Nepalese Journal of Zoology

ISSN: 2705-4403 (Print); 2705-4411 (Online)
www.cdztu.edu.np/njz

Volume 9 | Issue 2 | December 2025

https://doi.org/10.3126/njz.v9i2.86638

Checklist

An updated bird checklist for Dharan Forests Important Bird and Biodiversity Area, Nepal

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Suggested citation: Inskipp C., Giri T., Baral H.S., Acharya S., Poudyal L.P. and Timsina J.P. 2025. An updated bird checklist for Dharan Forests Important Bird and Biodiversity Area, Nepal. Nepalese Journal of Zoology, 9(2):58–79.
https://doi.org/10.3126/njz.v9i2.86638

Article history:
Received: 20 November 2025
Revised: 05 December 2025
Accepted: 07 December 2025

Abstract

An eleven-day bird survey carried out in Dharan Forests Important Bird and Biodiversity Area (DFIBA) in February 2025 recorded 180 species. This was followed by a desk study extracting records from published and unpublished reports, and eBird. These records were used to produce the first published DFIBA checklist. A total of 390 species was recorded between January 1949 and 17 September 2025, including four additional species from this bird survey and 46 additional species from the desk study. In 2024, DFIBA was assessed as an IBA based on globally threatened species and characteristic biome species criteria. This study showed that nine globally threatened species have been recorded, but four have not been found for at least 25 years, five are now rare and two have been downlisted, so DFIBA no longer qualifies as an IBA based on the globally threatened criterion. However, DFIBA still qualifies as an IBA based on the biome-restricted criterion. Three additional species were recorded in the Indo-Malayan Tropical Dry Zone biome than in the previous assessment. A total of 21 bird species, 65 per cent of the species recorded in this biome in Nepal was found, so slightly strengthening the evidence that DFIBA qualifies based on the biome-restricted assemblage criterion. The 2025 survey was limited to areas close to forest edges because of high elephant activity throughout the DFIBA. Designation of the DFIBA as a protected area is highly recommended. This would protect the tropical evergreen forest, which in Nepal, only occurs outside the protected area system, in DFIBA and the Mai valley IBA. It would also facilitate management to improve DFIBA habitats for wildlife. DFIBA remains significantly under-recorded. Further bird surveys in the centre and east, at higher elevations to cover the full altitudinal range and in all seasons should increase the DFIBA species list.

Keywords: Bird survey; Checklist; eBird; Globally threatened species; Biome-restricted species

1 | Introduction

Dharan Forests was identified as one of Nepal's Important Bird Areas (IBAs) in 2005 (Baral & Inskipp 2005). In the 2024 re-assessment of Nepal's IBAs more information was available on the site and its wildlife and Dharan Forests was reassessed as an Important Bird and Biodiversity Area (hereafter DFIBA), a key site for conservation in Nepal (BCN et al. 2024).

Biodiversity is not evenly distributed around the planet: some locations are disproportionately significant. To conserve biodiversity effectively, we must identify these places and target conservation action accordingly. IBAs are sites identified as being internationally significant for the conservation of birds and other biodiversity (BirdLife International 2025).

Since the launch of the IBA concept by BirdLife (then International Council for Bird Preservation) in 1979, IBAs have been identified in over 200 territories and countries worldwide, including Nepal, and thousands of protected areas have been designated as a direct consequence (BirdLife International 2025).

BirdLife Partners typically lead the process of identifying, monitoring and updating the IBA network in their countries. Locally gathered data are analysed nationally and assessed against a set of standardised criteria to identify sites of global importance (BirdLife International 2025). Bird Conservation Nepal is leading this initiative in Nepal, aided by BirdLife International.

BCN et al. (2024) gives a total of 340 bird species for DFIBA based on three reports: Baral et al. (2015), Basnet and Sapkota (2008) and Basnet (2009a,b). Basnet and Sapkota (2008) carried out quite a widespread survey in DFIBA during four visits covering all seasons and from 100-600 m, so not covering the full altitudinal range which

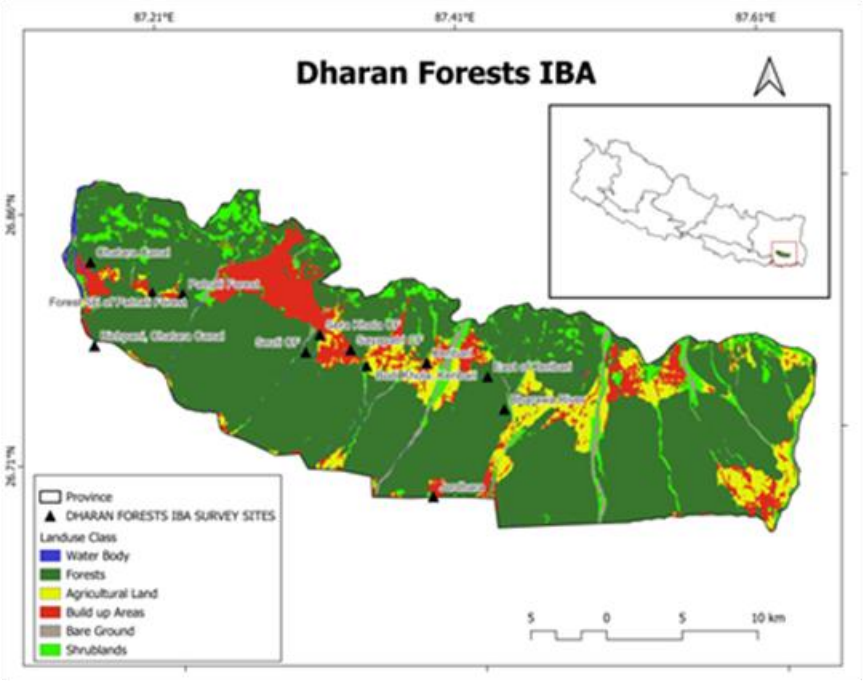

Figure 1. Dharan Forests IBA location, land cover and bird survey sites

extends to 1300 m. However, since then, ornithologists have mainly visited a small proportion of DFIBA in and around Patnali forest and along the Chatara Canal in the west of the IBA, up to 150 m.

BCN et al. (2024) assessed DFIBA as qualifying as an IBA based on the globally threatened bird species criterion. Significant populations of four globally threatened species had been recorded: greater spotted eagle *Clanga clanga*, steppe eagle *Aquila nipalensis*, lesser adjutant *Leptoptilos javanicus* and yellow-breasted bunting *Emberiza aureola.* DFIBA includes the Indo-Malayan tropical dry zone, Indochinese tropical moist forests and Sino-Himalayan subtropical forest biomes. Significant numbers of species characteristic of the Indo-Malayan Tropical Dry Zone had been recorded, therefore DFIBA also qualified as an IBA based on the biome-restricted assemblage criterion. Only small numbers of species have been recently recorded in the other two biomes (BCN et al. 2024).

Three restricted range species had been recorded in DFIBA: yellow-vented warbler *Phylloscopus cantator*, blackish-breasted babbler *Stachyris humei* and spiny babbler *Acanthoptila nipalensis*. However, there were no recent records of spiny babbler, only one record of blackish-breasted babbler (Karki & Choudhary 1997) and yellow-vented warbler is known to winter in small numbers (BCN et al. 2024). As significant populations of breeding or wintering restricted-range species were not known to occur DFIBA, it did not qualify as an IBA based on the restricted-range criterion (BirdLife International 2025).

Our survey aimed to include coverage of poorly known parts of the IBA. This research article aims to update the previous unpublished checklist (Baral et al. 2015) and IBA reassessment of DFIBA (BCN et al. 2024).

2 | Materials and methods

2.1 | Study area

The DFIBA (Fig. 1) is unprotected and covers an area of approximately 50,000 ha in south-east Nepal. It stretches from east to west in Sunsari and Morang districts with geographical coordinates centred on 26° 49'N and 87° 17'E. The altitude ranges

Figure 2. Bichpani, Dharan Forests IBA, Nepal (photo by Carol Inskipp)

Figure 3. Bichpani, Dharan Forests IBA, Nepal (photo by Carol Inskipp)

Figure 4. Near Panmara, Dharan Forests IBA, Nepal (photo by Carol Inskipp)

from 100-1300 m in the tropical and subtropical zones (BCN et al. 2024).

The principal vegetation of the area comprises forests, mainly tropical dry forests dominated by sal *Shorea robusta*. The remaining forests are tropical and subtropical moist evergreen which are characterized by dense vegetation with several tree species that are rare in other lowland forest types. These forests are mainly dominated by sal *Shorea robusta* with *Haldina cordifolia, Pterygota alata, Dillenia pentagyna, Dysoxylum spp., Phyllanthus emblica, Lagerstroemia parviflora, Aegle marmelos, Bombax ceiba, Cassia fistula* and *Terminalia alata* as co-dominant species. As a result of various anthropogenic disturbances, primarily repeated forest fires, tropical evergreen forest in Nepal has been replaced elsewhere in the country, apart from in the Mai valley IBA, by species that are fire resistant. (BCN et al. 2024). Other land uses are agricultural land, shrublands, built-up areas, water bodies and bare ground (Fig. 1). During this survey in February 2025, small areas of riverine grassland covering approximately 1.5-2 ha were found near Kerabari in the east.

2.2 | Methods

A bird survey was carried out in DFIBA during eleven days: 11th, 12th, 14th, 15th, 18-24th February 2025 covering a total of 21 trail transects. Surveys were carried out in Patnali forest, forest along the Chatara Canal from Bichpani Village southwards; all these forests have been frequently visited by birdwatchers since the 1970s. Surveys were also made in much less visited areas: near Purnabas village, Panmara and Kerabari forests, the forested ridge north of Panmara from 100-362 m, Sayapatri Community Forest (CF), Sera Khola CF, Seuti CF, by the Mugu Khola in Kerabari area,

Figure 5. Seuti Community Forest, west of Panmara, Dharan Forests IBA, Nepal (photo by Carol Inskipp)

Figure 6. Grassland by Budhi Khola, near Keribari, Dharan Forests IBA, Nepal (photo by Carol Inskipp)

east of Kerabari town, by the Bharawa Khola in Jordhara area, by the Budi Khola in Kerabari area, and the forest south-east of Patnali (Fig. 1, Table 1).

Trail transects were between 1 km and 5 km in length and averaged 2.67 km. Transects were conducted in the mornings and late afternoons. Morning surveys mainly started at 7.40 hr and lasted an average of almost 3 hr. Afternoon surveys chiefly started at 15.30 hr and lasted an average of 2.2 hr (Table 1). All habitats of DFIBA were covered, with the exception of subtropical forests from 1000-1300

Table 1. Survey routes in Dharan Forests Important Bird Area (Figures 2-6)

Date	Time (hr)	Survey route	Length (km)	Observers
11 Feb	07.45-12.00	Patnali forest	4	HSB, TG, CI, LP
12 Feb	08.00-11.50	Chatara canal, S section	3	HSB, TG, CI, LP
14 Feb	08.15-11.45	Patnali forest, Chatara canal & Purnabas village	4	TG, CI, BT
15 Feb	07.45-12.00	Chatara canal N section from Bichpani village	4	TG, CI, BT
18 Feb	16.00-17.30	Pancha CF, Panmara, Sunsari	2	TG, CI, BT
19 Feb	07.40-11.40	Pancha CF, Panmara, Sunsari	2.5	SG, TG, CI, BT
19 Feb	15.40-17.20	Keribari, Morang	2	SG, TG, CI, BT
20 Feb	07.50-11.50	Ridge N of Panmara & Sayapatri Community Forest (CF)	4	SG, TG, CI, GK, BT
20 Feb	15.40-17.20	Sera Khola CF & Seuti CF, west of Panmara	2.5	SG, TG, CI, GK, BT
21 Feb	07.40-09.10	Keribari area by Mugu Khola	2	SG, TG, CI, GK, BT
21 Feb	09.20-10.20	E of Keribari	2	SG, TG, CI, GK, BT
21 Feb	10.20-11.50	By Bharawa R.	2	SG, TG, CI, GK, BT
21 Feb	15.30-17.30	Jordhara area	2	SG, TG, CI, GK, BT
22 Feb	07.40-10.55	Seuti CF, W of Buddhist cremation site	3	SG, TG, CI, GK, BT
22 Feb	15.35-17.30	Seuti CF N of road	1.5	SG, TG, CI, GK, BT
23 Feb	07.40-09.25	By Budi Khola, Keribari	3	SG, TG, CI, GK, BT
23 Feb	15.00-15.30	Forest SE of Patnali forest	2	TG, CI, GK, BT
23 Feb	16.00-17.10	Patnali forest	1	TG, CI, GK, BT
24 Feb	07.30-11.55	Bichpani & Chatara Canal	5	TG, CI, GK, BT

Figure 7. Whistling hawk-cuckoo *Hierococcyx nisicolor* (photo by Tikaram Giri)

Figure 9. Black-headed bunting *Emberiza melanocephala* (photo by Tikaram Giri)

m which covered a relatively small area of DFIBA and were difficult to reach because of high elephant activity en route. Habitats surveyed comprised: tropical dry and moist forests, farmland, scrub by the Mugu Khola, near Kerabari, and by the Budi Khola, a small area of riverine grassland near Kerabari and running water and pools of the Bharawa Khola.

Wetlands were found to be very limited in extent, partly because of the ongoing drought. The Mugu Khola and Budi Khola riverbeds were dry. The Bharawa Khola, Morang district was an exception and there was a little water running and small pools, but otherwise the wide riverbed was dry. In the nearby Jordhara area, some ditches held water and there were pools in fields.

Binoculars used were pairs of 8x30 Zeiss, 10x42 Nikon, and Swarovski 8.5x42; also, a Celestron telescope. Nocturnal birds, which were heard from the Gautam family homestay, Panmara were recorded. The bird taxonomy used here follows DNPWC and BCN (2022). Global conservation status follows the IUCN Red List of Threatened Species (2025), and national conservation status follows the Nepal Red List (Inskipp et al. 2016).

3 | Results

The up-to-date list of bird species recorded in DFIBA between January 1949, and 17 September 2025 is given in the annotated Annex and totals 390 species. This list includes the initial unpublished checklist of 340 species (Baral et al. 2015) and the list of 180 bird species recorded during our surveys which added four species to the original list: large hawk cuckoo *Hierococcyx sparverioides,* whistling hawk cuckoo *H. nisicolor,* sapphire flycatcher *Ficedula. sapphira*, and white-rumped munia *Lonchura striata*. Records of 46 additional species were obtained in a desk study by extracting information from published and unpublished reports, and by assessing all checklists from eBird, to complete the updated checklist for DFIBA.

3.1 | Globally threatened species

Nine globally threatened species have been recorded in DFIBA (see Annex). No recent records could be located of four of these in the last 25 years: red-headed vulture *Sarcogyps calvus*, greater spotted eagle *Clanga clanga*, tawny eagle *Aquila rapax*, and great hornbill *Buceros bicornis.* Indian spotted eagle and lesser adjutant have been down-listed to near-threatened and the other five globally threatened species are all rare.

i. Egyptian vulture *Neophron percnopterus*

Globally Endangered. Extremely rare visitor. Only one recent record could be located: one bird in the Patnali River, Bichpani area in March 2015 (Sanjib Acharya Pers. Obs.). Widespread and locally fairly common in west and west-central Nepal, rare in the east (Grimmett et al. 2016).

ii. White-rumped vulture *Gyps bengalensis*

Globally Critically Endangered. Very rare visitor or possibly resident in DFIBA. Possibly also breeds in DFIBA but no evidence of breeding could be located. Only three recent records: in December 2018 recorded by Sandesh Gurung (Sandesh Gurung in litt. to Sanjib Acharya 4 September 2025), four seen on 2 January 2021 (Asmit Subba, eBird) and two seen in April 2025 by Dheeraj Chaudhary (Dheeraj Chaudhary in litt. to Sanjib Acharya, 4 September 2025). Resident in Nepal, rare in the centre and east, generally uncommon in the west (Grimmett et al. 2016).

Figure 8. Indian spotted eagle *Clanga hastata* (photo by Dheeraj Chaudhary)

Figure 10. Indochinese roller *Coracias affinis* (photo by Tikaram Giri)

Figure 11. Orange-headed thrush *Geokichla citrina* (photo by Tikaram Giri)

iii. Steppe eagle *Aquila nipalensis*

Globally Endangered. Rare passage migrant and winter visitor to DFIBA. Only three recent records: from October 2007 and January 2008 (Basnet & Sapkota 2008), two at the Patnali River – Bichpani area in March 2015 (Sanjib Acharya Pers. Obs.) and recorded in December 2018 by Sandesh Gurung (Sandesh Gurung *in litt*. to Sanjib Acharya, 4 September 2025). Fairly common winter visitor and passage migrant in Nepal (Grimmett et al. 2016).

iv. Eastern imperial eagle *Aquila heliaca*

Globally Vulnerable. Extremely rare visitor to DFIBA. Only one recent record could be located: one at the Patnali River – Bichpani area in March 2015 (Sanjib Acharya Pers. Obs.). Rare winter visitor to Nepal, mainly in lowlands, and passage migrant (Grimmett et al. 2016).

v. Yellow-breasted bunting *Emberiza aureola*

Globally Critically Endangered. Extremely rare passage migrant or winter visitor. Listed for DFIBA in the first assessment (Baral & Inskipp 2005) but no details of the record could be found. Suitable habitat for the species occurs across the Chatara section. (Hem Bahadur Katuwal *in litt.* to Carol Inskipp, 4 December 2025). Grimmett et al. (2016) describe the species as very local and uncommon in Nepal, mainly a passage migrant, with small numbers overwintering. However, surveys by Katuwal et al. (2025) between

Figure 12. Red-breasted parakeet *Psittacula alexandri* (photo by Tikaram Giri)

Figure 13. Yellow-vented warbler *Phylloscopus cantator* (photo by Deepak Budhathoki)

2015 and 2023 showed the species was more widespread than previously thought. A total of 85 presence records was documented across 22 districts, including Sunsari, with most sightings occurring outside protected areas and in agricultural landscapes.

3.2 | Restricted-range species

Three restricted-range species have been recorded from DFIBA.

i. Yellow-vented warbler *Phylloscopus cantator*

Local and very uncommon winter visitor to DFIBA. Small numbers winter in Patnali forest and forest by the Chatara Canal. First recorded (single bird) on 19 February 1998 (Alison & Chris Allen, eBird), one in December 1998 (Baral et al. 2015), one on 6 February 2011 (Dheeraj Chaudhary, eBird), eight on 15 February 2019 (Carol Inskipp, eBird), one on 10 November 2022 (Benjamin Knes & Clara Machowetz, eBird), two on 24 February 2025 by Chatara Canal (Inskipp et al. 2025), and one on 7 March 2025 (Laurie Allnatt & Dheeraj Chaudhary, eBird). In Nepal, a rare and local altitudinal migrant in the east (Grimmett et al. 2016).

ii. Blackish-breasted babbler (Sikkim wedge-billed babbler) *Stachyris humei* **(also near-threatened)**

Extremely rare in DFIBA, possibly under-recorded. There is still only one record of this species from Nepal. Two birds were seen by a stream west of Dharan town and east of Chatara village at 500 m on 20 December 1996 (Karki & Choudhary 1997). In Nepal, very rare and very local in the east (Grimmett et al. 2016).

iii. Spiny babbler *Acanthoptila nipalensis*

Rare resident in DFIBA, possibly under-recorded. Listed for DFIBA in the first IBA assessment (Baral and Inskipp 2005), but details of the record could not be located. Not included in the first DFIBA checklist (Baral et al. 2015). There is one recent record, two birds in Bhedatar area on 17 June 2025 (Anish Timsina, eBird). A local and frequent resident in Nepal (Grimmett et al. 2016).

3.3 | Biome-restricted species

The desk study found 21 biome-restricted species occurring in the Indo-Malayan tropical dry zone in DFIBA (see Annex).

Figure 14. White-rumped vulture *Gyps bengalensis* (photo by Tikaram Giri)

3.4 | Near-threatened species

Eleven near-threatened species have been recorded in DFIBA**.**

i. Asian woollyneck *Ciconia episcopus*

Uncommon in DFIBA. The species is listed in Baral et al. (2015) and Chaudhary (1997a). Fairly common and widespread resident in Nepal (Grimmett et al. 2016).

ii. Lesser adjutant *Leptoptilos javanicus*

A fairly common breeding resident in DFIBA. There is an active nesting colony at Tarahara. A total of 195 birds was recorded in the Asian Waterbird count in January 2014 (Hem Sagar Baral), but the number has reduced significantly since then with 68 birds in 2022 (BCN et al. 2024), 29 in 2023 and 20 in 2024. Other records include: 10 on 26 November 2002 (Shankar Tiwari, eBird), recorded on all four surveys (May 2007, October 2007, January 2008, March 2008) by Basnet and Sapkota (2008), 19 on 27 December 2012 (Suman Acharya & Suman Ghimire, eBird), and seven in Patnali on 24 February 2025 (Inskipp et al. 2025). Katuwal et al. (2022) found that the agricultural landscapes of lowland Nepal provide important breeding habitat for lesser adjutants. Increasing urban development of agricultural landscapes is likely the greatest threat to breeding lesser adjutants, with the decline of suitable nesting trees being a potential additional threat (Katuwal et al. 2022). Climate change showed a likely range expansion of up to 15 per cent (21,573 km^2) for lesser adjutant under the SSP5–8.5 scenarios for the 2070s (Katuwal et al. 2023). However, the current protected areas and IBAs are inadequate for providing optimal habitats for the species, which primarily depend on the availability and protection of large-sized trees that are used for nesting (Katuwal et al. 2023). Therefore, the research by Katuwal et al. (2023) suggests that agricultural landscapes should be prioritized in management plans for the conservation of lesser adjutant in Nepal. Local resident in Nepal, now mainly in the east (Grimmett et al. 2016).

iii. Cinereous vulture *Aegypius monachus*

Extremely rare visitor to DFIBA. The only recent record that could be located from DFIBA was in December 2018 by Sandesh Gurung (Sandesh Gurung *in litt.* to Sanjib Acharya, 4 September 2025). Winter visitor and passage migrant in Nepal, now rare and very local in the east, very uncommon in the centre and west (Grimmett et al. 2016).

iv. Himalayan griffon *Gyps himalayensis*

A frequent winter visitor to DFIBA. Recent records include: seven on 27 December 2012 (Suman Acharya & Dinesh Ghimire, eBird), 50 in the Patnali Khola – Bichpani area in March 2015 (Sanjib Acharya Pers. Obs.), nine on 12 May 2022 (Koshi Tappu Learning Ground, eBird), one on 8 February 2023 (Anand Chaudhary, eBird), eight on 4 April 2023 (Koshi Tappu Learning Ground, eBird), four on 23 April 2024 (Shiva Limbu, eBird), 16 on 9 December 2024 (Rasila Tiwari, Sarina Tiwari & Shankar Tiwari, eBird), 35 near Panmara on 18 February 2025 (Inskipp et al. 2025), and two on 24 March 2025 (Hem Kishor Mahato et al., eBird). Widespread resident in Nepal, subject to seasonal movements (Grimmett et al. 2016).

v. Indian spotted eagle *Clanga hastata*

Very rare visitor or possibly resident in DFIBA. Four were seen on 26 November 2002 (Shankar Tiwari, eBird) and one near Panmara on 18 February 2025 (Fig. 8) (Inskipp et al. 2025). Rare breeding resident in Nepal (Grimmett et al. 2016).

vi. Grey-headed fish-eagle *Icthyophaga ichthyaetus*

Very rare in DFIBA. The only recent record is from Panmara forest on 31 March 2008 (Basnet & Sapkota 2008). Rare and local breeding resident in Nepal (Grimmett et al. 2016).

vii. Mountain hawk-eagle *Nisaetus nipalensis*

Very uncommon visitor to DFIBA. Recorded in May 2007 and March 2008 (Basnet & Sapkota 2008), one in Patnali Forest on 11 October 2012 (Carol Inskipp, eBird) and two at Bichpani on 15 February (Inskipp et al. 2025). Frequent resident and altitudinal migrant in Nepal (Grimmett et al. 2016).

viii. Red-necked falcon *Falco chicquera*

Rare resident in DFIBA. Recent records include: a pair over the Budhi Khola near Yangshila VDC on 18 October 2007 (Basnet & Sapkota 2008), recorded on 25 April 2011 (Sanjib Acharya & Koshi Bird Society Team, eBird), one at the Patnali Khola – Bichpani area in March 2015 (Sanjib Acharya Pers. Obs.), one on 29 October 2020 (Sanjib Acharya, eBird), two there on 24 October 2022 (Sanjib Acharya, eBird), and one at Panmara on 26 May 2023 (Yubin Shrestha, eBird). Resident in Nepal, frequent at Koshi, rare elsewhere (Grimmett et al. 2016).

ix. River lapwing *Vanellus duvaucelii*

Uncommon, probably resident in DFIBA. Recorded on 5 January 2009 (Sanjib Acharya, eBird), In Patnali: four on 10 September 2022 (Sanjib Acharya & Dheeraj Chaudhary, eBird) and four on 13 October 2022 (Dinesh Ghimire & Bimal Timsina, eBird). Four were seen by the Bharuwa Khola. on 21 February 2025 (Inskipp et al. 2025). Locally common resident in Nepal lowlands (Grimmett et al. 2016).

Figure 15. Bengal bushlark *Mirafra assamica* (photo by Tikaram Giri)

x. Red-breasted parakeet *Psittacula alexandri*

Frequent resident in DFIBA. Recent records include: recorded in March 2008 by Basnet and Sapkota (2008), six on 28 November 2018 (Shankar Tiwari, eBird), four on 5 March 2025 (Laurie Allnatt, eBird), 53 in Patnali forest on 7 March 2025 (Dheeraj Chaudhary, eBird), In this survey one was heard near Panmara on 20 February, two heard near Kerabari on 21 February, and two seen at Patnali on 23 February (Inskipp et al. 2025). In Nepal, frequent in Chitwan NP, uncommon elsewhere, mainly in protected areas (Grimmett et al. 2016).

xi. Indian roller *Coracias benghalensis*

Frequent resident in DFIBA. The species is listed in Baral et al. (2015) and Basnet and Sapkota (2008). Common and widespread resident in Nepal (Grimmett et al. 2016).

3.5 | Other notable records

i. Large hawk-cuckoo *Hierococcyx sparverioides*

The first DFIBA record was one seen in forest by Patnali Bridge on 23 February 2025 (Inskipp et al. 2025). No other DFIBA records could be located. However, the subtropical forests where the species may breed are under-recorded. Fairly common and widespread summer visitor to Nepal, very rare in winter (Grimmett et al. 2016).

ii. Whistling hawk-cuckoo *Hierococcyx nisicolor*

Extremely rare visitor to DFIBA. The first DFIBA record was one seen in forest by Patnali Bridge on 23 February 2025 (Fig. 7) (Inskipp et al. 2025). Rare and local summer visitor to Nepal, mainly in the east (Grimmett et al. 2016).

iii. Malayan night heron *Gorsachius melanolophus*

Very rare and very local summer visitor to DFIBA. First recorded near Dharan: one bird in May 1976 (Gregory-Smith & Batson 1976). Rediscovered for Nepal on 24 April 2011 when one was seen in Patnali forest by Sanjib Acharya and Yeray Seminario (Sanjib Acharya, Pers. Obs.). Other records from Patnali include: two on 25 August 2012 (Sanjib Acharya & Koshi Bird Society Team, eBird), and one on 22 April 2022 (Badri Chaudhary, Dheeraj Chaudhary, Manshanta Ghimire, Sherpa Pemba, eBird). In Nepal, very rare and very local summer visitor to the east (Grimmett et al. 2016).

iv. Blue-eared barbet *Psilopogon cyanotis*

Probably a former resident, previously regularly recorded from some eastern lowland forests including DFIBA. First recorded in DFIBA in April 1986 when one or two were heard (Mayer 1986). The maximum of 15+ was heard there in April 1992 (Bräunlich & Oehlschlaeger 1992). However, only one to two birds were recorded there between 1994 and 2000 (Tiwari & Chaudhary 1997; Tika Giri and Hathan Choudhary *verbally* to C. Inskipp, 2004), and one in November 2012 (Bhagawan Dahal *in litt.* to H. S. Baral and C. Inskipp, 12 July 2013). There are no later records from DFIBA (or elsewhere in Nepal) despite repeated recent visits to Patnali by many observers. Our survey also failed to find it further east in DFIBA in February 2025. In Nepal, it was formerly very rare and very local in the far east (Grimmett et al. 2016).

v. Sapphire flycatcher *Ficedula sapphira*

Extremely rare visitor to DFIBA. The first DFIBA record was a female seen near Bichpani in forest by the Chatara Canal on 15 February 2025 (Inskipp et al. 2025). In Nepal, rare and possibly resident in the east (Grimmett et al. 2016).

vi. Ultramarine flycatcher *Ficedula superciliaris*

Very rare winter visitor to DFIBA. One seen in forest by the Chatara Canal on 15 February was the second DFIBA record. The first record was two birds seen in Patnali on 6 February 2011 (Dheeraj Chaudhary, eBird). In Nepal, a common breeding visitor, rare in winter (Grimmett et al 2016).

4 | Discussion

4.1 | Avian diversity in Dharan Forests IBA

A total of 390 species has now been recorded in DFIBA, including 50 species added in this study. This is the published bird checklist for the DFIBA. The only other DFIBA checklist was unpublished (Baral et al. 2015). However, the central and eastern forests of DFIBA, which are extensive, are still under-recorded, as are altitudes above 300 m in the tropical zone and in the subtropical zone, from 1000-1300 m.

Unfortunately, our field work was restricted to forest close to the edges by herds of wild Asian elephant *Elephas maximus* roaming all the IBA forests we surveyed. The herds included one of 26 elephants believed to be in the Patnali area. These elephants appear to be trapped by urban and road developments that are blocking their migration routes. During the daytime, they sheltered deep in the forests, but a drought that had persisted since the end of the 2024 monsoon meant there was very little for the elephants to eat in the forests. The elephants were therefore forced to come out of the forests at night to feed on crops on the local communities' farmland and food stores in villages. Since our survey, elephant herds continued to roam DFIBA up to at least November 2025 (Jay Prasad Timsina Pers. Obs.).

In the previous IBA assessment DFIBA qualified as an IBA based on the globally threatened and characteristic biome-restricted criteria (BCN et al. 2024).

However, results of this survey and desk study showed that DFIBA no longer supports significant populations of any globally threatened species. DFIBA therefore no longer qualifies as an IBA based on the globally threatened criterion.

This study showed that DFIBA does not support significant populations of the three restricted-range species, despite better coverage. DFIBA therefore still does not qualify as an IBA based on the restricted-restricted criterion.

An area can qualify as an IBA if it supports significant breeding populations of characteristic species of a biome. In this study, DFIBA was found to support 21 species with significant breeding populations in the Indo-Malayan Tropical Dry Zone, This is 65 per cent of the total occurring in Nepal for this biome and three more species than recorded in the previous assessment, so slightly strengthening the evidence that DFIBA qualifies as an IBA based on the biome-restricted assemblage criterion.

This study showed that eleven near-threatened bird species have been recorded, compared to eight species listed in the previous DFIBA assessment (BCN et al. 2024). However, in that assessment, Indian spotted eagle and lesser adjutant were considered globally threatened, mountain hawk-eagle as least concern, and river lapwing was overlooked. Alexandrine parakeet was listed as near-threatened in BCN et al. (2024) but has been downlisted to least concern.

During our visit, the lack of freshwater in DFIBA was worsened by the lengthy drought (from end September 2024 to late February 2025). Thunderstorms produced welcome rain and numerous puddles in the last day of our survey. After the storms bird activity noticeable increased.

4.2 | Threats to the IBA and recommendations

i. Roads

Wildlife roadkill is a serious issue in Nepal (KC 2023). This problem is particularly acute in the DFIBA where the Dharan-Itahari road, which bisects the IBA, is regarded one of the most wildlife unfriendly roads in the entire country because of its lack of passage to wild animals. Other roads that cross the IBA pose a similar threat. The

most immediate impact of roads on wildlife is fatal collisions with vehicles, which can cause severe injuries or death to animals. This can have a significant impact on the population dynamics of species and disrupt ecological processes. Apart from wildlife-vehicle collisions, the effect of raised embankments, guardrails, culverts and retaining walls within the road can also create obstacles for wildlife to move freely across their habitats (KC 2023).

These roads need to be wildlife-friendly infrastructures following the government of Nepal guidelines which were introduced in 2022. These guidelines stipulate underpasses, overpasses and tree canopy bridges built for the movement of wildlife across roads (Bhusal 2022). Unfortunately, these guidelines do not address the fragmentation of forests caused by road-building. Fragmentation of habitat is one of the key challenges facing forest birds in Nepal (Joshi 2022). A study in eastern Nepal found that contiguous forest supports a higher bird diversity than isolated forest and restricted-range species only occurred in the contiguous forest (Joshi et al. 2022). It is therefore recommended that roads crisscrossing DFIBA should not be encouraged when new road-building is considered. Any construction of new roads should strictly follow the linear infrastructure guidelines of the ministry. In addition, strict enforcement of speed limits and raising awareness about wildlife conservation among drivers are crucial to ensuring the long-term survival of wildlife (KC 2023).

ii. Invasive plant species

Mikania micrantha and other invasive plant species are taking over the forest edges and slowly also the interior in DFIBA. Using trees as a support, *Mikania* rapidly forms a dense cover of entangled leafy stems, swamping other vegetation and reducing plant diversity (Siwakoti 2017). Birds are known to be directly affected by its spread, for instance the weed makes it impossible for terrestrial-feeding birds, such as orange-headed thrush *Geokichla citrina,* to forage (Baral & Adhikari 2017). In 2025 the National Invasive Alien Species Management Strategy and Implementation Plan was approved. If implemented widely in Nepal, this long-awaited strategy should play a crucial role in controlling the spread of invasive species across the country (THT 2025). This strategy should be applied both outside as well as within the protected areas' system to ensure that invasive plants no longer degrade unprotected forests such as in DFIBA. Local communities should be supported such as in the Churia Hills in Chitwan National Park Buffer Zone where they have been funded to remove invasive plants including banmara, to produce manure resulting in restoration of degraded forests and the use of manure in reforestation (Anon 2025).

iii. Loss of forest quality

Over-harvesting in forests for fodder and over-lopping of trees was observed. Trees are prevented from flowering, producing seed and regenerating by unsustainable harvesting for fodder. Over-lopping of branches kills trees after a while, particularly if it takes place when trees are dormant (Banerjee 1995). While the community forestry programme has been successful in most places, it is important that more sustainable forest management be practiced here, because currently it is clearly harming the forests. The integrity of the forest ecosystems needs to be managed by removing current pressures. The Sunsari Divison Forest Office / Provincial Ministry on Forests and Environment need to be more active in ensuring sustainable harvesting of forest resources in order to conserve this forests' naturalness.

iv. Excessive sand mining

The demand for construction materials is the driver behind sand mining in Nepal. At Patnali and other seasonal streams throughout the IBA and widely throughout Nepal, sand mining is unregulated. This has resulted in excessive mining which is destroying the habitats of aquatic species as well as grassland species on the open grassy river embankments (Basnet & Sapkota 2008). Loss of riparian vegetation can increase erosion of riverbanks and adjacent slopes (Rentier & Cammaraat 2022). Over-extraction of boulders, gravel and sand from rivers and streams is a localised cause of deforestation in some areas (GoN/MoFSC 2014). Effective controls on sand mining and the use of environmentally friendly extraction methods are urgently needed

v. Climate change

Many of Nepal's rich variety of ecosystems including forests, are under threat due to climate change. The country is experiencing unpredictable weather patterns and increasing climatic extremes resulting in more frequent and severe floods and droughts, as well as accelerating glacial melt (Nepal 2024). One important impact of climate change in the DFIBA is that forests have become drier. This has been exacerbated by forest degradation resulting from over-exploitation of forest resources leading to more open forests and reduced shrub and ground vegetation layers. Bird species which depend on moist forests including the nationally threatened blue-eared barbet *Psilopogon cyanotis* and sultan tit *Melanochlora sultanea* are likely to lose their habitats as the forest becomes drier (Inskipp & Baral 2019). Another impact of climate change in recent years has been the occurrence of cold waves in winter. These are more persistent in the lowlands and insect-feeding birds have been especially affected (Inskipp & Baral 2019).

vi. Hunting and trapping

Disturbance to forest ecosystems, including trapping and hunting is still going on and needs to be strictly regulated. Hunting of wild boar *Sus scrofa* and deer continue to be a persistent problem, while various bird species, especially the red junglefowl *Gallus gallus,* are also targeted (Sanjib Acharya Pers. Obs.).

In the past, trapping of parakeets was widespread in DFIBA, with juvenile birds being taken directly from nests to sell as cage pets. Although this practice has significantly decreased in recent years compared to two decades ago, occasional cases still occur (Sanjib Acharya Pers. Obs.).

vii. Waste management

In recent years, following the formation of local governments, several municipalities have been using forest areas as dumping sites, posing a serious threat to the environment and public health.

In Itahari Sub-Metropolitan City, unmanaged solid waste is being dumped near the Seuti River bridge, where residents often burn the waste, leading to severe air pollution and forest fire. This threat is increased during winter and the dry season when there are no floods to wash away the deposited materials.

Similarly, Barahkshetra Municipality has cleared parts of the forest and cut down trees to create dumping grounds, further degrading the local ecosystem.

In contrast, Dharan Sub-Metropolitan City has taken a positive initiative by establishing a recycling centre. However, the facility is not operating to its full potential, accepting only selected materials for recycling while continuing to dump other waste along the Seuti River and at forest edges.

These practices have created significant threats including forest fire, to forest biodiversity, wildlife habitats, and air and water quality, ultimately endangering both environmental sustainability and human health. The establishment of recycling centres by the other Sub-Metropolitan Cities and Municipalities in Koshi Zone and stopping dumping of waste in forests, at forest edges and along riverbanks in DFIBA are urgently needed.

viii. Protection of DFIBA

Including DFIBA in the current protected area network is highly recommended. This would be especially valuable as DFIBA includes a significant area of tropical evergreen forest, a habitat type which currently lies outside Nepal's protected areas' system. Protection would facilitate management to improve habitats for wildlife, notably the provision of freshwater holes throughout the IBA. A plan

to extend the Koshi Tappu Wildlife Reserve in 2016 further north linking this forest should be revived; for saving this forest and also Koshi Tappu's biodiversity. The Mai valley, which is also unprotected, is the only other IBA which has tropical evergreen forest of a significant extent (BCN et al. 2024).

ix. Research station

Himalayan Nature's Kosi Bird Observatory provides a good base for students studying both forest ecology, as well as birds and other wildlife of wetlands and grasslands, though this research station is currently under-used. Kosi Bird Observatory is also a great place to study bird migration due to its strategic location on the eastern bank of the Koshi river, as it exits the last of the Himalayan foothills.

x. Further survey work

DFIBA remains under-recorded and further survey work in the centre and east of the IBA, covering the higher altitudes from 300-1300 m and at all seasons should certainly increase the species list.

5 | Conclusions

While Dharan Forests still qualify as an IBA, no globally threatened species now occur in significant populations, so DFIBA only qualifies based on the biome-restricted assemblage criterion. Including DFIBA within Nepal's protected areas' system is highly recommended to ensure these forests maintain their current value for biodiversity.

Acknowledgements

Special thanks go to Sharad Singh and Himalayan Nature for allowing us to stay at and use Kosi Bird Observatory which was an excellent base for our field survey for several days. We especially thank Puskar Budhathoki, the cook, for the tasty meals he provided us. We warmly thank the Gautam family from Panmara for their generous hospitality, letting us stay in their home for a week, giving us very comfortable accommodation and delicious meals, while we surveyed the centre and east of DFIBA. Many thanks are due to our driver, Ghanshyam Karki for his good driving, reliability and constant cheerfulness. We thank Ghanshyam and Smitri Gautam for taking part in some of our bird surveys. We are very grateful to Dheeraj Chaudhary, Sandesh Gurung, Hem Bahadur Katuwal and Anish Timsina for providing useful information, to Dheeraj Chaudhary for use of his Indian spotted eagle photograph and Deepak Budhathoki for his yellow-vented warbler photograph, to Bird Conservation Nepal for providing a DFIBA map, Santosh Bajagain for producing the final DFIBA map that included our survey sites, and to Dr Ashok Kumar Ram for his useful comments on elephants in DFIBA. Finally, many thanks go to the anonymous reviewers for their critical suggestions on the manuscript.

Authors' contributions

All authors contributed to the drafts and gave final approval for publication. All authors except SA carried out survey work. SA contributed to the desk study including details of bird species recorded in DFIBA. TG provided most of the bird photographs and CI the landscape and habitat photographs.

Conflicts of interest

The authors declare no conflict of interest.

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Annex 1. Annotated list of birds recorded in Dharan Forests Important Bird Area

Order, Family, English name	Scientific name	Ref. no.	IUCN status	NRDB	BRS	CITES
Galliformes						
Phasianidae						
Indian peafowl	*Pavo cristatus*	25	LC	LC	X	
Common quail	*Coturnix coturnix*	25	LC	LC		
Black francolin	*Francolinus francolinus*	46	LC	LC		
Red junglefowl	*Gallus gallus*	25, 50	LC	LC		
Kalij pheasant	*Lophura leucomelanos*	4	LC	LC		
Anseriformes						
Anatidae						
Lesser whistling-duck	*Dendrocygna javanica*	25	LC	LC		
Bar-headed goose	*Anser indicus*	20	LC	NT		
Ruddy shelduck	*Tadorna ferruginea*	20	LC	NT		
Northern shoveler	*Spatula clypeata*	6	LC	LC		
Gadwall	*Mareca strepera*	20	LC	LC		
Podicipediformes						
Podicipedidae						
Little grebe	*Tachybaptus ruficollis*	25	LC	LC		
Great crested grebe	*Podiceps cristatus*	32	LC	LC		
Columbiformes						
Columbidae						
Rock dove	*Columba livia*	20, 50	LC	LC		
Oriental turtle-dove	*Streptopelia orientalis*	25, 50	LC	LC		
Eurasian collared-dove	*Streptopelia decaocto*	25, 50	LC	LC		
Red turtle-dove	*Streptopelia tranquebarica*	50, 69	LC	LC		
Western spotted dove	*Spilopelia suratensis*	25, 50	LC	LC		
Grey-capped emerald dove	*Chalcophaps indica*	25, 50	LC	LC		
Orange-breasted green-pigeon	*Treron bicinctus*	34	LC	LC		
Ashy-headed green-pigeon	*Treron phayrei*	20, 50	NT	NT		
Thick-billed green-pigeon	*Treron curvirostra*	61	LC	EN		
Yellow-footed green-pigeon	*Treron phoenicopterus*	51	LC	LC	X	
Pin-tailed green-pigeon	*Treron apicauda*	20	LC	NT		
Wedge-tailed green-pigeon	*Treron sphenurus*	69	LC	LC		
Mountain imperial pigeon	*Ducula badia*	32	LC	EN		
Caprimulgiformes						
Caprimulgidae						
Grey nightjar	*Caprimulgus jotaka*	16	LC	LC		
Large-tailed nightjar	*Caprimulgus macrurus*	25, 50	LC	NT		
Savanna nightjar	*Caprimulgus affinis*	20	LC	NT		
Hemiprocnidae						
Crested treeswift	*Hemiprocne coronata*	13, 50	LC	LC		
Apodidae						
White-rumped spinetail	*Zoonavena sylvatica*	20	LC	LC		
Silver-backed needletail	*Hirundapus cochinchinensis*	50, 59	LC	LC		
Himalayan swiftlet	*Aerodramus brevirostris*	32	LC	LC		
Asian palm-swift	*Cypsiurus balasiensis*	50, 69	LC	LC		
Alpine swift	*Tachymarptis melba*	20	LC	LC		
Pacific swift	*Apus pacificus*	20	LC	LC		
House swift	*Apus nipalensis*	25	LC	LC		
Cuculiformes						

Cuculidae							
Greater coucal	*Centropus sinensis*	32, 50	LC	LC			
Sirkeer malkoha	*Taccocua leschenaultii*	20	LC	LC	X		
Green-billed malkoha	*Phaenicophaeus tristis*	50, 69	LC	LC			
Jacobin cuckoo	*Clamator jacobinus*	20	LC	LC			
Chestnut-winged cuckoo	*Clamator coromandus*	60	LC	LC			
Western koel	*Eudynamys scolopaceus*	45	LC	LC			
Banded bay cuckoo	*Cacomantis sonneratii*	50, 69	LC	LC			
Plaintive cuckoo	*Cacomantis merulinus*	20	LC	LC			
Grey-bellied cuckoo	*Cacomantis passerinus*	51	LC	LC			
Fork-tailed drongo-cuckoo	*Surniculus dicruroides*	69	LC	LC			
Large hawk-cuckoo	*Hierococcyx sparverioides*	50	LC	LC			
Common hawk-cuckoo	*Hierococcyx varius*	50, 69	LC	LC			
Whistling hawk-cuckoo	*Hierococcyx nisicolor*	50	LC	DD			
Indian cuckoo	*Cuculus micropterus*	69	LC	LC			
Common cuckoo	*Cuculus canorus*	69	LC	LC			
Himalayan cuckoo	*Cuculus saturatus*	69	LC	LC			
Gruiformes							
Rallidae							
White-breasted waterhen	*Amaurornis phoenicurus*	20, 50	LC	LC			
Common moorhen	*Gallinula chloropus*	20	LC	LC			
Common coot	*Fulica atra*	8	LC	LC			
Ciconiformes							
Ciconiidae							
Lesser adjutant	*Leptoptilos javanicus*	20, 50	NT	VU			
Asian openbill	*Anastomus oscitans*	20	LC	VU			
Black stork	*Ciconia nigra*	37	LC	VU		II	
Asian woollyneck	*Ciconia episcopus*	32	NT	NT			
Pelecaniformes							
Threskiornithidae							
Black-headed ibis	*Threskiornis melanocephalus*	66	LC	LC			
Red-naped ibis	*Pseudibis papillosa*	25, 50	LC	LC	X		
Ardeidae							
Yellow bittern	*Ixobrychus sinensis*	5	LC	LC			
Cinnamon bittern	*Botaurus cinnamomeus*	13	LC	LC			
Malay night heron	*Gorsachius melanolophus*	48	LC	CR			
Black-crowned night heron	*Nycticorax nycticorax*	18	LC	LC			
Green-backed heron	*Butorides striata*	25	LC	LC			
Indian pond-heron	*Ardeola grayii*	20, 50	LC	LC			
Cattle egret	*Bubulcus ibis*	20, 50	LC	LC			
Grey heron	*Ardea cinerea*	20	LC	LC			
Great white egret	*Ardea alba*	18	LC	LC			
Intermediate egret	*Ardea intermedia*	25, 50	LC	LC			
Little egret	*Egretta garzetta*	13, 50	LC	LC			
Suliformes							
Phalacrocoracidae							
Little cormorant	*Microcarbo niger*	25, 50	LC	LC			
Great cormorant	*Phalacrocorax carbo*	20	LC	NT			
Anhingidaae							
Oriental darter	*Anhinga melanogaster*	20	LC	NT			
Charadriiformes							
Burhinidae							
Indian thick-knee	*Burhinus indicus*	25, 50	LC	LC			
Charadriidae							
Little ringed plover	*Charadrius dubius*	18	LC	LC			

River lapwing	*Vanellus duvaucelii*	2, 50	NT	NT		
Yellow-wattled lapwing	*Vanellus malabaricus*	20	LC	VU	X	
Grey-headed lapwing	*Vanellus cinereus*	45	LC	LC		
Red-wattled lapwing	*Vanellus indicus*	19, 50	LC	LC		
Jacanidae						
Bronze-winged jacana	*Metopidius indicus*	25	LC	LC		
Scolopacidae						
Temminck's stint	*Calidris temminckii*	18	LC	LC		
Pintail snipe	*Gallinago stenura*	6	LC	LC		
Common snipe	*Gallinago gallinago*	6	LC	LC		
Common sandpiper	*Actitis hypoleucos*	25	LC	LC		
Green sandpiper	*Tringa ochropus*	25, 50	LC	LC		
Common greenshank	*Tringa nebularia*	25	LC	LC		
Marsh sandpiper	*Tringa stagnatilis*	25	LC	LC		
Turniciformes						
Turnicidae						
Yellow-legged buttonquail	*Turnix tanki*	25	LC	LC		
Barred buttonquail	*Turnix suscitator*	25	LC	LC		
Glareolidae						
Little pratincole	*Glareola lactea*	31, 50	LC	NT		
Strigiformes						
Strigidae						
Brown boobook	*Ninox scutulata*	20, 50	LC	LC		II
Asian barred owlet	*Glaucidium cuculoides*	50, 68	LC	LC		II
Jungle owlet	*Glaucidium radiatum*	25, 50	LC	LC		II
Spotted owlet	*Athene brama*	22, 50	LC	LC		II
Oriental scops-owl	*Otus sunia*	25	LC	DD		II
Brown wood-owl	*Strix leptogrammica*	56	LC	VU		II
Brown fish-owl	*Ketupa zeylonensis*	25	LC	VU		II
Accipitriformes						
Pandionidae						
Osprey	*Pandion haliaetus*	20	LC	LC		II
Elanidae						
Black-winged kite	*Elanus caeruleus*	20, 50	LC	LC		II
Accipitridae						
Oriental honey-buzzard	*Pernis ptilorhynchus*	20	LC	LC		II
Jerdon's baza	*Aviceda jerdoni*	23, 24, 50	LC	CR		II
Black baza	*Aviceda leuphotes*	41	LC	NT		II
Egyptian vulture	*Neophron percnopterus*	20	EN	VU		II
Crested serpent-eagle	*Spilornis cheela*	13, 50	LC	LC		II
Short-toed snake-eagle	*Circaetus gallicus*	20, 50	LC	LC		II
Red-headed vulture	*Sarcogyps calvus*	29	CR	EN	X	II
Himalayan griffon	*Gyps himalayensis*	20, 50	NT	VU		II
White-rumped vulture	*Gyps bengalensis*	20	CR	CR	X	II
Griffon vulture	*Gyps fulvus*	20	LC	DD		II
Cinereous vulture	*Aegypius monachus*	20	NT	EN		
Mountain hawk-eagle	*Nisaetus nipalensis*	25, 50	NT	LC		II
Changeable hawk-eagle	*Nisaetus cirrhatus*	20, 50	LC	LC		II
Rufous-bellied hawk-eagle	*Lophotriorchis kienerii*	47	LC	CR		II
Black eagle	*Ictinaetus malaiensis*	25	LC	LC		II
Indian spotted eagle	*Clanga hastata*	20, 50	NT	VU		II
Greater spotted eagle	*Clanga clanga*	20	VU	VU		II
Tawny eagle	*Aquila rapax*	20	VU	DD		II
Steppe eagle	*Aquila nipalensis*	25	EN	VU		II
Eastern imperial eagle	*Aquila heliaca*	20	VU	CR		II

Bonelli's eagle	*Aquila fasciata*	20	LC	LC		II
Booted eagle	*Hieraaetus pennatus*	20, 50	LC	LC		II
Western marsh harrier	*Circus aeruginosus*	20	LC	VU		II
Hen harrier	*Circus cyaneus*	20	LC	VU		II
Pied harrier	*Circus melanoleucos*	20	LC	VU		II
Crested goshawk	*Accipiter trivirgatus*	32. 50	LC	LC		II
Shikra	*Accipiter badius*	25, 50	LC	LC		II
Besra	*Accipiter virgatus*	28	LC	LC		I II
Eurasian sparrowhawk	*Accipiter nisus*	25, 50	LC	LC		II
Northern goshawk	*Accipiter gentilis*	20	LC	LC		II
Grey-headed fish-eagle	*Icthyophaga ichthyaetus*	25		CR		II
Black kite	*Milvus migrans*	13 50	LC	LC		III
White-eyed buzzard	*Butastur teesa*	20, 50	LC	LC	X	III
Himalayan buzzard	*Buteo refectus*	25, 50	LC	LC		II
Long-legged buzzard	*Buteo rufinus*	43 50	LC	LC		II
Bucerotiformes						
Bucerotidae						
Great hornbill	*Buceros bicornis*	55	VU	EN		I
Indian grey hornbill	*Ocyceros birostris*	20, 50	LC	LC	X	
Oriental ped hornbill	*Anthracoceros albirostris*	20, 25	LC	NT		III
Upupidae						
Common hoopoe	*Upupa epops*	46, 50	LC	LC		
Coraciiformes						
Meropidae						
Blue-bearded bee-eater	*Nyctyornis athertoni*	25, 50	LC	LC		
Asian Green bee-eater	*Merops orientalis*	25, 50	LC	LC		
Chestnut-headed bee-eater	*Merops leschenaulti*	25, 50	LC	LC		
Blue-tailed bee-eater	*Merops philippinus*	18	LC	LC		
Coraciidae						
Indian roller	*Coracias benghalensis*	25, 50	NT	LC		
Indochinese roller	*Coracias affinis*	50, 68	LC	LC		
Oriental dollarbird	*Eurystomus orientalis*	51	LC	LC		
Alcedinidae						
Common kingfisher	*Alcedo atthis*	25, 50	LC	LC		
Pied kingfisher	*Ceryle rudis*	32	LC	LC		
Stork-billed kingfisher	*Pelargopsis capensis*	14	LC	LC		
White-breasted kingfisher	*Halcyon smyrnensis*	13, 50	LC	LC		
Black-capped kingfisher	*Halcyon pileata*	53	LC	LC		
Piciformes						
Megalaimidae						
Coppersmith barbet	*Psilopogon haemacephalus*	50, 71	LC	LC		
Blue-eared barbet	*Psilopogon cyanotis*	60	LC	CR		
Great barbet	*Psilopogon virens*	20	LC	LC		
Lineated barbet	*Psilopogon lineatus*	25, 50	LC	LC	X	
Blue-throated barbet	*Psilopogon asiaticus*	25, 50	LC	LC		
Picidae						
Eurasian wryneck	*Jynx torquilla*	20, 50	LC	LC		
Greater fameback	*Chrysocolaptes guttacristatus*	50, 51	LC	LC		
Himalayan flameback	*Dinopium shorii*	32, 50	LC	LC		
Black-rumped flameback	*Dinopium benghalense*	13, 50	LC	LC	X	
Rufous woodpecker	*Micropternus brachyurus*	32	LC	LC		
Greater yellownape	*Chrysophlegma flavinucha*	50, 69	LC	LC		
Lesser yellownape	*Picus chlorolophus*	32, 50	LC	LC		
Streak-throated woodpecker	*Picus xanthopygaeus*	25	LC	LC		
Black-naped woodpecker	*Picus guerini*	25, 50	LC	LC		

Grey-capped woodpecker	*Picoides canicapillus*	32, 50	LC	LC		
Indian pygmy woodpecker	*Picoides nanus*	50, 69	LC	LC		
Yellow-crowned woodpecker	*Leiopicus mahrattensis*	25	LC	LC	X	
Fulvous-breasted woodpecker	*Dendrocopos macei*	25, 50	LC	LC		
Falconiformes						
Falconidae						
Collared falconet	*Microhierax caerulescens*	50, 65	LC	NT		II
Lesser kestrel	*Falco naumanni*	27	LC	NT		II
Common kestrel	*Falco tinnunculus*	25, 50	LC	LC		II
Red-necked falcon	*Falco chicquera*	49	NT	EN	X	II
Amur falcon	*Falco amurensis*	42	LC	LC		II
Eurasian hobby	*Falco subbuteo*	21	LC	LC		II
Peregrine falcon	*Falco peregrinus*	20	LC	LC		I
Psittaciformes						
Psittacidae						
Vernal hanging-parrot	*Loriculus vernalis*	20	LC	CR		II
Slaty-headed parakeet	*Himalayapsitta himalayana*	16	LC	LC		II
Plum-headed parakeet	*Himalayapsitta cyanocephala*	32, 50	LC	LC	X	II
Red-breasted parakeet	*Psittacula alexandri*	50, 58	NT	VU		II
Rose-ringed parakeet	*Alexandrinus krameri*	50, 69	LC	LC		
Alexandrine parakeet	*Palaeornis eupatria*	32, 50	LC	NT		II
Passeriformes						
Pittidae						
Indian pitta	*Pitta brachyura*	20	LC	LC		
Western hooded pitta	*Pitta sordida*	48	LC	VU		
Oriolidae						
Maroon oriole	*Oriolus traillii*	43	LC	LC		
Black-hooded oriole	*Oriolus xanthornus*	25, 50	LC	LC		
Indian golden oriole	*Oriolus kundoo*	25. 50	LC	LC		
Black-naped oriole	*Oriolus chinensis*	62	LC	LC		
Slender-billed oriole	*Oriolus tenuirostris*	25	LC	LC		
Vireonidae						
White-bellied erpornis	*Erpornis zantholeuca*	20, 50	LC	LC		
Campephagidae						
Small minivet	*Pericrocotus cinnamomeus*	25, 50	LC	LC	X	
Grey-chinned minivet	*Pericrocotus solaris*	44	LC	LC		
Short-billed minivet	*Pericrocotus brevirostris*	26	LC	LC		
Long-tailed minivet	*Pericrocotus ethologus*	25, 50	LC	LC		
Scarlet minivet	*Pericrocotus flammeus*	25, 50	LC	LC		
Rosy minivet	*Pericrocotus roseus*	66	LC	LC		
Indian cuckooshrike	*Coracina macei*	25, 50	LC	LC		
Black-winged cuckooshrike	*Lalage melaschistos*	13, 50	LC	LC		
Black-headed cuckooshrike	*Lalage melanoptera*	20, 50	LC	LC	X	
Artamidae						
Ashy woodswallow	*Artamus fuscus*	25, 50	LC	LC		
Vangidae						
Bar-winged flycatcher-shrike	*Hemipus picatus*	25, 50	LC	LC		
Large woodshrike	*Tephrodornis virgatus*	25, 50	LC	LC		
Common woodshrike	*Tephrodornis pondicerianus*	25, 50	LC	LC	X	
Aegithinidae						
Common iora	*Aegithina tiphia*	25, 50	LC	LC		
Rhipiduridae						
White-browed fantail	*Rhipidura aureola*	25	LC	LC		
White-throated fantail	*Rhipidura albicollis*	13, 50	LC	LC		
Dicruridae						

Black drongo	*Dicrurus macrocercus*	25, 50	LC	LC	
Ashy drongo	*Dicrurus leucophaeus*	25, 50	LC	LC	
White-bellied drongo	*Dicrurus caerulescens*	25, 50	LC	LC	
Crow-billed drongo	*Dicrurus annectens*	25	LC	LC	
Bronzed drongo	*Dicrurus aeneus*	25, 50	LC	LC	
Lesser racquet-tailed drongo	*Dicrurus remifer*	25, 50	LC	LC	
Hair-crested drongo	*Dicrurus hottentottus*	25, 50	LC	LC	
Greater racquet-taileddrongo	*Dicrurus paradiseus*	13, 50	LC	LC	
Monarchidae					
Black-naped monarch	*Hypothymis azurea*	40, 50	LC	LC	
Indian paradise-flycatcher	*Terpsiphone paradisi*	45	LC	LC	
Laniidae					
Brown shrike	*Lanius cristatus*	25, 50	LC	LC	
Isabelline shrike	*Lanius isabellinus*	25	LC	LC	
Bay-backed shrike	*Lanius vittatus*	20	LC	LC	
Long-tailed shrike	*Lanius schach*	25, 50	LC	LC	
Grey-backed shrike	*Lanius tephronotus*	15, 50	LC	LC	
Corvidae					
Rufous treepie	*Dendrocitta vagabunda*	25, 50	LC	LC	
Grey treepie	*Dendrocitta formosa*	20	LC	LC	
Red-billed blue magpie	*Urocissa erythroryncha*	25, 50	LC	LC	
Common green magpie	*Cissa chinensis*	20	LC	LC	
Black-headed jay	*Garrulus lanceolatus*	20	LC	LC	
House crow	*Corvus splendens*	25, 50	LC	LC	
Large-billed crow	*Corvus macrorhynchos*	25, 50	LC	LC	
Stenostiridae					
Yellow-bellied fairy -fantail	*Chelidorhynx hypoxanthus*	20	LC	LC	
Grey-headedcanary-flycatcher	*Culicicapa ceylonensis*	32, 50	LC	LC	
Paridae					
Sultan tit	*Melanochlora sultanea*	65	LC	LC	
Great tit	*Parus major*	32, 50	LC	LC	
Alaudidae					
Ashy-crowned sparrow-lark	*Eremopterix griseus*	13, 50	LC	LC	X
Bengal bushlark	*Mirafra assamica*	13, 50	LC	LC	X
Sand lark	*Alauda raytal*	43	LC	LC	X
Oriental skylark	*Alauda gulgula*	13	LC	LC	
Cisticolidae					
Zitting cisticola	*Cisticola juncidis*	25, 50	LC	LC	
Striated prinia	*Prinia crinigera*	69	LC	LC	
Grey-breasted prinia	*Prinia hodgsonii*	13, 50	LC	LC	
Yellow-bellied prinia	*Prinia flaviventris*	1	LC	LC	
Plain prinia	*Prinia inornata*	13, 50	LC	LC	
Common tailorbird	*Orthotomus sutorius*	25, 50	LC	LC	
Acrocephalidae					
Thick-billed warbler	*Arundinax aedon*	32, 50	LC	LC	
Blyth's reed-warbler	*Acrocephalus dumetorum*	13, 50	LC	LC	
Paddyfield warbler	*Acrocephalus agricola*	25	LC	LC	
Clamorous reed-warbler	*Acrocephalus stentoreus*	69	LC	NT	
Hirundinidae					
Red-rumped swallow	*Cecropis daurica*	25	LC	LC	
Wire-tailed swallow	*Hirundo smithii*	13	LC	LC	
Barn swallow	*Hirundo rustica*	32	LC	LC	
Asian plain martin	*Riparia chinensis*	45, 50	LC	NT	
Pycnonotidae					
Black ulbbul	*Hypsipetes leucocephalus*	20	LC	LC	

Black-crested bulbul	*Rubigula flaviventris*	20, 50	LC	LC	
Red-whiskered bulbul	*Pycnonotus jocosus*	18, 50	LC	LC	
Himalayan bulbul	*Pycnonotus leucogenys*	45	LC	LC	
Red-vented bulbul	*Pycnonotus cafer*	13 50	LC	LC	
Phylloscopidae					
Yellow-browed warbler	*Phylloscopus inornatus*	20, 50	LC	LC	
Hume's leaf-warbler	*Phylloscopus humei*	17, 50	LC	LC	
Lemon-rumped leaf-warbler	*Phylloscopus chloronotus*	25, 50	LC	LC	
Dusky warbler	*Phylloscopus fuscatus*	32, 50	LC	LC	
Smoky warbler	*Phylloscopus fuligiventer*	20	LC	LC	
Siberian chiffchaff	*Phylloscopus tristis*	13	LC	LC	
Tickell's leaf-warbler	*Phylloscopus affinis*	20, 50	LC	LC	
Green-crowned warbler	*Phylloscopus burkii*	17, 50	LC	LC	
Whistler's warbler	*Phylloscopus whistleri*	20, 50	LC	LC	
Chestnut-crowned warbler	*Phylloscopus castaniceps*	35	LC	LC	
Green warbler	*Phylloscopus nitidus*	20	LC	LC	
Greenish warbler	*Phylloscopus trochiloides*	32, 50	LC	LC	
Large-billed leaf-warbler	*Phylloscopus magnirostris*	45	LC	LC	
Yellow-vented warbler	*Phylloscopus cantator*	12, 50	LC	EN	
Blyth's leaf-warbler	*Phylloscopus reguloides*	50, 69	LC	LC	
Western crowned leaf-warbler	*Phylloscopus occipitalis*	38	LC	LC	
Grey-hooded warbler	*Phylloscopus xanthoschistos*	25	LC	LC	
Scotocercidae					
Grey-bellied tesia	*Tesia cyaniventer*	20	LC	LC	
Grey-sided bush-warbler	*Cettia brunnifrons*	20	LC	LC	
Chestnut-headed tesia	*Cettia castaneocoronata*	20	LC	LC	
Yellow-bellied warbler	*Abroscopus superciliaris*	25	LC	LC	
Aberrant bush-warbler	*Horornis flavolivaceus*	25	LC	LC	
Sylviidae					
Lesser whitethroat	*Curruca curruca*	25	LC	LC	
Zosteropidae					
Indian white-eye	*Zosterops palpebrosus*	32, 50	LC	LC	
Timaliidae					
White-browed scimitar-babble	*Pomatorhinus schisticeps*	69	LC	NT	
Rusty-cheeked scimitar-babbler	*Erythrogenys erythrogenys*	20	LC	LC	
Black-breasted babbler	*Stachyris humei*	52	NT	CR	
Pin-striped tit-babbler	*Mixornis gularis*	32, 50	LC	LC	
Pellorneidae					
Puff-throated babbler	*Pellorneum ruficeps*	25, 50	LC	LC	
Abbott's babbler	*Malacocincla abbotti*	50, 70	LC	EN	
Leiotrichidae					
Jungle babbler	*Argya striata*	32, 50	LC	LC	X
Spiny babbler	*Acanthoptila nipalensis*	21	LC	LC	
Sittidae					
Chestnut-bellied nuthatch	*Sitta cinnamoventris*	32, 50	LC	LC	
Velvet-fronted nuthatch	*Sitta frontalis*	32, 50	LC	LC	
Wallcreeper	*Tichodroma muraria*	25	LC	LC	
Sturnidae					
Asian pied starling	*Gracupica contra*	25, 50	LC	LC	
Brahminy starling	*Sturnia pagodarum*	20	LC	LC	
Chestnut-tailed starling	*Sturnia malabarica*	25, 50	LC	LC	
Common myna	*Acridotheres tristis*	20, 50	LC	LC	
Bank myna	*Acridotheres ginginianus*	20	LC	LC	
Jungle myna	*Acridotheres fuscus*	25	LC	LC	
Great myna	*Acridotheres grandis*	10	LC	LC	

Spot-winged starling	*Saroglossa spilopterus*	15	LC	LC	
Common hill myna	*Gracula religiosa*	25, 50	LC	LC	
Turdidae					
Dark-sided thrush	*Zoothera marginata*	46	LC	VU	
Scaly thrush	*Zoothera dauma*	32	LC	LC	
Orange-headed thrush	*Geokichla citrina*	13, 50	LC	LC	
Grey-winged blackbird	*Turdus boulboul*	35	LC	LC	
Black-breasted thrush	*Turdus dissimilis*	36	LC	LC	
Tickell's thrush	*Turdus unicolor*	32, 50	LC	LC	
White-collared blackbird	*Turdus albocinctus*	20	LC	LC	
Black-throated thrush	*Turdus atrogularis*	20	LC	LC	
Red-throated thrush	*Turdus ruficollis*	20	LC	LC	
Muscicapidae					
Oriental magpie-robin	*Copsychus saularis*	25, 50	LC	LC	
Indian robin	*Copsychus fulicatus*	20	LC	LC	X
White-rumped shama	*Copsychus malabaricus*	20, 50	LC	LC	
Dark-sided flycatcher	*Muscicapa sibirica*	20	LC	LC	
Brown-breasted flycatcher	*Muscicapa muttui*	67	LC	LC	
Asian Brown flycatcher	*Muscicapa dauurica*	20	LC	LC	
Rufous-bellied niltava	*Niltava sundara*	32	LC	LC	
Small niltava	*Niltava macgrigoriae*	20	LC	LC	
Verditer flycatcher	*Eumyias thalassinus*	25, 50	LC	LC	
Pale-chinned flycatcher	*Cyornis poliogenys*	39, 50	LC	LC	
Tickell's blue-flycatcher	*Cyornis tickelliae*	46	LC	LC	
Blue-throated blue-flycatcher	*Cyornis rubeculoides*	16, 50	LC	LC	
Indian blue robin	*Larvivora brunnea*	3	LC	LC	
Siberian blue robin	*Larvivora cyane*	33	LC	LC	
White-bellied redstart	*Luscinia phaenicuroides*	1	LC	LC	
Bluethroat	*Luscinia svecica*	13	LC	LC	
Siberian rubythroat	*Calliope calliope*	32, 50	LC	LC	
White-tailed robin	*Myiomela leucura*	16, 50	LC	LC	
Black-backed forktail	*Enicurus immaculatus*	20, 50	LC	LC	
Blue whistling-thrush	*Myophonus caeruleus*	25	LC	LC	
Slaty-blue flycatcher	*Ficedula tricolor*	69	LC	LC	
Snowy-browed flycatcher	*Ficedula hyperythra*	20, 50	LC	LC	
Pygmy blue flycatcher	*Ficedula hodgsoni*	20	LC	LC	
Rufous-gorgeted flycatcher	*Ficedula strophiata*	17	LC	LC	
Sapphire flycatcher	*Ficedula sapphira*	50	LC	NT	
Ultramarine flycatcher	*Ficedula superciliaris*	30, 50	LC	LC	
Little pied flycatcher	*Ficedula westermanni*	15, 50	LC	LC	
Rusty-tailed flycatcher	*Ficedula ruficauda*	69	LC	LC	
Red-breasted flycatcher	*Ficedula parva*	12, 50	LC	LC	
Red-throated flycatcher	*Ficedula albicilla*	32, 50	LC	LC	
White-capped water-redstart	*Phoenicurus leucocephalus*	25	LC	LC	
Plumbeous water-redstart	*Phoenicurus fuliginosus*	20	LC	LC	
Black redstart	*Phoenicurus ochruros*	25	LC	LC	
Hodgson's redstart	*Phoenicurus hodgsoni*	7	LC	LC	
Blue-capped rock-thrush	*Monticola cinclorhyncha*	20, 50	LC	LC	
Chestnut-bellied rock-thrush	*Monticola rufiventris*	54	LC	LC	
Blue rock-thrush	*Monticola solitarius*	32, 50	LC	LC	
Grey bushchat	*Saxicola ferreus*	25, 50	LC	LC	
Pied bushchat	*Saxicola caprata*	25, 50	LC	LC	
Common stonechat	*Saxicola torquatus*	32, 50	LC	LC	
Chloropseidae					
Golden-fronted leafbird	*Chloropsis aurifrons*	25, 50	LC	LC	

Orange-bellied leafbird	*Chloropsis hardwickii*	1	LC	LC
Dicaeidae				
Yellow-vented flowerpecker	*Dicaeum melanozanthum*	57	LC	CR
Thick-billed flowerpecker	*Dicaeum agile*	20	LC	LC
Pale-billed flowerpecker	*Dicaeum erythrorhynchos*	20	LC	LC
Plain flowerpecker	*Dicaeum minullum*	25	LC	LC
Scarlet-backed flowerpecker	*Dicaeum cruentatum*	64	LC	CR
Nectariniidae				
Streaked spiderhunter	*Arachnothera magna*	20	LC	LC
Ruby-cheeked sunbird	*Chalcoparia singalensis*	63	LC	EN
Purple sunbird	*Cinnyris asiaticus*	25, 50	LC	LC
Black-throated sunbird	*Aethopyga saturata*	11, 50	LC	LC
Crimson sunbird	*Aethopyga siparaja*	25	LC	LC
Ploceidae				
Baya weaver	*Ploceus philippinus*	25, 50	LC	NT
Estrildidae				
Red avadavat	*Amandava amandava*	20	LC	NT
White-rumped munia	*Lonchura striata*	50	LC	NT
Scaly-breasted munia	*Lonchura punctulata*	32, 50	LC	LC
Tricoloured munia	*Lonchura malacca*	20	LC	LC
Passeridae				
House sparrow	*Passer domesticus*	32, 50	LC	LC
Russet sparrow	*Passer cinnamomeus*	20	LC	LC
Eurasian tree sparrow	*Passer montanus*	20	LC	LC
Chestnut-shouldered bush-sparrow	*Gymnoris xanthocollis*	25	LC	LC
Motacillidae				
Forest wagtail	*Dendronanthus indicus*	20	LC	LC
Tree pipit	*Anthus trivialis*	25, 50	LC	LC
Olive-backed pipit	*Anthus hodgsoni*	32, 50	LC	LC
Rosy pipit	*Anthus roseatus*	13	LC	LC
Richard's pipit	*Anthus richardi*	13	LC	LC
Paddyfield pipit	*Anthus rufulus*	50, 69	LC	LC
Blyth's pipit	*Anthus godlewski*	20	LC	LC
Tawny pipit	*Anthus campestris*	20	LC	LC
Western yellow wagtail	*Motacilla flava*	25	LC	LC
Grey wagtail	*Motacilla cinerea*	25, 50	LC	LC
Citrine wagtail	*Motacilla citreola*	13	LC	LC
White-browed wagtail	*Motacilla maderaspatensis*	45, 50	LC	LC
White wagtail	*Motacilla alba*	20, 50	LC	LC
Fringillidae				
Common rosefinch	*Carpodacus erythrinus*	20	LC	LC
Emberizidae				
Crested bunting	*Emberiza lathami*	25, 50	LC	LC
Black-headed bunting	*Emberiza melanocephala*	20, 50	LC	VU
Yellow-breasted bunting	*Emberiza aureola*	20	CR	CR
Little bunting	*Emberiza pusilla*	20	LC	VU
Black-faced bunting	*Emberiza spodocephala*	13	LC	VU

Legend to Annex 1: IUCN status and NRDB (Nepal Red Data Book) status:

CR Critically Endangered; EN Endangered; VU Vulnerable; NT Near Threatened; LC Least Concern; DD Data Deficient

BRS Species characteristic species of the Indo-Malayan tropical dry zone biome

The reference for the first record of the bird species in DIBA and the reference for records from the field survey carried out in this study (Inskipp et al. 2025).

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