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Diversity and Status of Birds in Argha Important Bird and Biodiversity Area, Western Midhill of Nepal

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Introduction

Important Bird and Biodiversity Area (IBA) is an area large enough to safeguard a viable population of a species, group of species, or entire avian community during at least part of its life-cycle. The IBA program is a worldwide initiative by BirdLife International aimed at identifying, documenting and working towards the conservation and sustainable development of a network of critical sites for the world's birds and other biodiversity. The selection of IBA achieved through an internationally agreed set of criteria viz.

Cheer Pheasant by Mitra Pandey

1. Globally threatened species, 2. Restricted-range species, 3. Biome-restricted species and 4. Congregations (BirdLife International 2020). The IBAs have true significance for the international conservation of bird populations; to date identified and documented more than 13,000 IBAs in over 200 countries worldwide (BirdLife International 2020). The first research and compilation of Nepal's IBAs was made in 2004 when 27 IBAs were identified (Baral and Inskipp 2005). Recently, a total of 37 IBAs has been identified in Nepal of which 20 IBAs within protected areas, one is partially protected and 16 are unprotected, in total covering nearly 28 percent of Nepal's land area (BCN 2019). Bird Conservation Nepal is leading this initiative in Nepal partnering with government, conservation organizations and the local community. Argha IBA is unprotected and lies in the western mid-hill of Nepal.

Methodology

Study Area

Argha IBA occupies an area of 155.92 sq.km from 1100-2515m, 28.02°N, 83.12°E, in Arghakhanchi district, of western Nepal. Argha IBA has been designated because of its important White-rumped Vulture *Gyps bengalensis*, Red-headed Vulture *Sarcogyps calvus*, Egyptian Vulture *Neophron percnopterus*, Cheer Pheasant *Catreus wallichii* and Asian Wollyneck *Ciconia episcopus* nesting sites. The forest area is mostly covered with Chir pine *Pinus roxburghii* trees and the same tree species have been used by White-rumped Vulture for nesting (Bhusal 2011).

Bird Survey Methods

Nest monitoring of resident vultures during the breeding season was carried out since 2010. At the same time other observed bird species were also recorded. Most of the species data were recorded opportunistically by the first author for ten years covering both winter and summer season. Opportunistic data have been used previously for species occurrence at large geographic and temporal scale (Devictor et al. 2010). Many previous studies from avian taxa have proved similar results found from large volume of opportunistic data to those of formal bird count surveys when examining spatial and temporal patterns of bird occurrences (Munson et al. 2010, Walker & Taylor 2017).

Systematic bird survey was carried out from 4-6 December 2020 following the Mackinnon's species richness counting method as described by Bibby et al. (2000) to know the species richness, abundance and distribution. Each new encountered (seen and heard) bird species was recorded until a list of 20 species was reached. Subsequent lists with 20 bird species in each were prepared. During the survey, much care was taken not to repeat the same species in the same list, but to list the species in subsequent lists. 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 lists recorded for that area. By plotting the cumulative total of species detected against the number of lists, species richness curve was produced that is a measure of species diversity.

WPG 8.5*42 binoculars and Grimmett et al. (2003 and 2016) field guide book were used in the field to identify the bird species. The final checklist follows the BirdLife International's systematic order (del Hoyo et al. 2016).

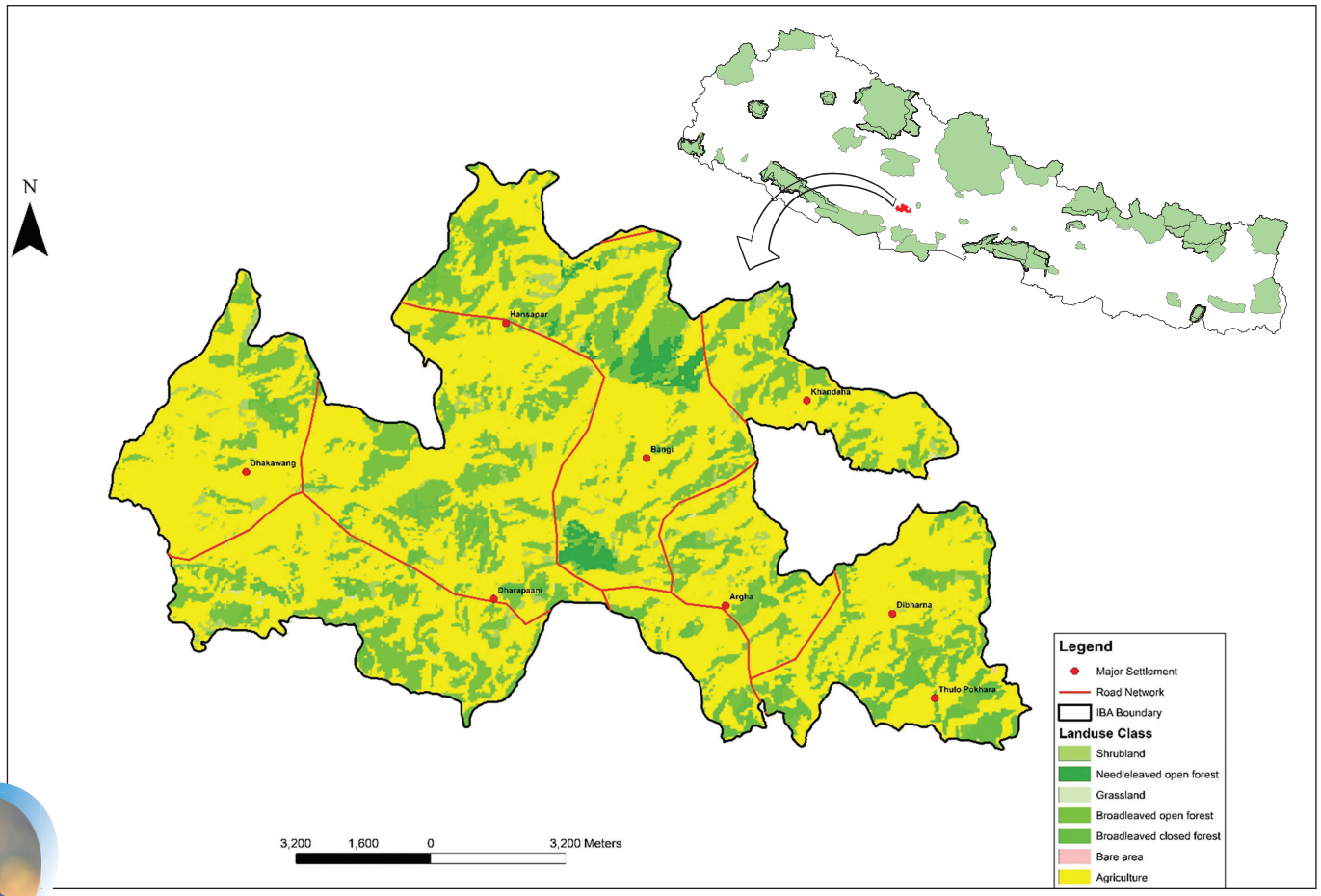

Fig: 1. **Map of Argha IBA**

Result and Discussion

Globally Threatened Species

Argha IBA is a breeding ground of globally threatened White-rumped Vulture, Red-headed Vulture, Egyptian Vulture and Cheer Pheasant and also holding the significant population of Slender-billed Vulture and wintering Steppe Eagle.

Species	IUCN Status	Status in Argha IBA
White-rumped Vulture	Critical Endangered	Nesting
Slender-billed Vulture	Critical Endangered	Rare Visitor
Red-headed Vulture	Critical Endangered	Nesting
Egyptian Vulture	Endangered	Nesting
Cheer Pheasant	Vulnerable	Nesting
Steppe Eagle	Endangered	Winter Visitor
Grey-crowned Prinia	Vulnerable	Rare

Breeding Status of Globally Threatened Species

White-rumped Vulture

Explored the small but isolated nesting colony of White-rumped Vulture in the Argha area of Arghakhanchi district in May 2010 (Bhusal 2011). Interestingly, the nesting site is situated at 1475m on average from the sea level whereas White-rumped Vulture nesting were observed usually below 900m only in Nepal. In contrast to breeding site in terai and valley, this site is situated in the mid-hill terrain and its nearest nesting colony is about 50 km far by aerial distance in the Kapilvastu district. The nesting trend is stable with fluctuation between consecutive years. The breeding success is correlated with the number of active nests and it ranges from 50% to 70%. Almost all nests are in the loose colony on the pine trees with an average height of the tree is about 28m and nest height is about 26m from the ground level.

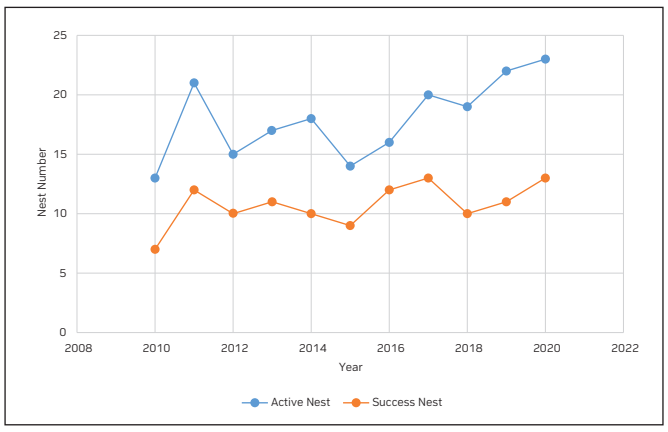

Fig: 2. **Nesting trend of White-rumped Vulture in Argha IBA**

Egyptian Vulture

Since 2010, we have been monitoring the Egyptian Vulture nest in the cliffs of Argha IBA. The number of active nests seems stable over the study period with fluctuation but it is correlated with the nest success. We recorded its nest in 12 locations and none of the single nest is used for longer than five years. The nesting success of EV is quite high in between 57% to 80%.

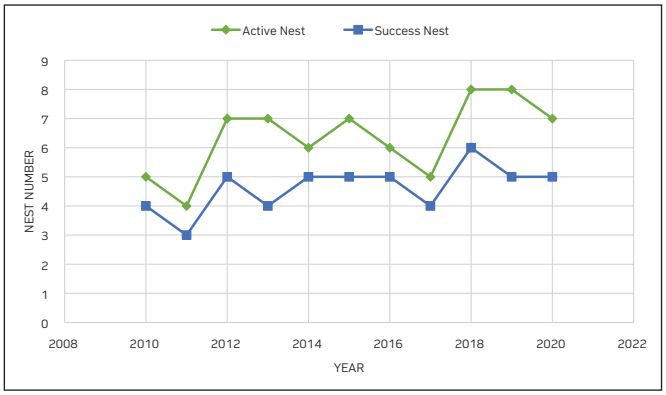

Fig: 3. **Nesting trend of Egyptian Vulture in Argha IBA**

Red-headed Vulture

Red-headed Vulture is commonly observed in Argha IBA but its nest was not found until 2019. The first active nest was recorded in December 2019 which continued nesting in the breeding season in 2020 too.

Cheer Pheasant

There were records of indirect evidence like feather and local people reporting of Cheer Pheasant presence in the two spot Ghorlasi and Gherabhir of Argha IBA. Fortunately, had direct sighting and photographed four individuals of Cheer Pheasant at an elevation 1872m from sea level in Ghorlasi of Sandhikharka Municipality ward no. 9 during the recent bird survey between 4-6 December 2020.

Active nests of near threatened Himalayan Griffon *Gyps himalayansis*, Bearded Vulture *Gypaetus barbatus* and Asian Woollyneck were also monitored since 2010. Endangered Steppe Eagle and near threatened Cinereous Vulture are regular winter visitor.

Bird Diversity

From the both opportunistic and systematic bird survey recorded the 239 species (Annex 1) of birds belonging to 17 orders representing 60 families in Argha IBA. Previous survey record had a total of 197 bird species in Argha IBA. Recently carried out bird survey from 4-6 December 2020, recorded a total of 178 species. This survey could add 42 new bird species in Argha IBA. Among families, Muscicapidae is dominant family, followed by Accipitridae, Phylloscopidae and so on (Figure 4).

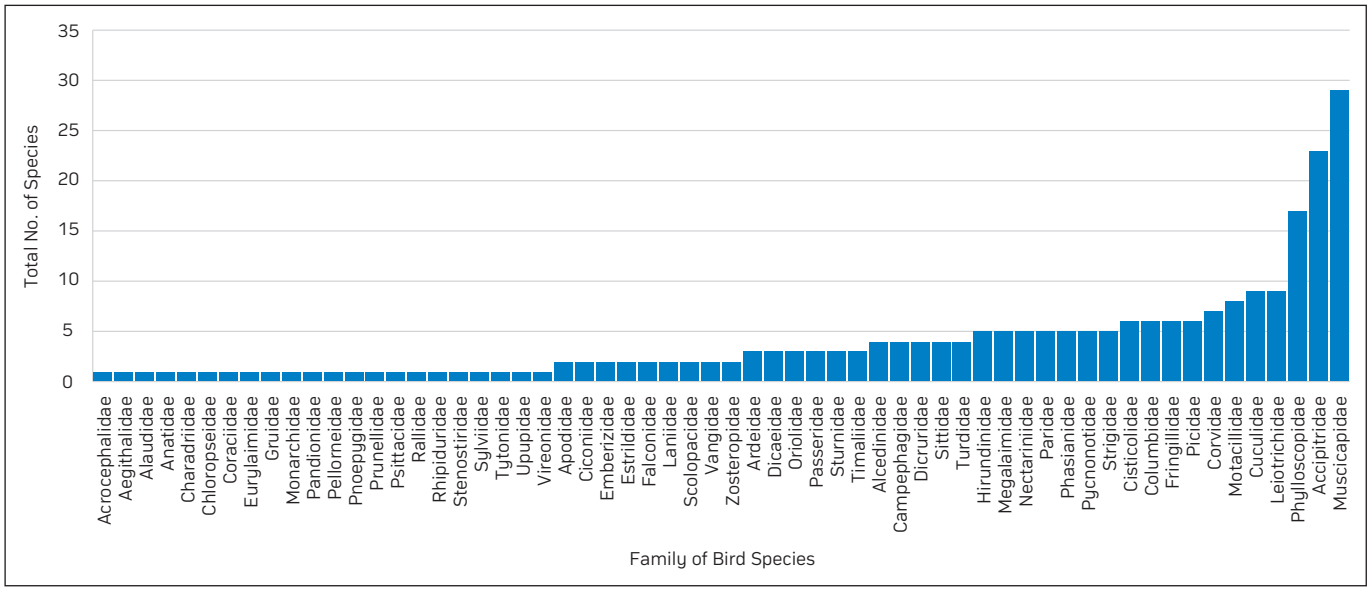

Fig: 4. **Familywise composition of observed species**

MacKinnon's list method was applied in the survey of birds carried out during 3-6 December 2020. A total of 28 lists comprising 20 species in each list were prepared in the whole survey period. There was an addition of new species in each list. A cumulative sum of newly added species in each list was calculated and a graph was drawn (Figure 5). The curve in the graph is gradually heading upward that clearly shows Argha IBA has still potential of having new species through this survey.

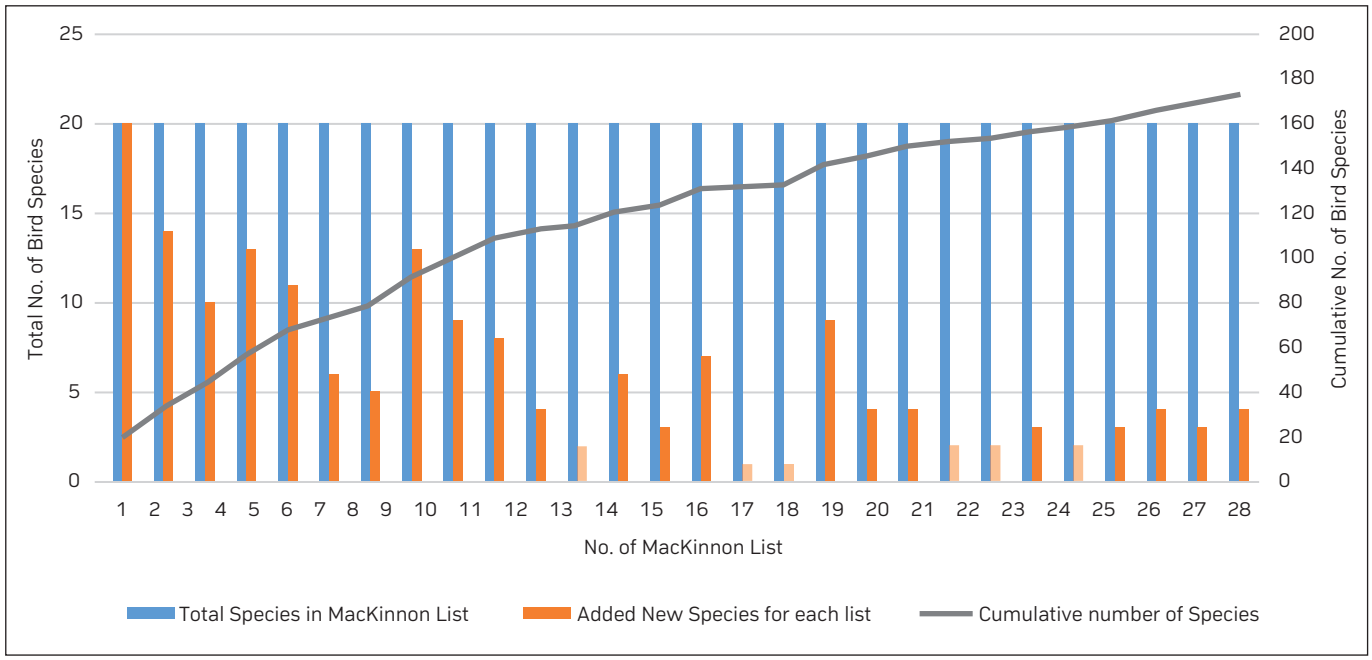

Fig: 5. **MacKinnon's species richness curve**

This study shows that, Argha IBA significantly hold the population of globally threatened species and having the rich avian diversity. The patchy forest area associated with the farmland makes the favorable environment to many of the birds. The valley like geography and steep cliffs provide the habitat for many of the raptors including vultures. However, more studies are required to explore the seasonal variability, the distribution pattern of bird species, habitat suitability of the species and other wildlife as well plants. It has the tremendous potential to boost the bird watching tourism in this IBA.. The developmental activities like road construction and hunting of pheasants are observed as the major threats. It is recommended for the community awareness and stakeholder advocacy to save the threatened species and bird habitat.

Acknowledgement

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Annex 1. Bird Checklist of Argha IBA, Arghakhanchi district, Nepal

SN	Order	Family	English name	Scientific name	Nepali Name	GTS	CITES	NTS	List 1	List 2	Max. Obs. No.
1	GALLIFORMES	Phasianidae	Hill Partridge	*Arborophila torqueola*	पिउरा				2		2
2	GALLIFORMES	Phasianidae	Chukar	*Alectoris chukar*	चुकर			NT	7	1	7
3	GALLIFORMES	Phasianidae	Black Francolin	*Francolinus francolinus*	कालो तित्रा				6	1	6
4	GALLIFORMES	Phasianidae	Cheer Pheasant	*Catreus wallichii*	चीर	VU	I	EN		4	4
5	GALLIFORMES	Phasianidae	Kalij Pheasant	*Lophura leucomelanos*	कालिज		III		4	9	9
6	ANSERIFORMES	Anatidae	Garganey	*Spatula querquedula*	श्वेताँखीभौं			VU		1	1
7	COLUMBIFORMES	Columbidae	Rock Dove	*Columba livia*	मलेवा				3	19	19
8	COLUMBIFORMES	Columbidae	Hill Pigeon	*Columba rupestris*	लेकाली मलेवा				6		6
9	COLUMBIFORMES	Columbidae	Oriental Turtle-dove	*Streptopelia orientalis*	तामे ढुकुर				12	34	34
10	COLUMBIFORMES	Columbidae	Eurasian Collared-dove	*Streptopelia decaocto*	कण्ठे ढुकुर				2	4	4
11	COLUMBIFORMES	Columbidae	Western Spotted Dove	*Spilopelia suratensis*	कुर्ले ढुकुर				3	3	3
12	COLUMBIFORMES	Columbidae	Wedge-tailed Green-pigeon	*Treron sphenurus*	पहाडी हलेसो				2		2
13	CAPRIMULGIFORMES	Apodidae	Himalayan Swiftlet	*Aerodramus brevirostris*	चीँचिका गौँथली				5	25	25
14	CAPRIMULGIFORMES	Apodidae	House Swift	*Apus nipalensis*	फिरफिरे घरगौँथली				12	9	12
15	CUCULIFORMES	Cuculidae	Greater Coucal	*Centropus sinensis*	ढोडे गोकुल				2	1	2
16	CUCULIFORMES	Cuculidae	Lesser Coucal	*Centropus bengalensis*	सानो गोकुल				1		1
17	CUCULIFORMES	Cuculidae	Jacobin Cuckoo	*Clamator jacobinus*	जुरे कोइली				1		1
18	CUCULIFORMES	Cuculidae	Western Koel	*Eudynamys scolopaceus*	कोइली				2		2
19	CUCULIFORMES	Cuculidae	Grey-bellied Cuckoo	*Cacomantis passerinus*	फुस्रो सानो कोइली				4		4
20	CUCULIFORMES	Cuculidae	Large Hawk-cuckoo	*Hierococcyx sparverioides*	पहाडी बीउ कुहियो				1		1
21	CUCULIFORMES	Cuculidae	Common Hawk-cuckoo	*Hierococcyx varius*	बीउ कुहियो				2		2

22	CUCULIFORMES	Cuculidae	Indian Cuckoo	*Cuculus micropterus*	काफल पाक्यो				2		2
23	CUCULIFORMES	Cuculidae	Common Cuckoo	*Cuculus canorus*	कुक्कु कोइली				2		2
24	GRUIFORMES	Rallidae	White-breasted Waterhen	*Amaurornis phoenicurus*	सिमकुखुरा				1	2	2
25	GRUIFORMES	Gruidae	Demoiselle Crane	*Anthropoides virgo*	कर्याङ-कुरुङ सारस		II	VU	32		32
26	OTIDIFORMES	Ciconiidae	Asian Woollyneck	*Ciconia episcopus*	लोभीपापी गरुड			NT	7	2	7
27	OTIDIFORMES	Ciconiidae	White Stork	*Ciconia ciconia*	सेतो गरुड				1		1
28	PELECANIFORMES	Ardeidae	Indian Pond-heron	*Ardeola grayii*	आसकोटे बकुल्ला				1	26	26
29	PELECANIFORMES	Ardeidae	Cattle Egret	*Bubulcus ibis*	वस्तु बकुल्ला				3	2	3
30	PELECANIFORMES	Ardeidae	Little Egret	*Egretta garzetta*	सानो सेतोबकुल्ला				1	2	2
31	CHARADRIIFORMES	Charadriidae	Red-wattled Lapwing	*Vanellus indicus*	हुटिट्याउँ				2		2
32	CHARADRIIFORMES	Scolopacidae	Common Sandpiper	*Actitis hypoleucos*	चञ्चले सुडसुडिया				1	1	1
33	CHARADRIIFORMES	Scolopacidae	Green Sandpiper	*Tringa ochropus*	रुख सुडसुडिया				3	4	4
34	STRIGIFORMES	Tytonidae	Common Barn-owl	*Tyto alba*	गोठे लाटोकोसेरो		II	VU	2		2
35	STRIGIFORMES	Strigidae	Asian Barred Owlet	*Glaucidium cuculoides*	ठूलो डुन्डुल		II		1		1
36	STRIGIFORMES	Strigidae	Jungle Owlet	*Glaucidium radiatum*	डुन्डुल		II		1	1	1
37	STRIGIFORMES	Strigidae	Spotted Owlet	*Athene brama*	कोचलगाँडे लाटोकोसेरो		II		2		2
38	STRIGIFORMES	Strigidae	Collared Scops-owl	*Otus lettia*	चित्री उलूक		II		1	2	2
39	STRIGIFORMES	Strigidae	Brown Fish-owl	*Ketupa zeylonensis*	मलाहा हुचील		II	VU	1		1
40	ACCIPITRIFORMES	Pandionidae	Osprey	*Pandion haliaetus*	मलाहा चील		II		1		1
41	ACCIPITRIFORMES	Accipitridae	Oriental Honey-buzzard	*Pernis ptilorhynchus*	मधुहा		II		2	2	2
42	ACCIPITRIFORMES	Accipitridae	Crested Serpent-eagle	*Spilornis cheela*	काकाकुल		II		1	2	2
43	ACCIPITRIFORMES	Accipitridae	Bearded Vulture	*Gypaetus barbatus*	हाडफोर		II	VU	5	6	6
44	ACCIPITRIFORMES	Accipitridae	Egyptian Vulture	*Neophron percnopterus*	सेतो गिद्ध	EN	II	VU	7	56	56
45	ACCIPITRIFORMES	Accipitridae	Red-headed Vulture	*Sarcogyps calvus*	सुन गिद्ध	CR	II	EN	2	2	2
46	ACCIPITRIFORMES	Accipitridae	Himalayan Griffon	*Gyps himalayensis*	हिमाली गिद्ध		II	VU	42	41	42
47	ACCIPITRIFORMES	Accipitridae	White-rumped Vulture	*Gyps bengalensis*	डङ्गर गिद्ध	CR	II	CR	9	2	9
48	ACCIPITRIFORMES	Accipitridae	Slender-billed Vulture	*Gyps tenuirostris*	सानो खैरो गिद्ध	CR	II	CR	1		1
49	ACCIPITRIFORMES	Accipitridae	Cinereous Vulture	*Aegypius monachus*	राजगिद्ध		II	EN	1		1
50	ACCIPITRIFORMES	Accipitridae	Mountain Hawk-eagle	*Nisaetus nipalensis*	पहाडी शदलचील		II		1		1
51	ACCIPITRIFORMES	Accipitridae	Black Eagle	*Ictinaetus malaiensis*	द्रोणक चील		II		1		1
52	ACCIPITRIFORMES	Accipitridae	Steppe Eagle	*Aquila nipalensis*	गोमायु महाचील	EN	II	VU	2	21	21
53	ACCIPITRIFORMES	Accipitridae	Bonelli's Eagle	*Aquila fasciata*	मोरङ्गी चील		II		2	8	8
54	ACCIPITRIFORMES	Accipitridae	Booted Eagle	*Hieraaetus pennatus*	काँधचन्द्र चील		II		1	4	4
55	ACCIPITRIFORMES	Accipitridae	Hen Harrier	*Circus cyaneus*	चल्लाचोर भुइँचील		II	VU		1	1
56	ACCIPITRIFORMES	Accipitridae	Shikra	*Accipiter badius*	शिक्रा		II		1		1
57	ACCIPITRIFORMES	Accipitridae	Besra	*Accipiter virgatus*	बेसरा		II		1	2	2
58	ACCIPITRIFORMES	Accipitridae	Eurasian Sparrowhawk	*Accipiter nisus*	वनबाज		II			2	2
59	ACCIPITRIFORMES	Accipitridae	Black Kite	*Milvus migrans*	कालो चील		II		2	36	36
60	ACCIPITRIFORMES	Accipitridae	White-eyed Buzzard	*Butastur teesa*	जमल श्येनबाज		II		1		1
61	ACCIPITRIFORMES	Accipitridae	Himalayan Buzzard	*Buteo refectus*	श्येनबाज		II		1	4	4

62	ACCIPITRIFORMES	Accipitridae	Long-legged Buzzard	*Buteo rufinus*	लामखुट्टे श्येनबाज		II		1		1
63	ACCIPITRIFORMES	Accipitridae	Upland Buzzard	*Buteo hemilasius*	पहाडी श्येनबाज		II	DD	1		1
64	BUCEROTIFORMES	Upupidae	Common Hoopoe	*Upupa epops*	फाप्रे चरा				1	3	3
65	CORACIIFORMES	Coraciidae	Indian Roller	*Coracias benghalensis*	ठेउवा					1	1
66	CORACIIFORMES	Alcedinidae	Common Kingfisher	*Alcedo atthis*	सानो माटीकोरे				1	3	3
67	CORACIIFORMES	Alcedinidae	Crested Kingfisher	*Megaceryle lugubris*	ठूलो छिरबिरे माटीकोरे					2	2
68	CORACIIFORMES	Alcedinidae	Pied Kingfisher	*Ceryle rudis*	छिरबिरे माटीकोरे				1		1
69	CORACIIFORMES	Alcedinidae	White-breasted Kingfisher	*Halcyon smyrnensis*	सेतोकण्ठे माटीकोरे				2	2	2
70	PICIFORMES	Megalaimidae	Coppersmith Barbet	*Psilopogon haemacephalus*	मिलचरा				1		1
71	PICIFORMES	Megalaimidae	Great Barbet	*Psilopogon virens*	न्याउली				2	22	22
72	PICIFORMES	Megalaimidae	Lineated Barbet	*Psilopogon lineatus*	छिर्के कुथुर्के				1		1
73	PICIFORMES	Megalaimidae	Golden-throated Barbet	*Psilopogon franklinii*	कुक्लुङ्ग				2		2
74	PICIFORMES	Megalaimidae	Blue-throated Barbet	*Psilopogon asiaticus*	कुथुर्के				1	6	6
75	PICIFORMES	Picidae	Rufous Woodpecker	*Micropternus brachyurus*	सानो तामे लाहाँचे				1		1
76	PICIFORMES	Picidae	Greater Yellownape	*Chrysophlegma flavinucha*	ठूलो सुनजुरे काठफोर				1		1
77	PICIFORMES	Picidae	Lesser Yellownape	*Picus chlorolophus*	सुनजुरे काठफोर				2	2	2
78	PICIFORMES	Picidae	Black-naped Woodpecker	*Picus guerini*	कालोगर्दने काठफोर					8	8
79	PICIFORMES	Picidae	Grey-capped Woodpecker	*Picoides canicapillus*	फुसोटाउके काष्ठकूट				1		1
80	PICIFORMES	Picidae	Fulvous-breasted Woodpecker	*Dendrocopos macei*	काष्ठकूट				1		1
81	CARIAMIFORMES	Falconidae	Common Kestrel	*Falco tinnunculus*	बौंडाइ		II		7	7	7
82	CARIAMIFORMES	Falconidae	Peregrine Falcon	*Falco peregrinus*	शाही बाज		I		2	1	2
83	PSITTACIFORMES	Psittacidae	Slaty-headed Parakeet	*Psittacula himalayana*	कर्रा सुगा		II		5	4	5
84	PASSERIFORMES	Eurylaimidae	Long-tailed Broadbill	*Psarisomus dalhousiae*	चित्रकुट					5	5
85	PASSERIFORMES	Oriolidae	Maroon Oriole	*Oriolus traillii*	घनरक्त सुनचरी					2	2
86	PASSERIFORMES	Oriolidae	Black-hooded Oriole	*Oriolus xanthornus*	कालोटाउके सुनचरी				2		2
87	PASSERIFORMES	Oriolidae	Indian Golden Oriole	*Oriolus kundoo*	गाजले सुनचरी				4		4
88	PASSERIFORMES	Vireonidae	White-bellied Erpornis	*Erpornis zantholeuca*	सेतोपेटे जुरेचरा					2	2
89	PASSERIFORMES	Campephagidae	Short-billed Minivet	*Pericrocotus brevirostris*	लघुठूँडे रानीचरी					9	9
90	PASSERIFORMES	Campephagidae	Long-tailed Minivet	*Pericrocotus ethologus*	लामपुछ्रे रानीचरी				3	28	28
91	PASSERIFORMES	Campephagidae	Scarlet Minivet	*Pericrocotus flammeus*	रानीचरी				1	3	3
92	PASSERIFORMES	Campephagidae	Indian Cuckooshrike	*Coracina macei*	लटुशक बिरहीचरी				2	2	2
93	PASSERIFORMES	Vangidae	Bar-winged Flycatcher-shrike	*Hemipus picatus*	आसकोटे चरी					3	3
94	PASSERIFORMES	Vangidae	Large Woodshrike	*Tephrodornis virgatus*	ठूलो टेन्था				1	3	3
95	PASSERIFORMES	Rhipiduridae	White-throated Fantail	*Rhipidura albicollis*	नक्कले मारुनीचरी				2	2	2
96	PASSERIFORMES	Dicruridae	Black Drongo	*Dicrurus macrocercus*	कालो चिबे				1	6	6
97	PASSERIFORMES	Dicruridae	Ashy Drongo	*Dicrurus leucophaeus*	ध्वाँसे चिबे				1		1
98	PASSERIFORMES	Dicruridae	Bronzed Drongo	*Dicrurus aeneus*	सानो चिबे				1		1
99	PASSERIFORMES	Dicruridae	Hair-crested Drongo	*Dicrurus hottentottus*	केशराज चिबे				1	1	1

100	PASSERIFORMES	Monarchidae	Indian Paradise-flycatcher	*Terpsiphone paradisi*	स्वर्गचरी				2		2
101	PASSERIFORMES	Laniidae	Long-tailed Shrike	*Lanius schach*	भद्राई				3	8	8
102	PASSERIFORMES	Laniidae	Grey-backed Shrike	*Lanius tephronotus*	हिमाली भद्राई				2	10	10
103	PASSERIFORMES	Corvidae	Rufous Treepie	*Dendrocitta vagabunda*	कोकले				2	8	8
104	PASSERIFORMES	Corvidae	Grey Treepie	*Dendrocitta formosae*	पहाडी कोकले				4	23	23
105	PASSERIFORMES	Corvidae	Red-billed Blue Magpie	*Urocissa erythroryncha*	स्यालपोथरी लामपुच्छ्रे				3	25	25
106	PASSERIFORMES	Corvidae	Common Green Magpie	*Cissa chinensis*	हरियो लामपुच्छ्रे				3	1	3
107	PASSERIFORMES	Corvidae	Black-headed Jay	*Garrulus lanceolatus*	कालोटाउके वनकाग					1	1
108	PASSERIFORMES	Corvidae	House Crow	*Corvus splendens*	घर काग				4	31	31
109	PASSERIFORMES	Corvidae	Large-billed Crow	*Corvus macrorhynchos*	कालो काग				4	198	198
110	PASSERIFORMES	Stenostiridae	Yellow-bellied Fairy-fantail	*Chelidorhynx hypoxanthus*	पहेंलो मारुनीचरी				2	1	2
111	PASSERIFORMES	Paridae	Yellow-browed Tit	*Sylviparus modestus*	चँदुवा चिचिल्कोटे					5	5
112	PASSERIFORMES	Paridae	Green-backed Tit	*Parus monticolus*	हरियो चिचिल्कोटे				3	6	6
113	PASSERIFORMES	Paridae	Great Tit	*Parus major*	चिचिल्कोटे				2	12	12
114	PASSERIFORMES	Paridae	Black-lored Tit	*Machlolophus xanthogenys*	पाण्डु चिचिल्कोटे				2	20	20
115	PASSERIFORMES	Paridae	Yellow-cheeked Tit	*Machlolophus spilonotus*	पीतमुहार चिचिल्कोटे			CR	1		1
116	PASSERIFORMES	Alaudidae	Oriental Skylark	*Alauda gulgula*	बात्मीचटी					1	1
117	PASSERIFORMES	Cisticolidae	Zitting Cisticola	*Cisticola juncidis*	फिरफिरे				9		9
118	PASSERIFORMES	Cisticolidae	Striated Prinia	*Prinia crinigera*	सुया घाँसेफिस्टो				4	3	4
119	PASSERIFORMES	Cisticolidae	Grey-crowned Prinia	*Prinia cinereocapilla*	धेघरी घाँसेफिस्टो	VU		CR	1		1
120	PASSERIFORMES	Cisticolidae	Grey-breasted Prinia	*Prinia hodgsonii*	फुस्रोछाती घाँसेफिस्टो				1	9	9
121	PASSERIFORMES	Cisticolidae	Ashy Prinia	*Prinia socialis*	टुणुक घाँसेफिस्टो				1		1
122	PASSERIFORMES	Cisticolidae	Common Tailorbird	*Orthotomus sutorius*	पातसिउने फिस्टो				3	25	25
123	PASSERIFORMES	Acrocephalidae	Thick-billed Warbler	*Arundinax aedon*	मोटोठूँडे ट्याकट्याके					1	1
124	PASSERIFORMES	Pnoepygidae	Scaly-breasted Cupwing	*Pnoepyga albiventer*	कत्ले डिकुरेभ्याकुर				1	3	3
125	PASSERIFORMES	Hirundinidae	Nepal House Martin	*Delichon nipalense*	नेपाल भीरगौँथली					32	32
126	PASSERIFORMES	Hirundinidae	Barn Swallow	*Hirundo rustica*	घर गौँथली				5	19	19
127	PASSERIFORMES	Hirundinidae	Red-rumped Swallow	*Cecropis daurica*	गेरुकटी गौँथली				13	7	13
128	PASSERIFORMES	Hirundinidae	Eurasian Crag Martin	*Ptyonoprogne rupestris*	नहिकुटी गौँथली				6	27	27
129	PASSERIFORMES	Hirundinidae	Asian Plain Martin	*Riparia chinensis*	भित्तेगौँथली			NT	18		18
130	PASSERIFORMES	Pycnonotidae	Ashy Bulbul	*Hemixos flavala*	फुस्रोपेटे जुरेली					7	7
131	PASSERIFORMES	Pycnonotidae	Mountain Bulbul	*Ixos mcclellandii*	कैलोपेटे जुरेली				10	16	16
132	PASSERIFORMES	Pycnonotidae	Black Bulbul	*Hypsipetes leucocephalus*	बाखे जुरेली				9	106	106
133	PASSERIFORMES	Pycnonotidae	Himalayan Bulbul	*Pycnonotus leucogenys*	जुल्फे जुरेली				4	89	89
134	PASSERIFORMES	Pycnonotidae	Red-vented Bulbul	*Pycnonotus cafer*	जुरेली				2	62	62
135	PASSERIFORMES	Phylloscopidae	Hume's Leaf-warbler	*Phylloscopus humei*	चञ्चले फिस्टो				9	14	14
136	PASSERIFORMES	Phylloscopidae	Lemon-rumped Leaf-warbler	*Phylloscopus chloronotus*	पीतकटी फिस्टो				6	8	8
137	PASSERIFORMES	Phylloscopidae	Buff-barred Warbler	*Phylloscopus pulcher*	सुन्तलेरेखी फिस्टो				1	9	9
138	PASSERIFORMES	Phylloscopidae	Ashy-throated Warbler	*Phylloscopus maculipennis*	फुस्रोकण्ठे फिस्टो				4	4	4

139	PASSERIFORMES	Phylloscopidae	Dusky Warbler	*Phylloscopus fuscatus*	गोधुली फिस्टो				2	2	2
140	PASSERIFORMES	Phylloscopidae	Smoky Warbler	*Phylloscopus fuligiventer*	ध्वाँसे फिस्टो				1	2	2
141	PASSERIFORMES	Phylloscopidae	Tytler's Leaf-warbler	*Phylloscopus tytleri*	मसिनोठूँडे फिस्टो			DD		1	1
142	PASSERIFORMES	Phylloscopidae	Tickell's Leaf-warbler	*Phylloscopus affinis*	पीतोदर फिस्टो				3	4	4
143	PASSERIFORMES	Phylloscopidae	Whistler's Warbler	*Phylloscopus whistleri*	सुसेली फिस्टो					4	4
144	PASSERIFORMES	Phylloscopidae	Greenish Warbler	*Phylloscopus trochiloides*	जीवल फिस्टो				2		2
145	PASSERIFORMES	Phylloscopidae	Blyth's Leaf-warbler	*Phylloscopus reguloides*	तालुधर्के फिस्टो				2	2	2
146	PASSERIFORMES	Phylloscopidae	Grey-hooded Warbler	*Phylloscopus xanthoschistos*	तुमुलकारी फिस्टो				4	44	44
147	PASSERIFORMES	Phylloscopidae	Grey-bellied Tesia	*Tesia cyaniventer*	फुस्रोपेटे टिसिया					1	1
148	PASSERIFORMES	Phylloscopidae	Chestnut-headed Tesia	*Cettia castaneocoronata*	रातोटाउके टिसिया				1	4	4
149	PASSERIFORMES	Phylloscopidae	Chestnut-crowned Bush-warbler	*Cettia major*	ठूलो रातोटाउके झाडीफिस्टो					1	1
150	PASSERIFORMES	Phylloscopidae	Grey-sided Bush-warbler	*Cettia brunnifrons*	रातोटाउके झाडीफिस्टो					5	5
151	PASSERIFORMES	Phylloscopidae	Aberrant Bush-warbler	*Horornis flavolivaceus*	पीतहरित झाडीफिस्टो					4	4
152	PASSERIFORMES	Aegithalidae	Red-headed Tit	*Aegithalos iredalei*	कालीकण्ठे राजचिचिल्कोटे				4	9	9
153	PASSERIFORMES	Sylviidae	Lesser Whitethroat	*Sylvia curruca*	श्वेतकण्ठ फिस्टो					2	2
154	PASSERIFORMES	Zosteropidae	Whiskered Yuhina	*Yuhina flavicollis*	जुङ्गे जुरेचरा				13	15	15
155	PASSERIFORMES	Zosteropidae	Oriental White-eye	*Zosterops palpebrosus*	काँकीर				2	14	14
156	PASSERIFORMES	Timaliidae	Streak-breasted Scimitar-babbler	*Pomatorhinus ruficollis*	छातीधर्से पाल्कोटे				2	12	12
157	PASSERIFORMES	Timaliidae	Rusty-cheeked Scimitar-babbler	*Erythrogenys erythrogenys*	पाल्कोटे				3	17	17
158	PASSERIFORMES	Timaliidae	Black-chinned Babbler	*Cyanoderma pyrrhops*	कालोचिउँडे वनभ्याकुर				3	18	18
159	PASSERIFORMES	Pellorneidae	Puff-throated Babbler	*Pellorneum ruficeps*	थोप्ले भ्याकुर				2	4	4
160	PASSERIFORMES	Leiotrichidae	Nepal Fulvetta	*Alcippe nipalensis*	नेपाल फूलबुट्टा					7	7
161	PASSERIFORMES	Leiotrichidae	Jungle Babbler	*Turdoides striata*	बगाले भ्याकुर				4	35	35
162	PASSERIFORMES	Leiotrichidae	White-crested Laughingthrush	*Garrulax leucolophus*	हिउँजुरे तोरीगाँडा				3	31	31
163	PASSERIFORMES	Leiotrichidae	White-throated Laughingthrush	*Garrulax albogularis*	सोइरने तोरीगाँडा				5		5
164	PASSERIFORMES	Leiotrichidae	Streaked Laughingthrush	*Trochalopteron lineatum*	छिर्के तोरीगाँडा				2	4	4
165	PASSERIFORMES	Leiotrichidae	Chestnut-crowned Laughingthrush	*Trochalopteron erythrocephalum*	कटुसटाउके तोरीगाँडा					5	5
166	PASSERIFORMES	Leiotrichidae	Red-billed Leiothrix	*Leiothrix lutea*	रोचिष्णु मिसिया		II			11	11
167	PASSERIFORMES	Leiotrichidae	Blue-winged Minla	*Siva cyanouroptera*	नीलपङ्ख मिन्ला					2	6
168	PASSERIFORMES	Leiotrichidae	Bar-throated Minla	*Chrysominla strigula*	शिव मिन्ला					12	12
169	PASSERIFORMES	Sittidae	Chestnut-bellied Nuthatch	*Sitta cinnamoventris*	कटुसे मट्टा				4	2	4
170	PASSERIFORMES	Sittidae	White-tailed Nuthatch	*Sitta himalayensis*	पहाडी मट्टा					2	2
171	PASSERIFORMES	Sittidae	Velvet-fronted Nuthatch	*Sitta frontalis*	मखमली मट्टा				2	9	9
172	PASSERIFORMES	Sittidae	Wallcreeper	*Tichodroma muraria*	मुरारी पुतलीचरा				1	4	4

173	PASSERIFORMES	Sturnidae	Chestnut-tailed Starling	*Sturnia malabarica*	फुस्रोटाउके सारौं				9		9
174	PASSERIFORMES	Sturnidae	Common Myna	*Acridotheres tristis*	डाङ्ग्रे रुपी				7	102	102
175	PASSERIFORMES	Sturnidae	Jungle Myna	*Acridotheres fuscus*	वन रुपी				2	159	159
176	PASSERIFORMES	Turdidae	Scaly Thrush	*Zoothera dauma*	गोब्रे चाँचर				1		1
177	PASSERIFORMES	Turdidae	Orange-headed Thrush	*Geokichla citrina*	सुन्तले चाँचर				2		2
178	PASSERIFORMES	Turdidae	Tickell's Thrush	*Turdus unicolor*	फुस्रे चाँचर				2		2
179	PASSERIFORMES	Turdidae	Black-throated Thrush	*Turdus atrogularis*	कालोकण्ठे चाँचर				1	1	1
180	PASSERIFORMES	Muscicapidae	Oriental Magpie-robin	*Copsychus saularis*	धोबिनी चरा				5	11	11
181	PASSERIFORMES	Muscicapidae	Dark-sided Flycatcher	*Muscicapa sibirica*	ध्वाँसे अर्जुनक				2		2
182	PASSERIFORMES	Muscicapidae	Ferruginous Flycatcher	*Muscicapa ferruginea*	कैलो अर्जुनक			NT	1		1
183	PASSERIFORMES	Muscicapidae	Rufous-bellied Niltava	*Niltava sundara*	सुन्दर नीलतभा				3	2	3
184	PASSERIFORMES	Muscicapidae	Small Niltava	*Niltava macgrigoriae*	सानो नीलतभा					2	2
185	PASSERIFORMES	Muscicapidae	Verditer Flycatcher	*Eumyias thalassinus*	नीलतुथो अर्जुनक				29		29
186	PASSERIFORMES	Muscicapidae	Blue-throated Blue-flycatcher	*Cyornis rubeculoides*	नीलकण्ठे अर्जुनक				2		2
187	PASSERIFORMES	Muscicapidae	Bluethroat	*Cyanecula svecica*	भूमिचर नीलकण्ठ				1	1	1
188	PASSERIFORMES	Muscicapidae	Siberian Rubythroat	*Calliope calliope*	साइबेरियाली रातोकण्ठ				1	4	4
189	PASSERIFORMES	Muscicapidae	Himalayan Bush-robin	*Tarsiger rufilatus*	सुन्तलाकोखे रविन					1	1
190	PASSERIFORMES	Muscicapidae	Golden Bush-robin	*Tarsiger chrysaeus*	सुनौलो रविन					4	4
191	PASSERIFORMES	Muscicapidae	Black-backed Forktail	*Enicurus immaculatus*	कालोढाडे खोलेधोबिनी					1	2
192	PASSERIFORMES	Muscicapidae	Spotted Forktail	*Enicurus maculatus*	थोप्ले खोलेधोबिनी				1	1	1
193	PASSERIFORMES	Muscicapidae	Blue Whistling-thrush	*Myophonus caeruleus*	कल्चौंडे				3	20	20
194	PASSERIFORMES	Muscicapidae	Slaty-backed Flycatcher	*Ficedula erithacus*	नीलढाडे अर्जुनक			NT	4		4
195	PASSERIFORMES	Muscicapidae	Slaty-blue Flycatcher	*Ficedula tricolor*	टिकटिके अर्जुनक				2	6	6
196	PASSERIFORMES	Muscicapidae	Snowy-browed Flycatcher	*Ficedula hyperythra*	सेतोआँखीभौं अर्जुनक					1	1
197	PASSERIFORMES	Muscicapidae	Rufous-gorgeted Flycatcher	*Ficedula strophiata*	सेतोटिके अर्जुनक				2	4	4
198	PASSERIFORMES	Muscicapidae	Red-throated Flycatcher	*Ficedula albicilla*	लालकण्ठे अर्जुनक					6	6
199	PASSERIFORMES	Muscicapidae	Blue-fronted Redstart	*Phoenicurus frontalis*	नीलटाउके खञ्जरी				2	10	10
200	PASSERIFORMES	Muscicapidae	Blue-capped Redstart	*Phoenicurus coeruleocephala*	धोबिनी खञ्जरी				2	8	8
201	PASSERIFORMES	Muscicapidae	White-capped Water-redstart	*Phoenicurus leucocephalus*	सेतोटाउके जलखञ्जरी				4	12	12
202	PASSERIFORMES	Muscicapidae	Plumbeous Water-redstart	*Phoenicurus fuliginosus*	नीलाम्बर जलखञ्जरी				8	23	23
203	PASSERIFORMES	Muscicapidae	Hodgson's Redstart	*Phoenicurus hodgsoni*	तनकम्प खञ्जरी				2	3	3
204	PASSERIFORMES	Muscicapidae	Blue-capped Rock-thrush	*Monticola cinclorhyncha*	सानो हजारा चाँचर				3		3
205	PASSERIFORMES	Muscicapidae	Blue Rock-thrush	*Monticola solitarius*	उमा चाँचर				1	1	1

206	PASSERIFORMES	Muscicapidae	Grey Bushchat	*Saxicola ferreus*	हिमाली झ्याप्सी				3	23	23
207	PASSERIFORMES	Muscicapidae	Pied Bushchat	*Saxicola caprata*	काले झ्याप्सी				2	17	17
208	PASSERIFORMES	Muscicapidae	Common Stonechat	*Saxicola torquatus*	भ्येकभ्येक झ्याप्सी				4	18	18
209	PASSERIFORMES	Chloropseidae	Orange-bellied Leafbird	*Chloropsis hardwickii*	स्वर्णोदर हरितचरी					4	4
210	PASSERIFORMES	Dicaeidae	Thick-billed Flowerpecker	*Dicaeum agile*	मोटोठूँडे पुष्पकोकिल				2		2
211	PASSERIFORMES	Dicaeidae	Plain Flowerpecker	*Dicaeum minullum*	समरुप पुष्पकोकिल				1	2	2
212	PASSERIFORMES	Dicaeidae	Fire-breasted Flowerpecker	*Dicaeum ignipectus*	अग्निवक्ष पुष्पकोकिल				2	7	7
213	PASSERIFORMES	Nectariniidae	Purple Sunbird	*Cinnyris asiaticus*	कालोबुङ्गेचरा				2		2
214	PASSERIFORMES	Nectariniidae	Fire-tailed Sunbird	*Aethopyga ignicauda*	लामपुच्छे बुङ्गेचरा				3	19	19
215	PASSERIFORMES	Nectariniidae	Black-throated Sunbird	*Aethopyga saturata*	कालीकण्ठे बुङ्गेचरा					1	1
216	PASSERIFORMES	Nectariniidae	Gould's Sunbird	*Aethopyga gouldiae*	कान्ति बुङ्गेचरा					1	1
217	PASSERIFORMES	Nectariniidae	Crimson Sunbird	*Aethopyga siparaja*	सिपराजा बुङ्गेचरा				1	3	3
218	PASSERIFORMES	Prunellidae	Rufous-breasted Accentor	*Prunella strophiata*	मुसे लेकचरी				3	3	3
219	PASSERIFORMES	Estrildidae	White-rumped Munia	*Lonchura striata*	सेतोढाडे मुनियाँ				3		3
220	PASSERIFORMES	Estrildidae	Scaly-breasted Munia	*Lonchura punctulata*	कोटेरो मुनियाँ				6	19	19
221	PASSERIFORMES	Passeridae	House Sparrow	*Passer domesticus*	घर भँगेरा				6	55	55
222	PASSERIFORMES	Passeridae	Russet Sparrow	*Passer cinnamomeus*	कैलो भँगेरा				8	4	8
223	PASSERIFORMES	Passeridae	Eurasian Tree Sparrow	*Passer montanus*	रुख भँगेरा				3	22	22
224	PASSERIFORMES	Motacillidae	Olive-backed Pipit	*Anthus hodgsoni*	रुख चुइयाँ				8	14	14
225	PASSERIFORMES	Motacillidae	Rosy Pipit	*Anthus roseatus*	गुलाफीकण्ठे चुइयाँ				3	12	12
226	PASSERIFORMES	Motacillidae	Upland Pipit	*Anthus sylvanus*	पहाडी चुइयाँ				1	3	3
227	PASSERIFORMES	Motacillidae	Paddyfield Pipit	*Anthus rufulus*	आली चुइयाँ				3	2	3
228	PASSERIFORMES	Motacillidae	Grey Wagtail	*Motacilla cinerea*	फुस्रो टिकटिके				3	4	4
229	PASSERIFORMES	Motacillidae	Citrine Wagtail	*Motacilla citreola*	बेसारे टिकटिके				1		1
230	PASSERIFORMES	Motacillidae	White-browed Wagtail	*Motacilla maderaspatensis*	खोले टिकटिके				9	11	11
231	PASSERIFORMES	Motacillidae	White Wagtail	*Motacilla alba*	फुस्रो टिकटिके				36	6	36
232	PASSERIFORMES	Fringillidae	Common Chaffinch	*Fringilla coelebs*	चित्रकचरी				2		2
233	PASSERIFORMES	Fringillidae	Common Rosefinch	*Carpodacus erythrinus*	अमोंगा तितु				5	1	5
234	PASSERIFORMES	Fringillidae	Dark-rumped Rosefinch	*Carpodacus edwardsii*	कुमधर्के तितु				2		2
235	PASSERIFORMES	Fringillidae	Dark-breasted Rosefinch	*Procarduelis nipalensis*	नेपाल तितु					2	2
236	PASSERIFORMES	Fringillidae	Yellow-breasted Greenfinch	*Chloris spinoides*	गाजले पीतचरी				9	55	55
237	PASSERIFORMES	Fringillidae	Eastern Goldfinch	*Carduelis caniceps*	रक्तमुहार पीतचरी					4	4
238	PASSERIFORMES	Emberizidae	Crested Bunting	*Emberiza lathami*	जुरे बगेडी				6		6
239	PASSERIFORMES	Emberizidae	Rock Bunting	*Emberiza cia*	शिला बगेडी				5	22	22

GTS- Globally Threatened Species, NTS- Nationally Threatened Species
CITIES- Convention on International Trade in Endangered Species of Wild Fauna and Flora
List 1. Listing of opportunistic bird record during the field visit in between 2010- 2020.
List 2. Bird Survey from 4-6 December 2020

Role of Gausala (Cowshed Area) for Vulture Conservation in Resunga Protected Forest, Gulmi District, Nepal

Bharat Panthi[1] and Thaneswor Khanal[1]

Introduction

Vultures are the natural scavengers, which provide essential ecosystem services, by maintaining clean environment through the rapid consumption of animal carcasses. All nine species of South Asian vultures are found in Nepal (DNPWC 2015). Out of those nine species of vultures, six species; Bearded Vulture, White-rumped Vulture, Himalayan Griffon, Red-headed Vulture, Egyptian Vulture and Cinereous Vulture are found in Resunga protected forest. (Thakuri, 2013, BCN 2020)

Looking back to the data of vultures since past two decades, the number of vultures has been found at the risk of extinction due to their rapid decline (Van et al. 2010). Veterinary use of the non-steroidal anti-inflammatory drug (NSAID) diclofenac is the main reason behind the population decline of the vultures (Green et al. 2004; Oaks et al. 2004; Shultz et al. 2004). Also, caracass poisoning is found to be one of the other major causes of killing vulture. Burying of carcasses in order to prevent disease, resulting food shortage to vulture have been identified as serious threat to vulture conservation. (Baral & Gautam 2007; Joshi et al. 2015; Phuyal 2016). Because of incredible decrease in the number of vultures and the realization of their need, various vulture safe feeding sites were established in different parts of Nepal.

Gausala, a cowshed area in Resunga Protected Forest, was established since 1985, with the aim to protect the street cows as well as aged unproductive cattle. These cows are also used for the religious purpose and after the religious works; they are again brought back to the Gausala. Resunga Conservation Committee (RCC) takes care of the cattle in terms of feeding and providing shelter. Since 2015, People Partner with Nature program has been implemented in Resunga which has also supported for the management of cowshed and vulture feeding site. Resunga Conservation Committee keeps on an average 150 cattle in the Gausala. Besides conserving cattle, Gausala also contribute in providing feed to the vultures. Gausala has designated a fixed place to throw the carcass to feed the vultures. This study aims to assess the role of Gausala on vulture conservation based on the diversity and trend of vultures arriving to feed in feeding site.

Himalayan Griffon by Shambhu Bhattarai

Methods and materials

Study area

The study was conducted in Resunga Protected Forest of Gulmi district, Lumbini Province of western Nepal (Figure 1). It covers an area of 19281.65ha, (DFO, 2018). It lies in 610-3050m from sea level. 50% of the total Resunga area is covered by agricultural area and 41% of the total area is covered by Forest. The Gausala is situated at Resunga Protected Forest (28° 5.180'N 83° 16.692'E) which lies 11 km north-east from Tamghas, the headquarter of Gulmi district.

Vulture count at carcass disposal site

After the death of the cows in Gausala, carcasses were offered to the vulture near the cowshed at the site which has few large numbers of pine trees which provides roosting habitat for the vultures. Count of the vulture roosting and feeding was done from August 2019 to March 2020.All the vulture observed within the feeding sites (Gausala) was counted. Vultures arriving to feed were observed from a suitable place. Numbers of different species of vultures were recorded along with the number of each species. A feed can be understood as the complete feeding on a carcass or more than one carcass on a day

Results and Discussion

With the increase in the number of carcass it was found that the number of vultures were also increasing. Comparing average number of vultures per feed and maximum number of vultures that attended a single feed, there is increase in vultures in Gausala. (Table 1). This shows that the Gausala has been effective in attracting number of vultures to food source.

Bearded Vulture by Mitra Pandey

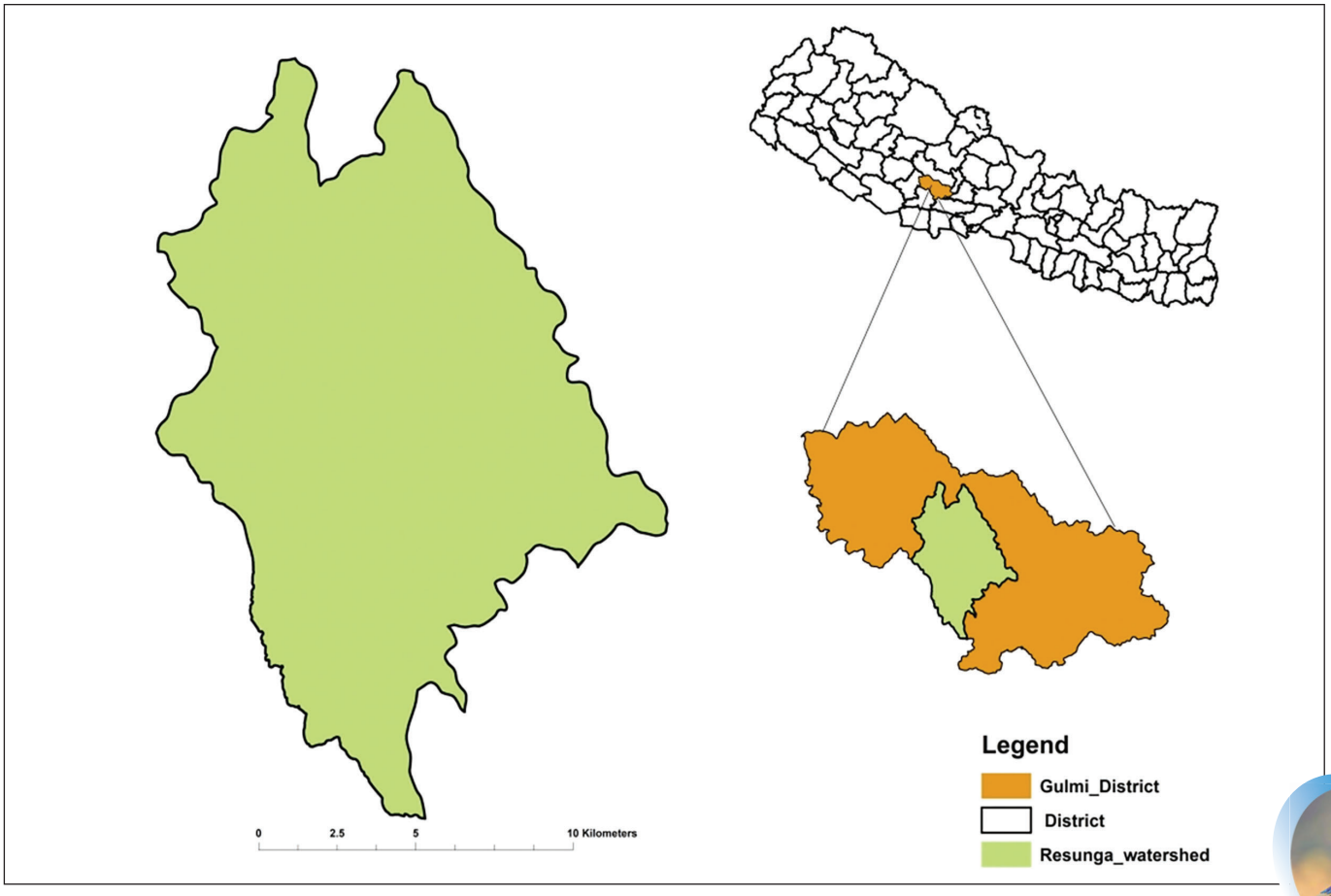

Fig: 1. **Map of Resunga Protected Forest**

Months	Number of feed	Total no.of vultures in all feed	Average number of vultures per feed ± SD	Max no. at single feed of carcass
Aug 2019	8	117	14.6 ± 6.3	25
Sept 2019	5	102	20.4 ± 2.1	24
Oct 2019	8	114	14.3 ± 7.6	30
Nov 2019	5	104	20.8 ± 12.4	45
Dec 2019	7	125	17.9 ± 5.1	26
Jan 2020	8	170	21.3 ± 5.0	30
Feb 2020	9	224	24.9 ± 10.2	48
Mar 2020	7	238	34.0 ± 11.8	60
Total	57			

The maximum and minimum number of vultures counted in the single feed was found to be 60 and 24 on the month of March 2020 and September 2019 respectively. (Figure :2). As the data shows that there were only 7 feed in the month of March but the average number of vulture and maximum number of vulture per single feed was found to be 34 and 60 respectively which indicates the increase of vulture in Gausala. From Standard Deviation (SD) the no of vulture in the feed was found highly dispersed in the month of November 2019 whereas vulture number at the feed was closely clustered to the mean in the month of September 2019.

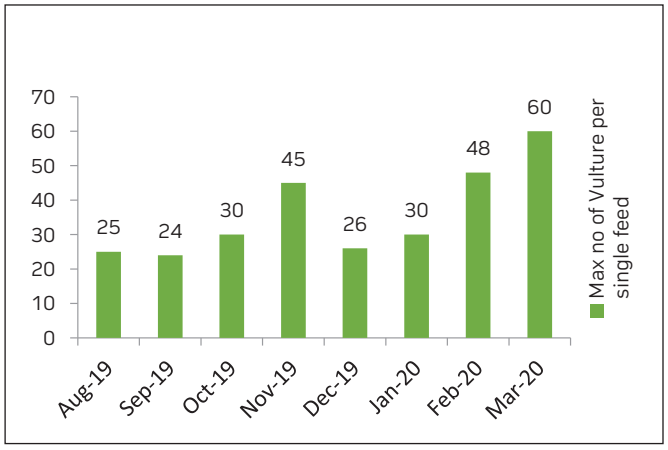

Fig: 2. **Max no of vulture per single feed**

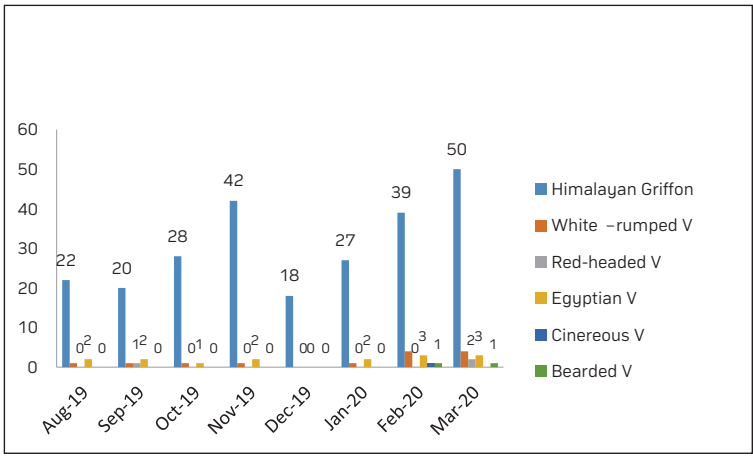

Fig: 3. **Max.no of vulture species in single feed**

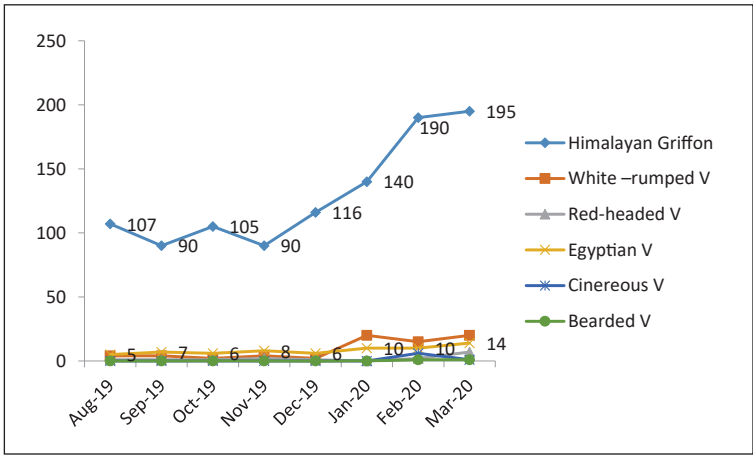

Fig: 4. **No. of different species in total feed in different months**

Himalayan Griffon was found to be a dominant species in all the feed of every months followed by White–rumped, Egyptian and Red-headed Vulture. Similarly Cinereous and Bearded Vulture were recoded only in the month of February and March 2020. (Figure: 3& 4)

Mortality Rate of Cattle in Gausala

The average death rate of cattle in Gausala was found to be 7.12 per month during this study time. The mortality rate of cattle was high during the month of August, September and November 2019 as the cattle was affected by Foot-and-mouth disease (FMD).

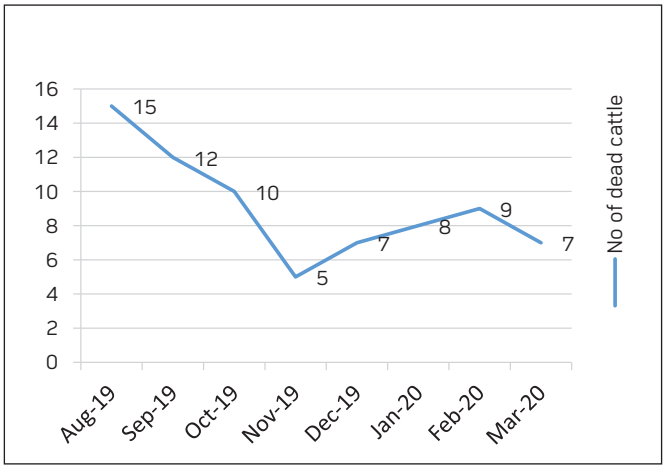

Fig: 5. **No. of dead cattle during study time**

Factors resulting death of cattle

As per the RCC there are several factors playing role in the death of cattle. Among them 65 % of death of cattle are natural whereas 5 % of death of cattle is caused by Leopard attack, 10 % by diseases and 20 % by accident of cattle. As there is steep slope in grazing area, so the accidental death is quite high.

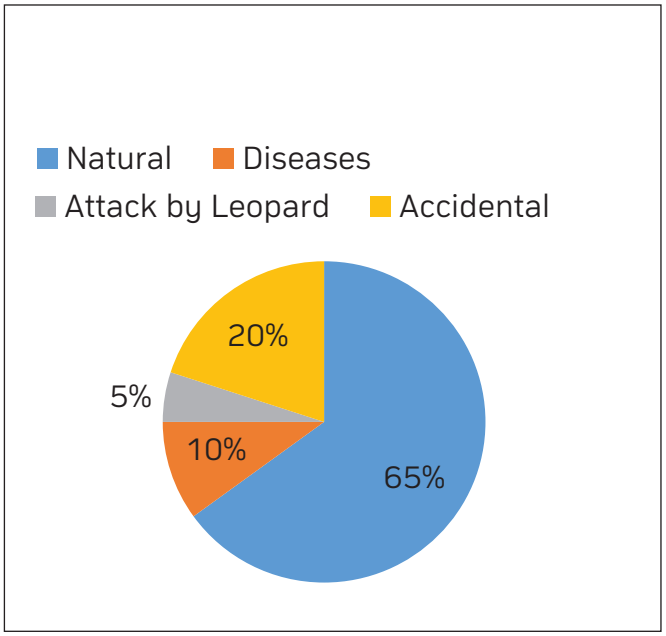

Fig: 6. **Factors resulting death to cattle**

Source: Resunga Conservation Committee (RCC)

Discussion

Average no of vulture in each feed was analyzed and it was found to be increasing. This might be due to sufficient food availability for vultures. The similar condition can be seen in Pakistan (Gilbert 2007). The nest of these species of vultures are absent in the study area but Bhusal et al, (2011) argued about the availability of nest in Arghakhanchi which is not too far from the study area.

Similarly, Chaudhary et al, (2010) reported that there was a remarkable increase in the number of vultures every year from 2007 to 2009 in Vulture restaurant of Nawalparasi due to the availability of sufficient food for the vultures.

Conclusion and recommendation

The results show an increase in vulture numbers at Gausala, which suggests that the Gausala has been successful in attracting vultures to a feeding site. It is great contribution for making the world's first Vulture Safe Zone (Bhusal, 2018). The eventual recovery of vultures in Nepal will be enhanced if it is possible to protect and retain small but key remaining vulture populations in the wild through creating Vulture Safe Zones.

As Gulmi District is one of the other toxic drug Free Zones (Bhusal, 2018) but at present Gausala lacks the mechanism to ensure that the carcasses are free of diclofenac residue, thus a proper inspection of carcasses should be carried out before offering to the vultures. It is also recommended for the proper skinning of death cattle before feeding to the vultures.

1. Bird Conservation Nepal, Lazimpat, Kathmandu, Nepal

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First Record of Green Imperial Pigeon *Ducula aenea* in Nepal

Devendra Kumar Kharel

Green Imperial Pigeon *Ducula aenea* is an arboreal frugivore belonging to Family Columbidae. It is distributed along India, Sri Lanka, Burma, North Thailand and the Indo-Chinese region (Ali et al. 1987; Grimmett et al. 1999; Kazmeirczak 2000; Rasmussen et al, 2005). It is found in evergreen and moist deciduous forest though frequent occurrence in secondary forest with *Ficus* and other fruit species are also noted (Ali et al. 1987). The species though reported from West Bengal state of India, adjacent to Nepal southeastern border has no information from Nepal till now.

During a regular bird watching in Jhapa, Eastern Nepal, a group of four individuals of Green Imperial Pigeon was recorded on 24 November, 2020 at around 8:30 a.m. in Mechinagar-7, Sattighatta at an elevation of 98m (N 26.61831° E088.13618°). This is the first record of the species from Nepal. These individuals were sighted perching in *Bombax ceiba* (tree dimensions; 15m height and 40 cm diameter at breast height). The record was made from degraded riverine fallow land alongside Mechi River where scattered bamboo culms, tree species (*Acacia catechu, Dalbergia sissoo, Bombax ceiba*) and other shrubby species were present. The nearest settlement area was around 60m away with agricultural lands and tea plantation. The individuals flew towards north-west direction towards Tea estates which lies south of Churia forest of Nepal. The record site lies about 400m from India border which could be the western most range of the species. However, provided the fact that the species flew north-west the species could be present further westwards.

The species may have been using the area as regular habitat and passage route between forests of India and Nepal since long. Infrequent sightings could be due to lack of bird surveys in the area. Further survey seems important to know the actual distribution and status of this species in Nepal and to find whether the sighting represents vagrant or resident population. On the other hand, the record also highlights importance of trees outside forest for biodiversity management which are very important station for birds.

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First photographic evidence of Common Reed Bunting *Emberiza schoeniclus* record in Nepal.

Nahakul Bhusal

On 23rd Nov 2020 at 8:15 am, I was birding along the Manohara river of Bhaktapur district at the northern side of the Nilbarahi temple. I was observing some birds like plovers, sandpipers and pipits in the waterside vegetation. Meanwhile, I saw a strange bird whose appearance was like a sparrow. The bird was perching at the top of the bush. I watched it from a close distance through a binocular (magnification 8 ×30) for about 5 minutes. The bird stayed there for about 8 minutes that provided me an opportunity to take its photographs. The GPS coordinate of that location is 27.70362°N and 85.39669°E with an elevation of 1316 m.

I remained there for some time to observe its behavior. The bird then flew to the ground from the bush probably for foraging. The flight of the bird was very strong and oscillate. The bird was in a group with other species such as larks, pipits. I was not sure that the species was Common Reed Bunting. I was confused with Little Bunting. In Common Reed Bunting, the female has buff supercilium, brown ear-coverts and dark moustachial stripe and malar stripes (Grimett et.al 1998). I had difficulty with the identification mainly due to a lack of field experience. Later, I posted the photo in social media - face-book group named 'Birds ID Nepal. What bird is that!'. Then it was confirmed to be Common Reed Bunting. Globally, the Common Reed Bunting is assessed as the least concern (Birdlife International 2020). First record of this species for Nepal was thought to be in Begnas Lake, Kaski district on 20 December 1970. Then included this species in the official checklist Birds of Nepal. But, recently previous record was withdrawn by recorder Carol Inskipp and Tim Inskipp (Inskipp, et.al.2020). So, this became the first recording of Common Reed Bunting with the photographic evidence in Nepal.

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Case Stories of 'People Partner with Nature Program'

Conservation Pond: A means to manage watershed in Resunga Protected Forest

Conservation pond evolved as a management tool in Resunga for the sustainable conservation of watershed. Locals in the Resunga area have traditionally managed ponds along ridges and on slopes for watering domestic animals as well as for wildlife. These ponds improved recharge and also helped to increase spring yields. Over time, many ponds disappeared due to haphazard road construction as well as locals did not maintain them and they silted up.

However, the expenses involved in construction of conservation pond are too high for locals to bear the initial cost. Thus, Bird Conservation Nepal through People Partner with Nature programme supported nine different local CBO's especially Community Forest user group to construct eleven different conservation ponds in various location.

The highest level of investment is from local people as they are responsible for the maintenance of conservation pond. As a result, discharge of the spring below conservation pond has increased resulting regular supply of water to the village. Mr. Chet Prasad Rakaskoti treasurer of D-gaira CFUG said that "By harvesting rain water in conservation pond has boosted the underground water reserve to create adequate water supply in the spring resulting the area greener." He also added that conservation pond has become the major source of drinking water to wildlife and birds.

A success story of Man Bahadur Funjeli (A model agro-farmer of Resunga area)

The agriculture sector is dominant in the livelihood of Nepalese people but farmers living in developing countries like Nepal have to face different obstacles to earn their livelihood through farming. Due to the lack of high-quality seeds, proper agricultural training, modern technology transfer, proper guidance Nepalese farmer have to struggle a lot .It is also true for Man Bahadur Funjeli, a well-known farmer in Balithum (Gulmi Durbar Rural Municipality) of Gulmi District.

While struggling for proper farming, he found rays of hope when there was a support of Bird Conservation Nepal through People Partner with Nature Program. He received several

capacity building opportunities including, honey bee keeping training, Citrus fruit thinning pruning training, compost manure preparation training and vegetable nursery training as well as several agricultural equipment, seeds and seedlings.

He has managed his land in an integrated way where he combines agricultural crops with NTFP (Non-Timber Forest Product), vegetable farming, honey bee farming, citrus fruit farming and fishery in one pond constructed within his land. He currently holds 25 honey bee hives, 80 trees of citrus fruit and 200 seedlings of *Tejpat* NTFP.

He was able to earn Rs 45000 from honey bee and Rs 35000 from selling vegetables last year. From this year he will also be able to earn by selling the citrus fruits and the NTFPs he has planted in his farm. Mr. Rajali felt very confident on himself that he can run his livelihood from his farm, with lots of hopes and confidence; he had decided to take a courageous step of investing in coffee farming also from this year.

Contribution of beekeeping to livelihood and biodiversity

Tika Ram Resmi is a leading beekeeper in the village Ratamata, Gulmi District in western Nepal. He started beekeeping in the year 2017 after receiving the five-days training about beekeeping and receiving one modern beehive including bees from Bird Conservation Nepal.

developing himself as a modern beekeeper in the village. He exclaimed, "At this moment, I feel that if I was not able to receive modern beekeeping training and tools then my beekeeping practice would be traditional resulting low yield of honey." With proper management of beehives, he now has 20 honeybee hives. He admitted that he got a benefit of around rupees forty thousand in 2019 by selling honey only. As he is capable of dividing honey bee colonies, he is planning to sell the honey bee colonies this year and he is sure that his profit will be double this year.

Revolving fund support brought change in livelihood

Mr. Jib Bahadur KC (48), from Malika rural municipality - 04, Arkhabang of Gulmi district, is a user member of Khamdesh community forests. He has a family of one son, three daughters, his father and his wife. He owns 4 ropanies of land. In his land, he used to grow crops like: maize, millet, potato, etc. adopting traditional methods. He was not satisfied with the production he used to receive from the field because it was difficult to fulfill all basic needs of his family members.

After implementation of PPN programme in 2018, Khamdesh CFUG received NRS. 50,000 from BCN in order to support livelihood of poor and marginalized households of the CFUG. Jib Bahadur KC was one of the beneficiaries to receive revolving fund of amount NRs. 10,000. He added some money in the supported amount to purchase vegetable seeds and necessary tools to start off-seasonal vegetable farming and also established a greenhouse tunnel to produce tomatoes. His first harvest was 500 kg of tomato and earned NRs. 30,000 selling the tomatoes only. The achieved success encouraged him to boost up seasonal vegetable farming like: cauliflower, cabbage and pepper. From the profit made, he also purchased 100 chicken and started poultry farming in a small scale along with vegetable farming. Presently, he has a vegetable and meat shop at Thulachaur, Arkhabang.

He has expressed his satisfaction saying, "In the initial stage, I was not confident enough to start a farm and was hard to fulfill my family basic needs. But later, I was fortunate to receive revolving fund and technical support from BCN. At present, I have four plastic tunnels and 300 chickens in my farm. It has improved my income and now I am able to fulfill all necessary needs at local level".

Mushroom farming: a good source of income

Hwangdi is a place in Madane protected forest area, where majority of the people are farmers. They grow maize, millet and potatoes as their major food crop. From their traditional farming technique, neither they were able meet their nutritional needs nor their financial needs.

After implementation of PPN programme by BCN in 2018, a mushroom farming training was provided to the farmers with necessary tools and seeds support for mushroom farming. A total of 15 farmers of Mehal vegetable farming group directly involved in the training and started mushroom farming. They used rice straw extracted from their rice field, as raw material for mushroom farming. After one and half months, their hard work paid-off. Mushroom started to germinate in their farm. They harvested 300 kg. of mushroom from their farmland. It was the very first time of growing mushroom by themselves in Hwangdi so, they were excited to use it as vegetable, which added new taste in the daily food of Hwangdi people. Later, they also sold 200 kg. of mushroom to the local people at the rate of NRs. 350 per kg. and earned NRs. 70,000. Some amount of the income was again invested in the following season mushroom farming.

One of the members of mushroom farming group, Khima Gharti Magar said, "Before growing mushroom in our own farm, local peoples used to eat wild mushroom. Without the knowledge of edible mushroom, sometimes they used to be fatal. Now things have changed, we are able to meet nutritional needs and financial needs. We have started saving money in the cooperative after receiving income from mushroom farming. It has increased not only our income but also confidence to do something new and better in our own area."

Local practise of nature conservation in Madane

Madane protected forest is rich in biodiversity. It has diverse vegetation type within the altitudinal range of 975m. to 2657m. It is a home of 264s species of birds, 29 species of mammals, 26 species of herpeto-fauna and 8 species of fishes. It is also very close to Dhorpatan hunting reserve.

In Madane protected forest area, poaching was a major threat. Before establishing the forest area as protected forest, poaching of birds and other wildlife for meat was severe. However, after the declaration of protected forest, there was some reduction in illegal activities. But, protecting wildlife from the people of adjacent districts: Baglung and Pyuthan was still a major challenge as they intrude inside Madane protected forest area illegally for hunting and poaching wildlife, collecting fodders and fuelwood.

Bird conservation Nepal in 2018 established a community based anti-poaching unit (CBAPU) in coordination with forest office, local government, police staffs, youth clubs and community forest user groups. A total of 11 CFUGs of Arkhwang and Hwangdi area were included for establishing community based Anti-poaching unit. After its establishment, local youth and members of CBAPU involved regularly in forest patrolling activity and wildlife conservation awareness activities. Mrs. Kamala Aryal, the president of CBAPU and member of Madane protected forest management committee said that, "Strengthening of CBAPU was a major need so we were trained on safety-net practice and supported with forest patrolling gear by BCN which helped and motivated us in conservation." Mr. Yam bahadur Budha, secretary of CBAPU admitted that regular forest patrolling by CBAPU has controlled wildlife hunting and poaching activities in Madane protected forest.

Youths of Madane towards conservation

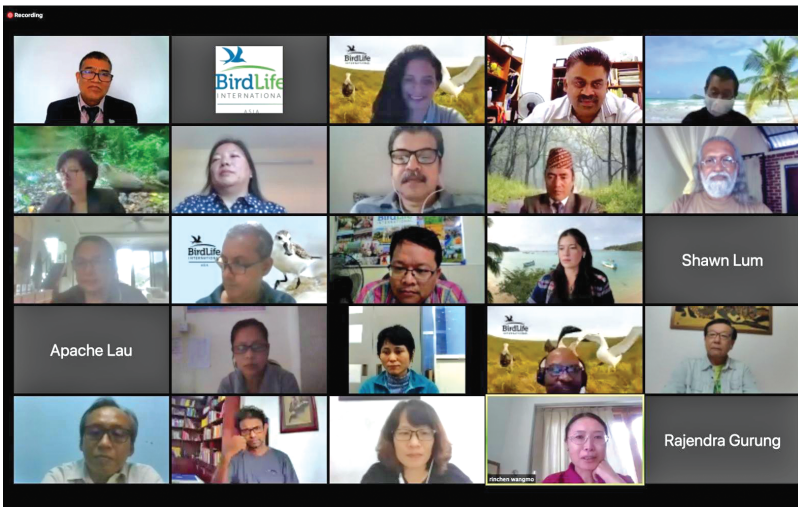
Binod smriti youth club of Malika-03, Hwangdi was established in 2065 B.S. with the aim of executing developmental activities and capacity building of youths. They organized various social and developmental events regularly. But, bio-diversity and environment sector was not focused. After the implementation of 'People Partner with Nature' programme by BCN in 2018, they

became a member of Nepal bird conservation network (NBCN) and participated in various conservation and awareness events organized by BCN including national workshop of NBCN. Their participation in various events of BCN helped them to understand the importance of biodiversity and environment protection. They became capable of organizing various environment and bio-diversity conservation related activities in their own area. Environment clean-up campaign, bio-engineering to control soil erosion, street drama for conservation awareness were some of the important activities. They also established and operated a community resource center for the local people where people can learn about biodiversity and environment. This became the important platform to read books, watch documentaries and discuss on contemporary conservation issues. The youth club also started organizing bird watching events for enhancing the knowledge of birds.

News

19th BirdLife Asia Partnership Meeting

19th BirdLife Asia Partnership meeting scheduled to be hosted in Nepal by Bird Conservation Nepal turned into a virtual meeting because of COVID-19 pandemic disease. It was a three days long event started from 4-6 November 2020. More than a hundred participants from 25 nations attended online to review annual progress as a partner organizations and deal with upcoming conservation challenges in Asia. Participants as per their interest also joined in Breakout sessions on important topics such as Asian Flyways, Bird Trade, Business Partnerships, Forests and Energy.



Life Members

Lal Prasad Gurung has joined BCN as a Lifemember. Mr. Gurung is a Former Director of Annapurna Conservation Area Project (ACAP), who has over 30 years of experience in the community based natural resource management and sustainable tourism planning and management.

Anil Adhikari has Joined BCN as a Life Member. Mr. Adhikari is a technical writer/editor and an experienced professional working on wildlife conservation in Nepal. He has been working on snow leopard conservation since a decade under Snow Leopard Conservancy (SLC).

Amrit Poudel has joined BCN as a Life Member. Mr. Poudel is a student of Forestry with profound interest in conservation of bird and biodiversity.

Rachana Chettri has joined BCN as a Life Member. Mrs. Chhetri is a founder/Principal of Heavenly Garden Kids Campus, Bhairahawa. She is a dedicated social worker and engages in nature conservation activities.

Hari Maya Gurung has Joined BCN as a Life Member. Miss Gurung, a proprietor of Hotel Trekkers Inn of Ghandruk, Kaski is very supportive towards bird and biodiversity conservation.

Nirmal Dulal has joined BCN as a Life Member. Mr. Dulal, currently serving Nepal Police is an avid bird lover and photographer.

The newsletter is produced quarterly for members of Bird Conservation Nepal. The aim of the newsletter is to inform BCN members on the recent development of ornithology in Nepal and any other relevant news on birds. It is circulated to all members free of cost. The individual annual membership is NRs. 500 for any SAARC nationals and US$ 15.00 for others to join as Friends of BCN.

Those who would like to donate to or be a member of BCN can do so by a direct bank transfer, to the bank details below, or via cheque. Cheques should be made payable to Bird Conservation Nepal and sent to the address below.

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नेपाल पंछी संरक्षण संघ

Bird Conservation Nepal

Established in 1982, Bird Conservation Nepal (BCN) is the leading organisation in Nepal, focussing on conservation of birds, their habitats and sites. It seeks to promote interest in birds among the general public, encourage research on birds, identify major threats to birds' continued survival. As a result, BCN is the foremost scientific authority providing accurate information on birds and their habitats throughout Nepal. We provide scientific data and expertise on birds for the Government of Nepal (GoN) through the Department of National Parks and Wildlife Conservation (DNPWC) and work closely in birds and biodiversity conservation throughout the country.

BCN is a membership-based organisation with a founding President, patrons, life members, ordinary members, friends of BCN and active supporters. Our membership provides strength to the society and is drawn from people of all walks of life from students, professionals and conservationists. Our members act collectively to set the organisation's strategic agenda.

We are committed to showing the value of birds and their special relationship with people. As such, we strongly advocate the need for peoples' participation as future stewards to attain long-term conservation goal.

As the Nepalese partner of BirdLife International, a network of more than 120 organisations around the world, BCN also works on a worldwide agenda to conserve the world's birds and their habitats.

For further information please contact:

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BirdLife INTERNATIONAL PARTNER