



Nepal ~ nature, biodiversity & conservation



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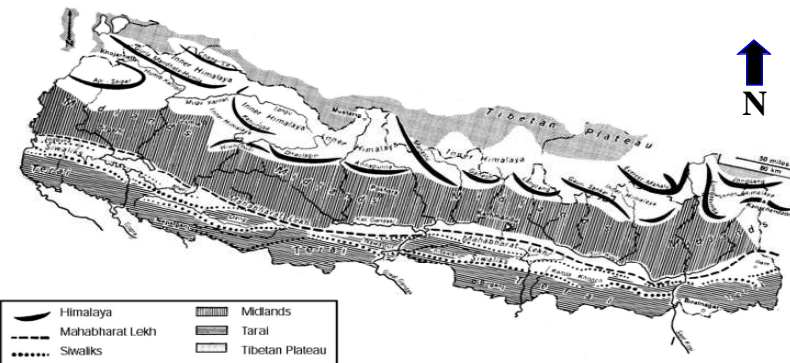
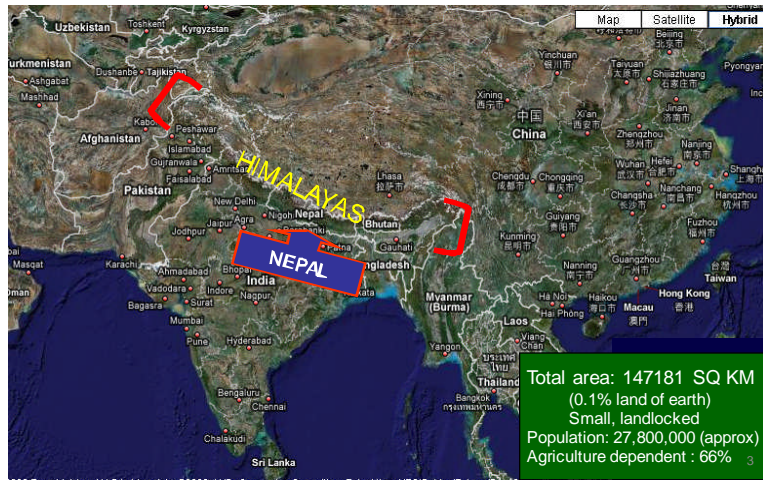
Presentation outline

- Nature: physiographic & climatic cond. & biodiversity
- Bird diversity (rep. 38 families out of 69)
- Threat status
- Conservation initiatives



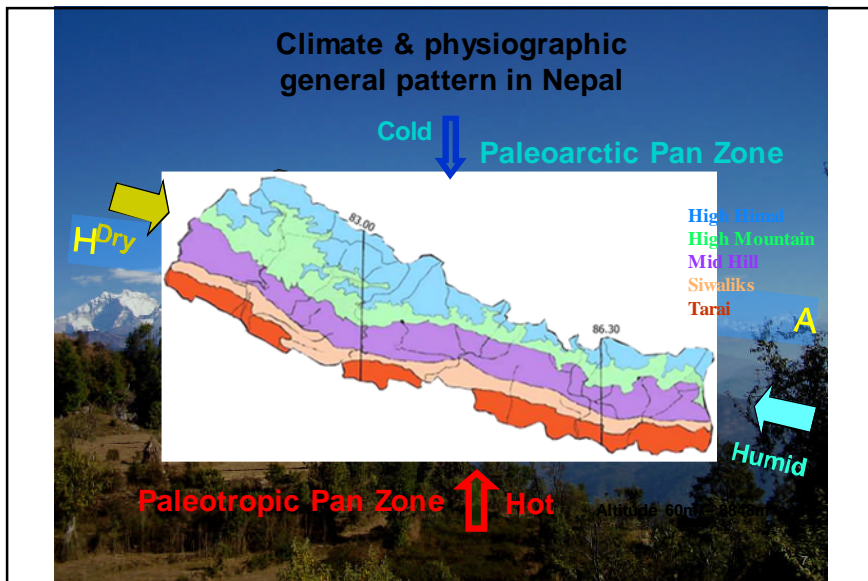
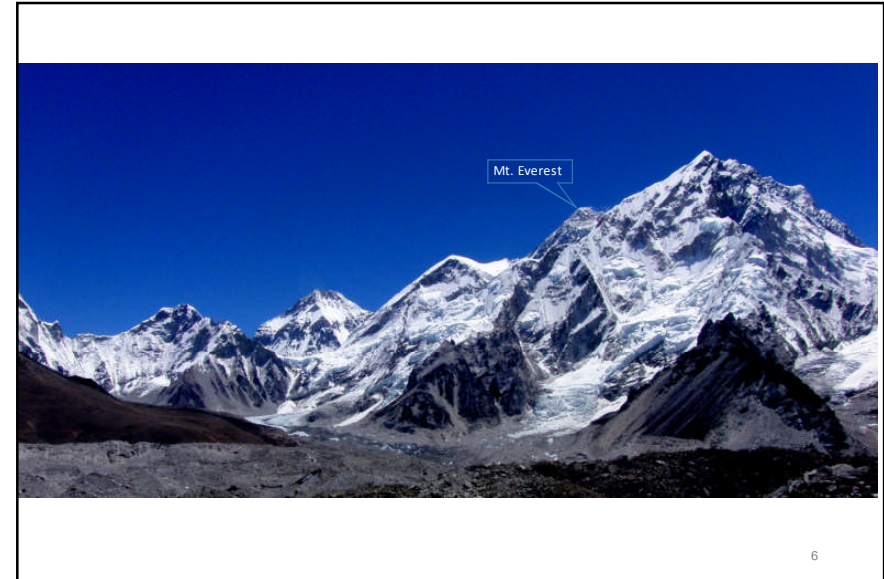
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Where is Nepal Himalaya



It contains the highest mountains in the world, The majestic Himalaya range contains **Eight** of the world's highest mountains, culminating in Mt. Everest.


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Physiographic zones with corresponding bioclimatic zones and sub-zones


Physiographic zones (LRMP 1986)	Corresponding Bioclimatic zones & sub-zones (Dobremez, 1972)	
	zones	sub-zones (altitudinal range)
High Himal	Nival	(above 5000m)
	Alpine	Upper (from 4500 to 5000m) Lower (from 4000 to 4500m)
High Mountain	Sub-alpine	Upper (from 3500 to 4000m) Lower (from 3000 to 3500m)
	Temperate	Upper (from 2500 to 3000m) Lower (from 2000 to 2500m)
Mid Hill	Sub-tropical	Upper (from 1500 to 2000m) Lower (from 1000 to 1500m)
Siwalik Terai	Tropical	Upper (from 500 to 1000m) Lower (below 500m)

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Photo: R. Suwal

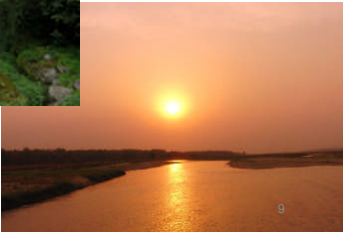


Unique Biological diversity is the identity of Nepal

"Walking through magnificent forests of oak and rhododendrons beneath the towering white summits, one can understand why some claim this to be the most beautiful place on the planet".



Thundering rivers, magical montane forests and dense lowland jungles supporting a fabulous range of exciting bird and mammalian species.









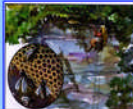







Nepal's contribution of Biodiversity in World's Total

Plant Species			Animal Species			
Group (Life forms)	World	Nepal	Group (Life forms)	World number	Nepal	
		%			Number	
Algae		1.72	Spider	39,490*	175	0.44
Fungi		2.69	Moths	160,000#	785	0.49
Bryophytes		4.77	Butterflies	17,500#	651	3.72
Lichens		2.77	Fish	10,000@	187	1.87
Pteridophytes		5.15	Herpeto	12,650+	195	1.54
Fl. Plants		2.76	Birds	9,799○	878	8.98
Total		2.80	Mammals	4,675+	200	4.00

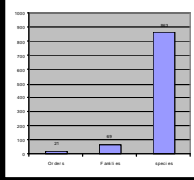
Sources: * Panick, NL2006.
 # Smithsonian Institute 2007.
 @ IUCN, 2003.
 ○ Bird life International 2006.
 + Uetz, P. 2000.

Superlative in Nepalese Flora & Fauna

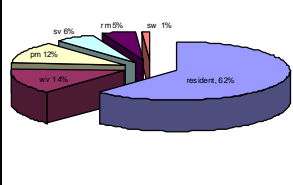
 Highest living Bacteria	 Highest flying bird	 Naur – largest stag	 Highest flowering plant	 Smallest woodpecker
 Smallest rododendron	 High alt. rec. butterfly	 Largest honey bee	 Highest cultivated rice	
 Largest moth Atlas moth (<i>Attacus atlas</i>)	 Gaur – largest in cow fam.	 Rock Python	 Tallest flying bird	 Largest venomous snake

Bird Diversity

- 21 Orders
- 69 Families
- 878 species

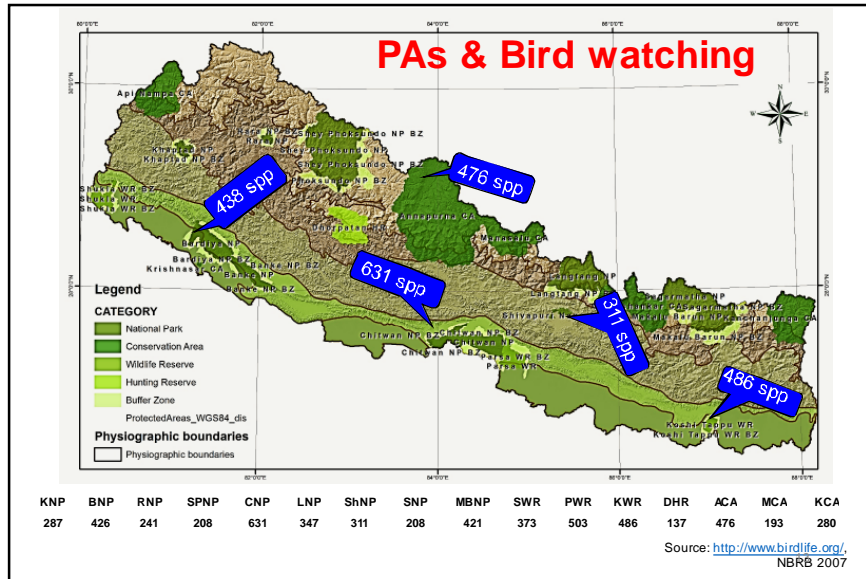


- 62% resident birds
- 14% winter visitors
- 12% passage migrants
- 6% summer visitors
- 5% residents and migrants
- 1% summer and winter visitors



One Endemic: Spiny Babbler (*Turdoides nipalensis*)

Source: Bhuju et al. 2007¹²



How about outside PAs ?

Heterogeneous Landscapes on Steep Slopes at Low Altitudes as Hotspots of Bird Diversity in a Hilly Region of Nepal in the Central Himalayas



Tej B. Basnet, Maan B. Rokaya, Bishnu P. Bhattarai, Zuzana Münzbergová, 2016. *PLoS ONE* 11(3): e0150498

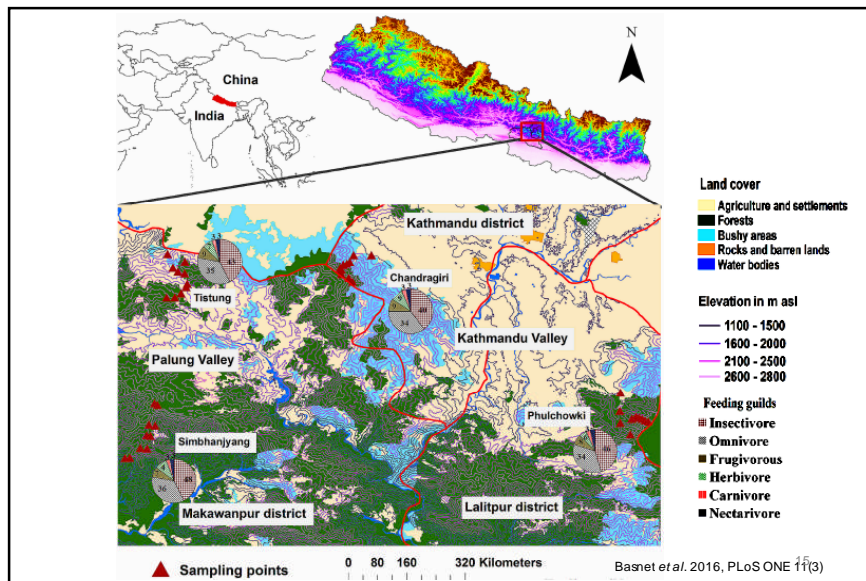


Table 1. The association between species richness, proportion of omnivorous, frugivorous and insectivorous species and species composition, altitude and habitat characteristics. For species richness and proportions of the different feeding guilds, locality and time of sampling (pre- or post-breeding) were used as random effects in the models and tested using GLMER. For species composition, locality and time of sampling were used as covariates and the associations determined using CCA. Longitude, latitude and their interaction were used as covariates in cases of a significant association with space on the given dependent variables as identified by a Mantel test. Only variables selected as significant by a step wise selection are presented.

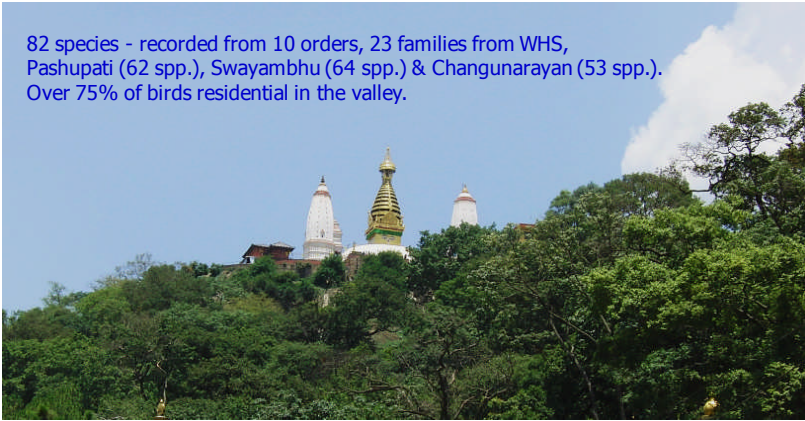
	Species richness		Proportion of omnivorous species		Proportion of frugivorous species		Proportion of insectivorous species		Species composition	
	Dev.	P-value	Dev.	P-value	Dev.	P-value	Dev.	P-value	p-value	% explained
Longitude	9.493	0.002	-	-	12.326	<0.001	19.059	<0.001	-	-
Latitude	1.133	0.287	-	-	3.815	0.051	7.151	0.007	-	-
Longitude x Latitude	7.53	0.006	-	-	-	-	-	-	-	-
Altitude	45.22	<0.001	-	-	17.708	<0.001	5.268	0.022	0.002	2.1
Heterogeneity	4.068	0.047	5.935	0.015	-	-	-	-	-	-
Canopy	-	-	-	-	-	-	-	-	0.024	1.6
Forest edge	-	-	-	-	-	-	-	-	0.002	3.1
Slope	4.799	0.036	-	-	-	-	-	-	0.028	1.63
Litter content	-	-	-	-	-	-	-	-	-	-
Shrubs	-	-	-	-	-	-	-	-	0.022	5.2
Forest	-	-	-	-	-	-	-	-	-	-

doi:10.1371/journal.pone.0150498.t001

Basnet *et al.* 2016, *PLoS ONE* 11(3)

Birds Diversity in World Heritage Sites (sacred grove) in Kathmandu Valley

82 species - recorded from 10 orders, 23 families from WHS, Pashupati (62 spp.), Swayambhu (64 spp.) & Changuanarayan (53 spp.). Over 75% of birds residential in the valley.

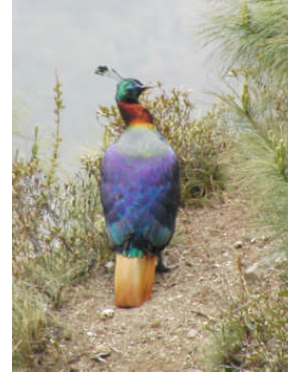


Tej Basnet, Bhushan R. Shrestha, and Vimal Thapa Dec., 2006. fob@friendsofbird.net.np

Avian Families

Phasianidae 22 species

Partridge, Quail, Pheasant & Snowcock



Himalayan Monal (*Lophophorus impejanus*)

Phaesants of Nepal

Common Name	Scientific name	Con. Status	NRDB
Chukar	<i>Alectoris chukar</i>	LC	NT
Cheer Pheasant	<i>Catreus wallichii</i>	P,VU, I	EN
Red Junglefowl	<i>Gallus gallus</i>	LC	LC
Blood Pheasant	<i>Ithaginis cruentus</i>	LC,II	LC
Himalayan Monal	<i>Lophophorus impejanus</i>	P,LC, I	NT
Kalij Pheasant	<i>Lophura leucomelanos</i>	LC	LC
Indian Peafowl	<i>Pavo cristatus</i>	LC	NT
Koklas Pheasant	<i>Pucrasia macrolopha</i>	LC	VU
Satyr Tragopan	<i>Tragopan satyra</i>	P,NT,III	VU

Source: Grimmett *et al.* 2000
Inskipp *et al.* 2016

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Family – Anatidae 33 species

Duck, Teal & Goose (Mostly winter visitor)



Ruddy Shelduck (*Tadorna ferruginea*)

Family – Charadriidae 17 species

Stilt, Plover & Lapwing
Mostly migratory & winter visitor



Painting by
H.D. Pratt

Ibisbill *Ibidorhyncha struthersii*

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Family – Megalaimidae 7 species



Coppersmith Barbet (*Megalaima haeracephala*)

Family – Picidae 25 species



Himalayan Flameback (*Dinopium shorii*)

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Alcedinidae
3 spp.


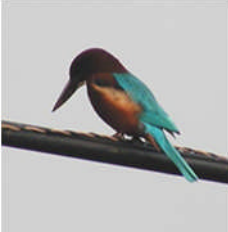


Photo: K. Karki


Common Kingfisher (*Alcedo atthis*)

Dacelonidae
4 spp.



White-breasted Kingfisher

Cerylidae 2 spp.



Crested Kingfisher

Family – Bucerotidae
4 species




Photo: R. Suwal

Oriental Pied Hornbill (*Anthracoceros albirostris*)

Family - Upupidae




Photo: R. Suwal

Common Hoopoe (*Upupa epops*)

22

Family - Coraciidae




Photo: K. Karki

Indian Roller (*Coracias benghalensis*)

Family – Meropidae
4 species




Photo: R. Suwal

Chestnut-headed Bee eater (*Merops leschenaulti*)

23

Family – Cuculidae
17 species
Most summer visitor

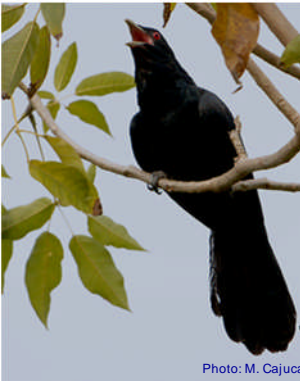


Photo: M. Cajuca

Asian Koel *Eudynamis scolopacea*

Family - Centropodidae




Photo: R. Suwal

Greater Coucal (*Centropus sinensis*)

24

Psittacidae
7 species



Slaty-headed Parakeet

Strigidae
19 species



Jungle Owl

25

Family – Columbidae
20 species
Dove & pigeon



Spotted Dove (*Streptopelia chinensis*)

Family – Pittidae
3 species



Indian Pitta *Pitta brachyura*

Source: en.wikipedia.org

26

Gruidae
4 species



Photo: R. Lather

Sarus Crane (*Grus antigone*)

Scolopacidae 28 Spp.
Sandpiper, Stint, Snipe etc migratory



Photo: K. Karki

Common Greenshank (*Tinga nebularia*)

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Family – Accipitridae
49 species



Himalayan Griffon (*Gyps himalayensis*)



Collared Falcon

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Vultures & conservation status



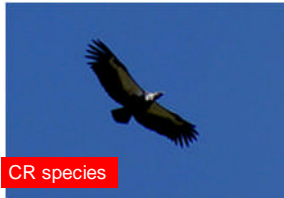
Egyptian Vulture (*Neophron percnopterus*)

Common Name	Scientific name	SS	IUCN
Cinereous Vulture	<i>Aegypius monachus</i>	w	NT
Lammergeier	<i>Gypaetus barbatus</i>	r	NT
White-rumped Vulture	<i>Gyps bengalensis</i>	m	CR
Eurasian Griffon	<i>Gyps fulvus</i>	m	LC
Himalayan Griffon	<i>Gyps himalayensis</i>	r	NT
Slender-billed Vulture	<i>Gyps tenuirostris</i>	r	CR
Egyptian Vulture	<i>Neophron percnopterus</i>	m	EN
Red-headed Vulture	<i>Sarcogyps calvus</i>	r	CR

Source: NBRB 2007



Slender-billed Vulture (*Gyps tenuirostris*)



White-rumped Vulture (*Gyps bengalensis*)



Red-headed Vulture (*Sarcogyps calvus*)

31

Family – Ardeidae 15 species



Black-crowned Night heron (*Nycticorax nycticorax*)

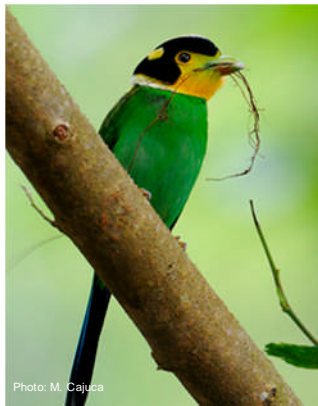
Family - Threskiornithidae



Black stork (*Ciconia nigra*)

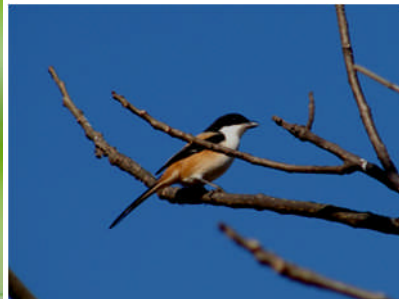
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Eurylaimidae 2 species



Long-tailed Broadbill *Psarisomus dalhousiae*

Laniidae 6 species



Long-tailed Shrike (*Lanius schach*)

31

Family – Muscicapidae : 96 spp

Flycatcher, Forktail, Shortwing, Cochoa, Robin, Redstart, Grandala, Niltava, Wheatear, Redstart, Thrush, Blackbird



Redstart's Redstart's Redstart's Redstart's
Photo: TG Bapat

Corvidae
48 species

Sturnidae
12 species



Ashy Drongo

Sittidae
6 species

Paridae
12 species

Aegithalidae
4 species



Velvet-fronted Nuthatch (*Sitta frontalis*)

Black-lored Tit (*Parus xanthogenys*)

Black-throated Tit (*Aegithalos concinnus*)

Hirundinidae
11 species

Pycnonotidae
9 species

Cisticolidae
13 species



Barn Swallow (*Hirundo rustica*)

Black Bulbul

Grey-breasted Prinia (*Prinia hodgsonii*)


Family – Sylviidae : 135 spp.

Warbler, Grassbird, Chiffchaff, Cutia, Tesia, Tailorbird, Babbler, Laughingthrush, Leiothrix, Barwing, Fulvetta, Minla, Yuhina, Sibia, Parrotbill etc.




Silver-eared Mesia (*Leiothrix argenteauris*)

Nectariniidae
16 species



Crimson Sunbird (*Aethopyga siparaja*)


Passeridae
37 species



Alpine Accentor (*Prunella collaris*)

Pipit, Wagtail, Accentor,
Snowfinch, Sparrow,
Weaver, Munia etc

Fringillidae
51 species



Yellow-breasted Greenfinch *Carduelis spinoides*

Finch, Bullfinch, Linnet,
Siskin, Chaffinch, Brambling
Grosbeak, Crossbill,
Grosbeak, Serin, Siskin,
Bunting etc

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Threat Status

- **6 Critically Endangered**
(Slender-Billed Vulture, White-Rumped Vulture, Red-headed Vulture, Pink-headed Duck, White-bellied Heron and Bengal Florican)
- **5 Endangered**
- **23 Vulnerable**
- **23 Near Threatened**
- **820 Least Concern**

Extinct species	
Common name	Scientific name
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Green Cochoa	<i>Cochoa viridis</i> *
Hodgson's Hawk Cuckoo	<i>Hierococcyx fugax</i> *
Jungle Bush Quail	<i>Perdicula asiatica</i>
Long-tailed Sibia	<i>Heterophasia picaoides</i> **
Pink-headed Duck	<i>Rhodonessa caryophyllacea</i>
Red-faced Liocichla	<i>Liocichla phoenicea</i> **
Rufous-necked Hombill	<i>Aceros nipalensis</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Silver-breasted Broadbill	<i>Serriolophus lunatus</i>
White-bellied Heron	<i>Ardea insignis</i>

Recently recover from Chisapanitar, Dahakhani CNP

Source: Bhuju et al. 2007 ** sighting record

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Globally Threatend Birds of Nepal

Species	Cat ego ry	Species	Cate gory
Swamp Francolin <i>Francolinus gularis</i>	VU	Houbara Bustard <i>Chlamydotis undulata</i>	VU
Cheer Pheasant <i>Catreus wallichi</i>	VU	Bengal Florican <i>Houbaropsis bengalensis</i>	CR
Pink-headed Duck <i>Rhodonessa caryophyllacea</i>	CR	Lesser Florican <i>Sypheotides indicus</i>	EN
Baer's Pochard <i>Aythya baeri</i>	EN	Sarus Crane <i>Grus antigone</i>	VU
Lesser Adjutant <i>Leptoptilos javanicus</i>	VU	Wood Snipe <i>Gallinago nemaricola</i>	VU
Greater Adjutant <i>Leptoptilos dubius</i>	EN	Indian Skimmer <i>Rynchops albicollis</i>	VU
White-bellied Heron <i>Ardea insignis</i>	CR	Rufous-necked Hombill <i>Aceros nipalensis</i>	VU
Lesser Kestrel <i>Falco naumanni</i>	VU	Grey-crowned Prinia <i>Prinia cinereocapilla</i>	VU
Saker Falcon <i>Falco cherrug</i>	EN	Bristled Grassbird <i>Chaetomis striata</i>	VU
Pallas's Fish-eagle <i>Haliaeetus leucorhphus</i>	VU	Jerdon's Babbler <i>Chrysomma alitrostre</i>	VU
Egyptian Vulture <i>Neophron percnopterus</i>	EN	Slender-billed Babbler <i>Turdoides longirostris</i>	VU
White-rumped Vulture <i>Gyps bengalensis</i>	CR	White-throated Bushchat <i>Saxicola insignis</i>	VU
Slender-billed Vulture <i>Gyps tenuirostris</i>	CR	Kashmir Flycatcher <i>Ficedula subrubra</i>	VU
Red-headed Vulture <i>Sarcogyps calvus</i>	CR	Yellow Weaver <i>Ploceus megarhynchus</i>	VU
Indian Spotted Eagle <i>Aquila hastata</i>	VU	Yellow-breasted Bunting <i>Emberiza aureola</i>	VU
Greater Spotted Eagle <i>Aquila clanga</i>	VU		
Eastern Imperial Eagle <i>Aquila heliaca</i>	VU		

Source: BCN 2007

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Globally Threatened Birds of Nepal



- 35 globally threatened species
- 19 near threatened species
- 15 restricted-range sps.
- 130 breeding & wintering sps (15%) considered nationally threatened.
- Habitat loss is major threat to 86% of birds
- Hunting, illegal trade and poisoning are other threats

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Conservation Challenges



- Trade
- Political instability
- Education
- Use of pesticides
- Habitat degradation



Trade

- Hornbill
- Owl
- Falcon
- Pheasants
- Parakeet
- Munia
- Bunting
- Hill Myna

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Habitat degradation



- Forest
- Wetland
- Old trees (Kapok, fig)
- Grassland
- Rapid urbanization
- Use of chemicals & pesticides

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Conservation

Conservation Organizations

- **GO**
 - DNPWC
- **NGOs**
 - NTNC (Central Zoo)
 - BCN
 - SWAN
 - FoB
- **INGOs**
 - IUCN
 - WWF

Protected Areas

- **National Parks**
 - Ten
- **Wildlife reserve**
 - three
- **Conservation area**
 - six
- **Hunting area**
 - one
- **Ramsar Sites**
 - nine
- **World Heritage Sites**
 - Four
- **Buffer zone**
 - twelve

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Conservation initiatives

Education & Awareness

Vulture
Demoiselle crane

Demoiselle Crane

Anthropoides virgo

Kali Gandaki river is the ante-precedent river, i.e., it is older than the Himalaya. This river made the **deepest gorge (over 5000m) in the world** between Mt. Annapurna (8091m) and Mt. Dhaulagiri (8167m). The river is wider in the upstream and down stream with large riverbed providing staging area for cranes during migration & very narrow in Mustang.

Atlas population
Nile R.
Black Sea population
Kalmikia population
Kazakhstan/ Central Asia population
Kurgalhin NR.
Eastern Asia population
Dalanz NR.
Zhakong NR.
Xunghai NR.

Legend:
■ Breeding range
■ Wintering range
↔ Migration routes

(Source: Meine and Archibald 1996)

Demoiselle Crane's Migration: passing over the Kali Gandaki river, Baglung

Migrating route of Demoiselle crane

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- Importance of birds
- Illegal collection & trade

- Habitat conservation
- Use of Pesticide & Chemicals

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Thank you!



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