

Orange-flanked Bush Robin	<i>Tarsiger cyanurus</i>	2	5			3	11			3	1,2,3&4		
Golden Bush Robin	<i>Tarsiger chrysaeus</i>	6	5	6		6	9	6		2,3,4&5	1,2,3&5	1,2,3&4	
Oriental Magpie Robin	<i>Copsychus saularis</i>	4	1	3	4	4	2		4	1&5	5	1,2&3	1,2,3&5
Blue-capped Redstart	<i>Phoenicurus coeruleocephalus</i>		1								5		
Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>		1				1				2		
Blue-fronted Redstart	<i>Phoenicurus frontalis</i>	8	14	1		13	35	1		2,3,4&5	1,2,3,4 &5	4	
White-capped Water Redstart	<i>Chaimarromis leucocephalus</i>					1							
Plumbeous Water Redstart	<i>Rhyacornis fuliginosus</i>					3							
White-tailed Robin	<i>Myiomela leucura</i>				1				1				3
Spotted Forktail	<i>Enicurus maculatus</i>					2							
Common Stonechat	<i>Saxicola torquata</i>		1				2				5		
Grey Bushchat	<i>Saxicola ferrea</i>	1	3	12	12	1	5	28	32	2	2&4	1,2,3,4& 5	1,2,3,4&5
Sturnidae													
Chestnut-tailed Starling	<i>Sturnus malabaricus</i>				1				3				4
Common Myna	<i>Acridotheres tristis</i>	3	1	2	2	6	6	9	3	1,2&5	2	1&2	
Sittidae													
Kashmir Nuthatch	<i>Sitta cashmirensis</i>		3				7				4		
Chestnut-bellied Nuthatch	<i>Sitta castanea</i>		3				4				1,2&3		4
White-tailed Nuthatch	<i>Sitta himalayensis</i>				1				3				3
Velvet-fronted Nuthatch	<i>Sitta frontalis</i>	5	6	3	1	12	9	5	4	2,4&5	2,3,4&5	2&3	4
Certhiidae													
Rusty-flanked Tree-creeper	<i>Certhia nipalensis</i>		1				1				2		
Brown-throated Tree-creeper	<i>Certhia discolor</i>		1	1			1	1			2	3	
Paridae													
Great Tit	<i>Parus major</i>	3	4		2	5	14		4	1&2	2&3		2&5

Green-backed Tit	<i>Parus monticolus</i>	14	13	11	8	77	84	57	27	1,2,3,4&5	1,2,3,4 &5	2,3,4&5	2,3&5	
Black-lored Tit	<i>Parus xanthogenys</i>	6	5	7	6	10	23	19	20	1,2&4	1&2	1,2&4	1	
Aegithalidae														
Black-throated Tit	<i>Aegithalos concinnus</i>		7	5	1				21	9		1,2,3&4	1,2,3&4	2
Hirundinidae														
Plain Martin	<i>Riparia paludicola</i>		1						13			5		
Barn Swallow	<i>Hirundo rustica</i>	2		3	2	17		12	5	1&5		1,3&5	1&3	
Red-rumped Swallow	<i>Hirundo daurica</i>		1	2	2		6	4	7		4	2&5	4&5	
Pycnonotidae														
Striated Bulbul	<i>Pycnonotus striatus</i>				1				2					3
Black-crested Bulbul	<i>Pycnonotus melanicterus</i>		1	1			1				3	3		
Himalayan Bulbul	<i>Pycnonotus leucogenys</i>	9	11	12	10	65	83	54	33	1,2,3,4&5	1,2,3,4 &5	1,2,3&5	1,2,3&5	
Red-vented Bulbul	<i>Pycnonotus cafer</i>	5	3	2	5	11	16	7	9	1,2,3&4	1,2&3	2&3	2,3&5	
Mountain Bulbul	<i>Hypsipetes mccllellandii</i>		8	3	2		35	5		1,2,3&4	1,2,3,4 &5	3&4	3&5	
Black Bulbul	<i>Hypsipetes leucocephalus</i>	15	13	6	6	12 5	97	32	34	1,2,3,4&5	1,2,3,4 &5	1,2,3,4& 5	1,2&3	
Cisticolidae														
Striated Prinia	<i>Prinia criniger</i>	3	4	8	8	3	7	12	17	2&5	2&4	1,2,3&5	2,3,4&5	
Zosteropidae														
Oriental White-eye	<i>Zosterops palpebrosus</i>	10	9	10	12	85	94	45	30	1,2,3&4	1,2,3,4 &5	1,2,3,4& 5	1,2,3,4&5	
Sylviidae														
Chestnut-headed Tesia	<i>Tesia castaneocoronata</i>		3	3			4	3				2,3&5	2&3	
Grey-bellied Tesia	<i>Tesia cyaniventer</i>	1	1			1	1			2	2			
Grey-sided Bush Warbler	<i>Cettia brunnifrons</i>		1				2				1			
Common Tailorbird	<i>Orthotomus sutorius</i>	9	4	6	8	12	7	6	10	1,2,3,4&5	1,2&3	1,2,3&5	1,2,3,4&5	

Common Chiffchaff	<i>Phylloscopus collybita</i>	2		1		1		1		1&5		2	
Dusky Warbler	<i>Phylloscopus fuscatus</i>	1	2	3		1	3	3		5	1&4	1,2,&3	
Tickell's Leaf Warbler	<i>Phylloscopus affinis</i>	3	4	3		12	19	6			2,3&4	2,3&4	
Buff-barred Warbler	<i>Phylloscopus pulcher</i>	3	5	2		4	6	2		1&2	2,3&4	3&5	
Ashy-throated Warbler	<i>Phylloscopus maculipennis</i>	3	9	5		7	21	18		1&3	1,2,3,4 &5	1,4&5	
Lemon-rumped Warbler	<i>Phylloscopus chloronotus</i>	3	7	6		8	13	14		2,3&5	1,2,3&4	1,2,3&5	
Hume's Warbler	<i>Phylloscopus humei</i>	4	3	14		8	11	15		1,2&3	2&4	1,2,3,4& 5	
Greenish Warbler	<i>Phylloscopus trochiloides</i>	8	10	8		25	19	18		1,2,3,4&5	1,2,3,4 &5	2,3&4	
Blyth's Leaf Warbler	<i>Phylloscopus reguloides</i>	8		1		15		1		1,2,3&4		3	
Golden-spectacled Warbler	<i>Seicercus burkii</i>	1	1	2		2	1	2		2	5	1&3	
Whistler's Warbler	<i>Seicercus whistleri</i>	3	2	6		5	3	6		2&4	3	2,3,4&5	
Grey-hooded Warbler	<i>Seicercus xanthoschistos</i>	15	18	22	12	89	79	94	65	1,2,3,4&5	1,2,3,4 &5	1,2,3,4& 5	1,2,3,4&5
Grey-cheeked Warbler	<i>Seicercus poliogenys</i>			1				2				3	
Black-faced Warbler	<i>Abroscopus schisticeps</i>			2	2			4	4			3&4	3&4
White-throated Laughingthrush	<i>Garrulax albogularis</i>		2	2	1		15	7	3		4	2&4	3
White-crested Laughingthrush	<i>Garrulax leucolophus</i>	4	4	3	5	4	4	3	5	2&4	2,3&4	2&4	1,2&5
Striated Laughingthrush	<i>Garrulax striatus</i>		1	2	3		5	4	4		4	2&4	1&2
Rufous-chinned Laughingthrush	<i>Garrulax rufogularis</i>		2								2&4		
Streaked Laughingthrush	<i>Garrulax lineatus</i>	1			2	1			3	2			1&3
Rusty-cheeked Scimitar Babbler	<i>Pomatorhinus erythrogenys</i>	6	7	4	10	25	18	9	32	1&2	1,2,3,4 &5	1,2,3&4	1,2,3,4&5
Streak-breasted Scimitar Babbler	<i>Pomatorhinus ruficollis</i>	8	10	6	8	23	14	20	22	1,2,3,4&5	1,2,3,4 &5	1,2,3&4	1,2,3,4&5
Scaly-breasted Wren	<i>Pnoepyga albiventer</i>			1								5	

Babbler													
Black-chinned Babbler	<i>Stachyris pyrrhops</i>	9	11	9	10	57	45	33	27	1,2,3&4	1,2,3,4 &5	1,2,3&4	1,2,3,4&5
Spiny Babbler	<i>Turdoides nipalensis</i>				2				3				5
Red-billed Leiothrix	<i>Leiothrix lutea</i>	2	1			2	2			1&3	1		
White-browed Shrike Babbler	<i>Pteruthius flaviscapis</i>	3		2	2	9		5	2	3,4&5		3&5	3&4
Green Shrike Babbler	<i>Pteruthius xanthochlorus</i>				1				1				3
Rusty-fronted Barwing	<i>Actinodura egertoni</i>			1	1			1	1			3	3
Blue-winged Minla	<i>Minla cyanouroptera</i>	1				1				5			
Chestnut-tailed Minla	<i>Minla strigula</i>	6	7	3	1	72	82	58	3	2,4&5	3,4&5	3,4&5	4
Red-tailed Minla	<i>Minla ignotincta</i>		1				2				4		
White-browed Fulvetta	<i>Alcippe vinipectus</i>	1				4				4			
Nepal Fulvetta	<i>Alcippe nipalensis</i>		2	1	1		8	3	2		4	3	3
Rufous Sibia	<i>Heterophasia capistrata</i>	9	8	9	8	17 5	19 2	12 2	145	2,3,4&5	2,3,4&5	3,4&5	1,2,3,4&5
Whiskered Yuhina	<i>Yuhina flavicollis</i>	8	6	2	2	13 5	88	67	12	1,2,3,4&5	1,2,3,4 &5	3&5	3&4
White-bellied Yuhina	<i>Yuhina zantholeuca</i>		1				1				2		
Nectariniidae													
Fire-breasted Flowerpecker	<i>Dicaeum cruentatum</i>	13	6	11	3	65	34	32	12	1,2,3,4&5	2,3,4&5	1&2	3&4
Purple Sunbird	<i>Aethopyga gouldiae</i>								2				
Green-tailed Sunbird	<i>Aethopyga saturata</i>	11	11	1	1	75	87	1	1	1,2,3,4&5	2,3,4&5	5	3
Black-throated Sunbird	<i>Aethopyga siparaja</i>		1	10			17	16			1	1,3,4&5	1,3,4&5
Crimson Sunbird	<i>Aethopyga ignicauda</i>	3		1	1	4		2	1	1&2		1	4
Fire-tailed Sunbird	<i>Arachnothera longirostra</i>	8	11	1		95	10 2	1		1,2&4	1,2,3,4 &5	3	
Passeridae													
House Sparrow	<i>Passer domesticus</i>	1	1	2	1	12	7	6	10	1	2	1&2	5
Russet Sparrow	<i>Passer rutilans</i>	2	1			17	9			2	2		

Eurasian Tree Sparrow	<i>Passer montanus</i>	3	1	4	1	25	18	7	2	1&4	2	1,2,3&5	2
White Wagtail	<i>Motacilla alba</i>												
Grey Wagtail	<i>Motacilla cinerea</i>	1				3				1			
Tree Pipit	<i>Anthus trivialis</i>	2	3			12	8			3&5	2,4&5		
Olive-backed Pipit	<i>Anthus hodgsoni</i>	3	4	3		19	15	11		2&5	1,2&3	1,2&3	
Rosy Pipit	<i>Anthus roseatus</i>	2				2				3&5			
Upland Pipit	<i>Anthus sylvanus</i>				1				2				1
Rufous-breasted Accentor	<i>Prunella strophiata</i>	2				5				2			
White-rumped Munia	<i>Lonchura striata</i>	2				19				1&5			
Fringillidae										1			
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>	1	1	4		22	8	25		3	5	1,2&5	
Plain Mountain Finch	<i>Leucosticte nemoricola</i>		1				1				5		
Dark-breasted Rosefinch	<i>Carpodacus nipalensis</i>	2	3			15	27			2	2&4		
Common Rosefinch	<i>Carpodacus erythrinus</i>	2	4	5		34	45	33		3&4	1&2	1,2,4&5	
Spot-winged Rosefinch	<i>Carpodacus rodopeplus</i>	1				1				3			
Scarlet Finch	<i>Haematospiza sipahi</i>		1	1			1	1			4	4	
Gold-naped Finch	<i>Pyrrhoplectes epauletta</i>		1				1				1		
Crested Bunting	<i>Melophus lathami</i>				1				5				5
Rock Bunting	<i>Emberiza cia</i>	2	1	2		38	7	5		4&5	4	4&5	

Annex II: Itinerary of bird survey

Visit	Date	Route
November, I visit	8-Nov-10	Tamghas, chandmari-Bhagwati Temple -Sukhha Pokhari-Rehuunga Top
	10-Nov-10	Tamghas Bazar - Gausala-Tamghas Bazar
	11-Nov-10	Tamghas Bazar - Reshunga Top – Tamghas Bazar
	12-Nov-10	Reshunga Top-Jughum-Reshunga Top
	13-Nov-10	Reshunga Top-Gaudakot
February, II visit	4-Feb-11	Bhagwati Temple -Sukhha Pokhari-Rehuunga Top
	5-Feb-11	Tamghas Bazar - Gausala-Tamghas Bazar
	6-Feb-11	Tamghas Bazar - Reshunga Top – Tamghas Bazar
	7-Feb-11	Reshunga Top-Jughum-Reshunga Top
	8-Feb-11	Reshunga Top-Gaudakot
March, III Visit	24-Mar-11	Bhagwati Temple -Sukhha Pokhari-Rehuunga Top
	25-Mar-11	Tamghas Bazar - Gausala-Tamghas Bazar
	26-Mar-11	Tamghas Bazar - Reshunga Top – Tamghas Bazar
	27-Mar-11	Reshunga Top-Jughum-Reshunga Top
	28-Mar-11	Reshunga Top-Gaudakot
June, IV Visit	18-Jun-11	Bhagwati Temple -Sukhha Pokhari-Rehuunga Top
	19-Jun-11	Tamghas Bazar - Gausala-Tamghas Bazar
	20-Jun-11	Tamghas Bazar - Reshunga Top – Tamghas Bazar
	21-Jun-11	Reshunga Top-Jughum-Reshunga Top
	22-Jun-11	Reshunga Top-Gaudakot

Annex III: Plant species of Reshunga Forest

Botanical Names	Form	Family	Local Names
<i>Emblca officinalis</i>	Tree	Euphorbiaceae	Amala
<i>Phyllanthus emblica</i>	Tree	Lauraceae	Amala
<i>Prunus serasoides</i>	Tree	Lauraceae	Ban painyu
<i>Quercus species</i>	Tree	Lauraceae	Banjh
<i>Ficus bengalensis</i>	Tree	Moraceae	Bar
<i>Schima wallichii</i>	Tree	Lauraceae	Chilaune
<i>Madhuca butyraceae</i>	Tree	Lauraceae	Chiuri
<i>Boehmeria rugulosa</i>	Tree	Urticaceae	Dar
<i>Castanopsis indica</i>	Tree	Fagaceae	Dhalne katus
<i>Ficus neriifolia</i>	Tree	Moraceae	Dudhilo
<i>Quercus lamellosa</i>	Tree	Lauraceae	Falant
<i>Erythrina variegata</i>	Tree	Leguminoseae	Faledo
<i>Acer oblongum</i>	Tree	Sapindaceae	Firfire
<i>Rhododendron arboreum</i>	Tree	Lauraceae	Gurans
<i>Rhododendron barbatum</i>	Tree	Lauraceae	Gurans
<i>Eurya cerasifolia</i>	Tree	Theaceae	Jhyano
<i>Eriobotrya dubia</i>	Tree	Rosaceae	Jure kafal
<i>Ficus lacor</i>	Tree	Moraceae	Kabro
<i>Myrica esculenta</i>	Tree	Lauraceae	Kafal
<i>Celtis australis</i>	Tree	Ulmaceae	Khari
<i>Quercus semicarpifolia</i>	Tree	Lauraceae	Khasru
<i>Bauinia variegata</i>	Tree	Leguminoseae	Koiralo
<i>Fraxinus floribunda</i>	Tree	Oleaceae	Lankuri
<i>Pyrus pashia</i>	Tree	Lauraceae	Mayel
<i>Prunus serasoides</i>	Tree	Lauraceae	Painyu
<i>Erythrina variegata</i>	Tree	Leguminoseae	Phaledo
<i>Ficus religiosa</i>	Tree	Moraceae	Pipal
<i>Ilex doniana</i>	Tree	Aquifoliaceae	Punwale
<i>Ilex excels</i>	Tree	Aquifoliaceae	Punwale
<i>Rhus succedanea</i>	Tree	Lauraceae	Rani bhalayo
<i>Pinus roxburghii</i>	Tree	Lauraceae	Rani salla
<i>Sapindus mukorossi</i>	Tree	Lauraceae	Ritha
<i>Symplocos sumuntia</i>	Tree	Lauraceae	Sano lodh
<i>Betula alnoides</i>	Tree	Betulaceae	Saur
<i>Symplocos pyrifolia</i>	Tree	Lauraceae	Seti kath
<i>Myrsina capitellata</i>	Tree	Lauraceae	Seti kath
<i>Brassaioopsis hainla</i>	Tree	Araliaceae	Seto chuletro

<i>Betula alnoides</i>	Tree	Betulaceae	Saur
<i>Bombax ceiba</i>	Tree	Bombaceae	Simal
<i>Albizia lebbek</i>	Tree	Leguminoseae	Siris
<i>Diospyros embryoeteris</i>	Tree	Ebenaceae	Tendu
<i>Rhus wallichii</i>	Tree	Lauraceae	Thulo bhalayo
<i>Alnus nepalensis</i>	Tree	Betulaceae	Uttis
<i>Dendrocalamus hamiltonii</i>	Bamboo	Gramineae	Tame bans
<i>Rubus elipticus</i>	Shrub	Lauraceae	Ainselu
<i>Adhatoda vasica</i>	Shrub	Acanthaceae	Asuro
<i>Zanthoxylum armatum</i>	Shrub	Rutaceae	Timur
<i>Picrasma javanica</i>	Shrub	Lauraceae	Taju
<i>Picrasma javanica</i>	Shrub	Lauraceae	Taju
<i>Rubus pentagonus</i>	Shrub	Lauraceae	Rato aiselu
<i>Osbeckia stellata</i>	Shrub	Lauraceae	Rato chulasi
<i>Osyris wightiana</i>	Shrub	Lauraceae	Nundhiki
<i>Eurya acuminata</i>	Shrub	Theaceae	Jhyane
<i>Osyris wightiana</i>	Shrub	Lauraceae	Nanuke
<i>Rduranta repens</i>	Shrub	Lauraceae	Nil kanda
<i>Rubus elipticus</i>	Shrub	Lauraceae	Ainselu
<i>Adhatoda vasica</i>	Shrub	Acanthaceae	Asuro
<i>Abrus precatorius</i>	Climber	Leguminoseae	Rati
<i>Abrus precatorius</i>	Climber	Leguminoseae	Ratti gedi
<i>Eragrostis tenella</i>	Grass	Gramineae	Banso
<i>Scutellaria discolor</i>	Herb	Lauraceae	Nilo butte ghans
<i>Corydalis chaeriphylla</i>	Herb	Fumariaceae	Okhare ghans
<i>Bergenia ciliata</i>	Herb	Saxifragaceae	Pakhanved