An Assessment on Bird's Diversity in Bagmati River Corridor

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Abstract

Bagmati River is considered as a potential conservation area in terms of the bio-diversity conservation due to its unique and diversified habitat distribution. Due to various causes, the river is being polluted and hence habitat degradation rate is increasing. As a consequence, the direct effect is seen on birds inhabiting there. Aiming the assessment of bird's diversity, one year survey was conducted in Bagmati River from Tilganga Bridge to chobhar Gorge Bridge (here after termed as Bagmati river corridor) by applying the point count method .In the total enumeration, 100 of birds species were recorded among which 7 are listed in CITES appendix. The bird species that are regarded as globally threatened are not recorded in the study area. In this report, some potential patches in the study area, are described as hot spots, considering the higher probability of recording maximum number of birds species. The public voice is also collected to find out the public perception on the present status of birds of Bagmati river corridor using the questionaire method. Some causes of habitat destruction and some potential conservation measures are also mentioned.

Key Words: Bagmati river corridor, Birds, Conservation, Hotspots, Diversity, Habitat

Introduction

Bagmati River and its tributaries are the main source of water in the Kathmandu valley. In the ritual history of Hindus, it is taken as a very sacred river. The Bagmati River and its surroundings (here after termed as Bagmati river corridor) are taken as the richest site for wetland and other winter birds. The population and urbanization rate of the valley is rapidly increasing with time. Due to the direct human influence on the river, it is being polluted and the water discharged is also becoming toxic. As a consequence, the habitat of winter birds and the wetland is degrading. To provide the basic status of bird's diversity in the Bagmati river corridor, this study had been carried out.

Objectives

The main objective of the study is to find out the birds diversity in the Bagmati river corridor and also to know the major hotspots in the area.

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Study area and duration

The study had been carried out in the Bagmati river corridor starting from Tilganga Bridge to Chobhar Gorge Bridge which includes about 13km in length. The study had been done for a period of a year starting from 1 November 2006 to 30 October 2007.

Vegetation type in the study area

Though the Bagmati River channels the fresh water, specific hydrophytes are not distributed. In the study site, there is no such dense vegetation area but small patches of mixed forest with mostly indigenous tree species such as Painyu (prunus ceracoides), Lapsi (choerospondias axillaries), etc are found. However some exotic species such as Bains (Salix species), Gulmohar (delonix regia) and lahare pipal (populas deltoids) etc are also found. Some clumps of bans, reeds, banmara etc. are also found.

Habitat variety

The Bagmati River itself is the main habitat for birds. Beside this, muddy area of river bank, patches of grass and shrubs, cultivated land near-by and some patches of forest with pine and uttis are the main habitat types found in the study site.

Methodology used

Surveying Methodology

The study was completed by point count method. The observation spots were fixed in every span of about 500m. There were total 26 observations stations in the study area. Metal plates numbering 1 to 26 had been kept in the station. Tilganga Bridge was taken as the first and the Chobhar Gorge Bridge as 26th observation station. The visit was made every fortnight. The total study area was divided in-to three parts (via: part I: station 1–8, part II: station 9–7 and part III: 18–26) and three surveyors observed the birds in each part. All birds seen or heard for 15 minutes were noted down. A pair of binocular and a book "Birds of Nepal" (Grimmett et al. 2000) were used for identifying birds. Unidentified birds were noted for later reference with experts. Survey started each day at 6:30 am and four hours were spent in total in a day giving at least 15 minutes to a station. This enabled one observer to cover all station. Observers swapped stations routinely to minimize biases. The observation speed of observer was uniform. The observation parts divided before were allocated to each surveyor alternately for their visit. Twenty four visits had been done during the study.

Social surveying methodology

A separate social survey was done by using single questionnaire method to find out the people's response on birds status. The single question: "what is the status of bird in the Bagmati river corridor?" was asked to 40 people, residing near the river.

Data collection and compilation methodology

The information obtained from the observation was noted in a field book and compilation was done in monthly basis after the development of a separate field note form, so that the information could be checked in every month. After the monthly compilation, final compilation of information was done.

Limitation

Due to the weather disturbance, such as fog in winter and rain in monsoon season, some birds might have got excluded from record, but it is assumed that, the excluded bird is recorded the observation that follows.

Findings

Species record

A total of 100 bird species were recorded in the study site. Among the species recorded, 7 species are listed in the CITES appendix.

In the case of maximum number of birds observed in a group, are of common birds except black kite which is listed in the CITES appendix II and up to 51 had been recorded in a group during the study. The total enumerated bird list is presented in the annex I. It is noted that, the Birds wetland birds are few in numbers. The main cause of reduction may probably be due to the destruction of suitable habitat.

Species record on the basis of month

During the survey, the maximum number of bird species was recorded in winter season. More than 50 spps. had been recorded in January, February, March, November and December on each month where as in monsoon season less than 25 had been recorded on each month. It shows that, Bagmati river corridor genuinely may be the special habitat for winter and migratory birds and the number spps. may increase if the habitat is conserved. The detail of the bird's species recorded on the basis of the month is described in chart 1.

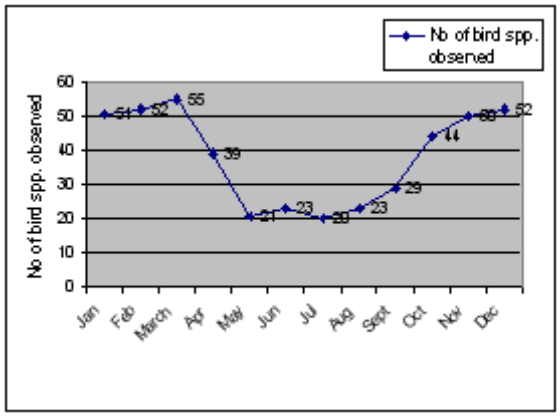

Chart 1: Bird's species recording pattern

Species record on the basis of frequency

During the survey, some species were recorded frequently while some were recorded occasionally and some even only once. Among the total number of birds species recorded during 24 visits, five frequent birds and five rare birds were listed.

Habitat Destruction

It is clear that the bird's habitat in Bagmati river corridor is highly deteriorated, which is clearly proved by the record of very less population of bird in the site. Following are the main causes of habitat destruction that were observed during the visit of the study area.

- Direct disposal of the garbage in the river
- Direct discharge of the sewage to the river.
- Rapid illegal collection of sand from the river.
- Increasing rate of unplanned urbanization
- Encroachment of the river bank by the landless people for the settlement.

Due to the above mentioned causes, the river bank and even the river water is being highly polluted and toxic. As a consequence, the number of birds is reducing.

Social Surveys

To find out the peoples response on the birds status in the study area, a single question was asked to 40 people, residing near the river area, and their response was compiled.

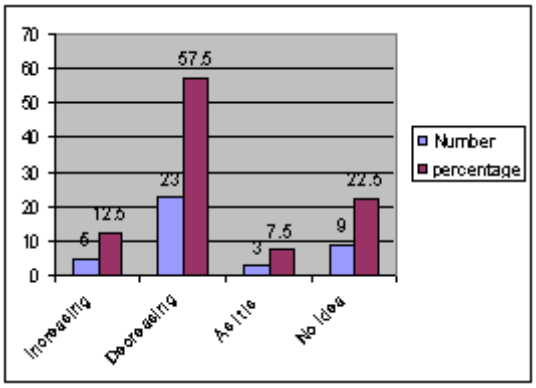

Chart 2: showing the people response

Hotspots in the Study Area

The small patches of either forest or grassland area is included in the study site. The potentiality of maximum number of birds' species can be recorded and these areas are defined as the hotspots in the study area. The hotspots identified in the study area are: Between Bagwani suspension bridge to chobhar Gorge Bridge, Between Balkhu Bridge to Teku suspension bridge, Forest patch (nearer to the Teku suspension bridge), Bagmati River Nature Park, and Between Baneshwor campus and SchEmes College.

Beside these areas, the grassland area covering some bushes around the river bank also offers the better habitat for birds.

Conservation Measures /Recommendations

If the pollution and toxicity in Bagmati river corridor can be reduced, the probability of increasing bird's diversity in terms of both species and number is high under the assumption that the habitat condition will be improved. Bagmati river catchments area is also considered as the potential Important Bird's Area (IBA) (Baral H. S., Inskipp 2005) and probably the study site is included under that. Conservation measures may play vital role in the diversity conservation of the study area. Direct disposal and dumping of urban garbage in the Bagmati River and its bank should managed with the direct coordination of Kathmandu Metropolitan city and Lalitpur sub-metropolitan city, targeting the conservation of Bagmati river bio-diversity. The

establishment of reed may be an effective biological filtration method as demonstrated in Bagmati River Nature Park (BNP). The Bagmati river nature park (BNP) is the best example of bio-diversity conservation of river. Such model if possible, should be extended all over the corridor. Various awareness approaches should be adopted for Bagmati river corridor conservation. For instance, Bagmati River cleaning campaigns, training, workshops and other extra curricular activities to school students, teachers and city dwellers. Unplanned urbanization, especially nearer to the river bank, should be controlled that the pollution due to disposal of garbage may come under control. Illegal sand collection system from the river should be stopped and the alternative job opportunity to the sand collectors should be managed. Special encouragement to local people along the river should be made for the plantation and conservation of river. Since there are many organizations devoting their effort on Bagmati river conservation, special collaboration with the organization that are launching their program in Bagmati river should be made and collaborative program should be launched for the effective and productive conservation of the river. The Bagmati river corridor should be declared as "Bagmati corridor bird conservation area". The river corridor should be developed as special bird watching area to the urban tourist so that the conservation interest can increase among city dwellers.

Conclusion

The Bagmati river corridor is the richest area for bird's diversity. Despite that, the river is being polluted. If the river is conserved, not only the bio-diversity will be conserved but also the door for other better earning opportunities like development of bird watching, hiking area to the urban tourists, park establishment etc. can be created. It is sure that only positive impacts will be aroused by conserving the Bagmati River and again it is our choice that, whether we want benefit by conserving the Bagmati River or we are ready to loose the nature's finest creation by neglecting it.

Annex I.

Birds list recorded in the Bagmati river corridor.

S.N	English Name	Scientific Name	S.N	English Name	Scientific Name
1	Ruddy Shelduck	*Tadorna ferruginea*	52	Dark-throated Thrush	*Turdus ruficollis*
2	Common Teal	*Anas crecca*	53	Red-throated Flycatcher	*Ficedula parva*
3	Eurisian Wryneck	*Jynx torquilla*	54	Slaty-backed Flycatcher	*Ficedula hodgsonii*
4	Blue-throated Barbet	*Megalaima asiatica*	55	Slaty-blue Flycatcher	*Ficedula tricolor*
5	Common Hoopoe	*Upupa epops*	56	Verditer Flycatcher	*Eumyias thalassina*
6	White-throated Kingfisher	*Halcyon smyrnensis*	57	Siberian Rubythroat	*Luscinia calliope*
7	Eurasian Cuckoo	*Cuculus canorus*	58	White-tailed Rubythroat	*Luscinia pectroralis*
8	Indian Cuckoo	*Cuculus micropterus*	59	Oriental Magpie Robin	*Copsychus saularis*

9	Asian Koel	*Eudynamys scolopacea*	60	Hodgsons Redstart	*Phoenicurus hodgsonii*
10	Rose-ringed Parakeet	*Psittacula krameri*	61	Blue-fronted Redstart	*Phoenicurus frontalis*
11	House Swift	*Apus affinis*	62	Blue-caped Redstart	*Phoenicurus coeruleocephalus*
12	Spotted Owlet	*Athene brama*	63	White-capped Water Redstart	*Chaimarrornis leucocephalus*
13	Rock Pigeon	*Columbia livia*	64	Plumbeous Water Redstart	*Rhyacornis fuliginosus*
14	Oriental Turtle Dove	*Streptopelia orientalis*	65	Spotted Forktail	*Enicurus maculatus*
15	Spotted Dove	*Streptopelia chinensis*	66	Slaty-backed Forktail	*Enicurus schistaceus*
16	Eurasian Collared Dove	*Streptopelia decaocta*	67	Common Stonechat	*Saxicola torquata*
17	Red Collared Dove	*Streptopelia tranquebarica*	68	Pied Bushchat	*Saxicola caprata*
18	Common Redshank	*Tringa totanus*	69	Grey Bushchat	*Saxicola ferrea*
19	Common Greenshank	*Tringa nebularia*	70	Common Myna	*Acridotheres tristis*
20	Common Sandpiper	*Actitis hypoleucos*	71	Jungle Myna	*Acridotheres fuscus*
21	Green Sandpiper	*Tringa ochropus*	72	Wallcreeper	*Tichodroma muraria*
22	Wood Sandpiper	*Tringa glareola*	73	Great Tit	*Parus major*
23	Black-winged Stilt	*Himantopus himantopus*	74	Black-throated Tit	*Aegithalos concinnus*
24	Little-ringed Plover	*Vanellus dubius*	75	Nepal House Martin	*Delichon nipalensis*
25	Grey-headed Lapwing	*Vanellus cinereus*	76	Plain Martin	*Riparia paludicola*
26	Red-watt led Lapwing	*Vanellus indicus*	77	Little Forktail	*Enicurus scouleria*
27	River Lapwing	*Vanellus duvaucelii*	78	Barn Swallow	*Hirundo rustica*
28	Black Kite	*Milvus migrans*	79	Red-vented Bulbul	*Pycnonotus cafer*
29	Common Buzzard	*Buteo buteo*	80	Zitting Cisticola	*Cisticola juncidis*
30	Steppe Eagle	*Aquila nipalensis*	81	Common Tailorbird	*Orthotomus sutorius*
31	Booted Eagle	*Hieraaetus pennatus*	82	Oriental White Eye	*Zosterops palpebrosus*
32	Common Kestrel	*Falco tinnunculus*	83	Dusky Warbler	*Phylloscopus fuscatus*
33	Peregrine Falcon	*Falco peregrinus*	84	Blyths Leaf Warbler	*Phylloscopus reguloides*
34	Saker Falcon	*Falco cherrug*	85	Humes Warbler	*Phylloscopus humei*
35	Great Cormorant	*Phalacrocorax carbo*	86	Greenish Warbler	*Phylloscopus trochiloides*
36	Little Egret	*Egretta garzetta*	87	Grey-throated Babbler	*Stachyris nigriceps*
37	Cattle Egret	*Bubulcus ibis*	88	House Sparrow	*Passer domesticus*

38	Intermediate Egret	*Mesopohyx intermedia*	89	Eurasian Tree Sparrow	*Passer montanus*
39	Indian Pond Heron	*Ardeola grayii*	90	White Wagtail	*Motacilla alba*
40	Little Heron	*Butorides striatus*	91	White-browed Wagtail	*Motacilla maderaspatensis*
41	Black-crowned Night Heron	*Nycticorax nycticorax*	92	Yellow Wagtail	*Motacilla flava*
42	Gray-backed Shrike	*Lanius tephronotus*	93	Grey Wagtail	*Motacilla cinerea*
43	Long-tailed Shrike	*Lanius schach*	94	Tree Pipit	*Anthus trivialis*
44	Red-billed Blue Magipe	*Urocissa erythrorhyncha*	95	Olive-backed Pipit	*Anthus hodgsonii*
45	Rufous Treepie	*Dendrocitta vagabunda*	96	Rosy Pipit	*Anthus roseatus*
46	House Crow	*Corvus splendens*	97	Yellow-breasted Greenfinch	*Carduelis spinoides*
47	Large-billed Crow	*Corvus macrorhynchos*	98	Common Rosefinch	*Carpodacus erythrinus*
48	Yellow-billed Fantail	*Rhipidura hypoxantha*	99	Red Avadavat	*Amandava amandava*
49	Black Drongo	*Dicrurus macrocercus*	100	Grey-breasted Prinia	*Prinia hodgsonii*
50	Blue Whistling Thrush	*Myophonus caeruleus*			
51	Scaly Thrush	*Zoothera dauma*			

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