

Checklist

Birds and habitats recorded in the lower Mai Valley Important Bird and Biodiversity Area

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Abstract

A bird survey was carried out in the lower Mai Valley Forests (MVF) Important Bird and Biodiversity Area (IBA) in far eastern Nepal, between 180 m and 2200 m from 01 to 10 March 2022. An assessment was also made of the environmental conditions of forest and river habitats, and type and extent of agriculture. A comparison was made with a March 1981 visit. Observations were noted during a ten-day trek from Ilam (1205 m) up to Hangetham (2200 m) and down to Sukhani (180 m). The large number of 256 bird species was recorded, including one globally threatened and five globally near-threatened species, five restricted-range species, 20 nationally threatened and eight nationally near-threatened species. One new species for Nepal, black-breasted thrush *Turdus dissimilis* and three rare Nepal species not found in the IBA for at least 20 years, were also recorded. Extensive intact areas of semi-evergreen subtropical and lower temperate mixed broadleaved forests valuable for birds still remain. Tropical forests have been fragmented and mainly replaced by tea and rubber plantations, and also by the spread of agriculture. However, Sukhani still comprises a substantial semi-evergreen broadleaved forest important for birds, although it is highly threatened. Hunting is probably a significant threat to bird species in MVF. Despite loss and degradation of some forests, especially in the tropical zone, MVF still qualify as an IBA. The Mai Khola habitat has been severely damaged by the Mai Khola Hydroelectric Project, which became operational in 2015, resulting in serious declines in river birds. MVF remain outside the existing protected area network. Including MVF in Nepal's protected area system would ensure conservation of the species-rich semi-evergreen mixed broadleaved tropical and subtropical forests that are currently an important omission. Further bird surveys are recommended at all elevations and in tropical and subtropical forests that have so far not been covered.

Keywords: Birds; Forests; IBA; Lower Mai Valley; Survey

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1 | Introduction

The Mai Valley (Fig. 1), is located in far eastern Nepal and was assessed as an Important Bird and Biodiversity Area (IBA) in the first Nepal IBA assessment (Baral & Inskipp 2005). IBAs are sites that contribute to global bird diversity and include vital habitats for threatened bird species. IBAs are identified for birds using internationally agreed criteria applied locally by BirdLife Partners and experts (BirdLife International 2014). There are 37 IBAs in Nepal covering nearly 28% of Nepal's land area (BCN, DNPWC & DoFSC in press).

The Mai Valley Forests (MVF) IBA lies between 26° 40'N and 27° 05'N 87° 41'E-88° 10'E in Mechi Zone and covers 30,000 ha. It extends from the Mai River confluence with the Kankai River at 180 m in the tropical zone to the Indian border on the Singhalila ridge at 3050 m in the subalpine zone. A total of 362 species has been recorded in the upper and lower valleys during surveys carried out between 2006 and 2016 (BCN, DNPWC & DoFSC in press). The Mai valley comprises the upper Mai valley (2200 m – 3050 m) and lower Mai valley (180 m – 2200 m). The upper Mai valley was further surveyed between

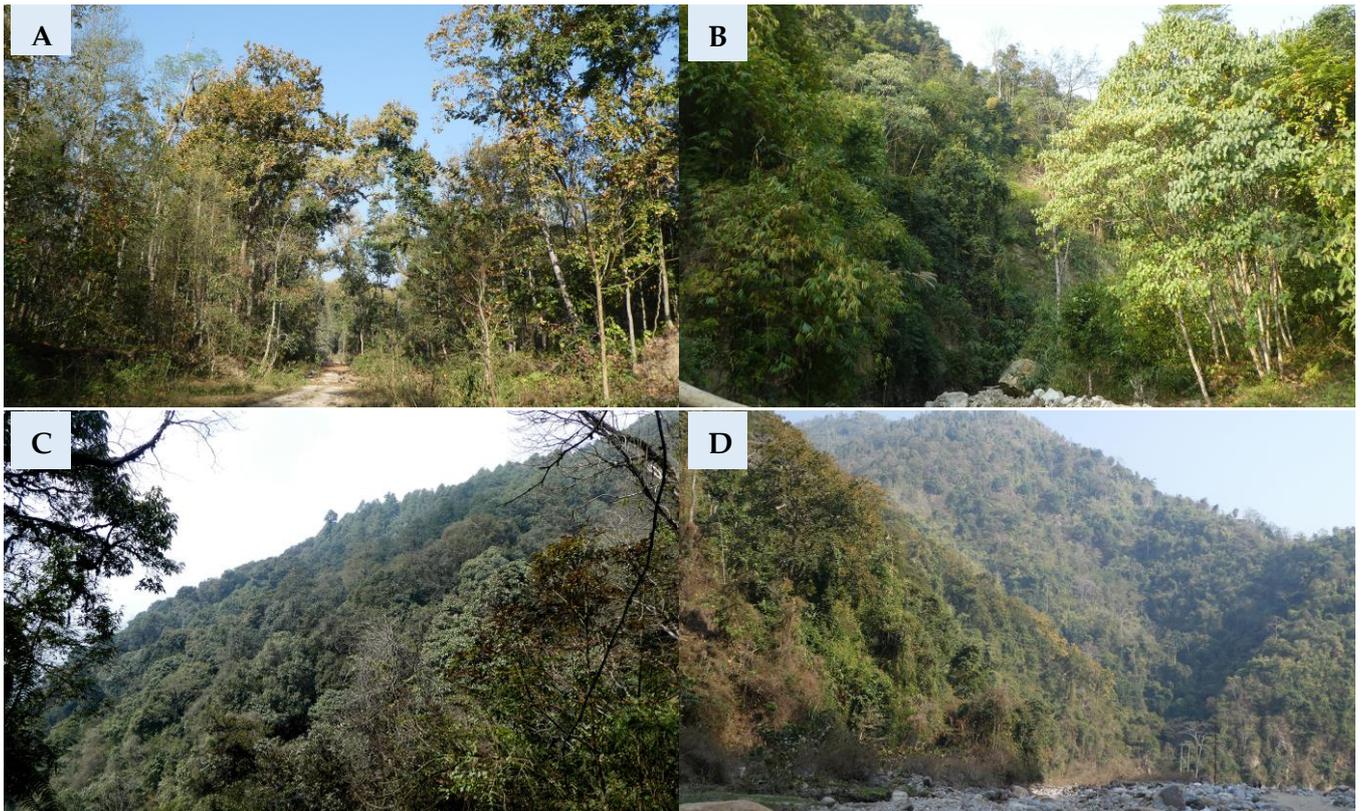


Figure 1. Photographs showing the vegetation of the study area. A- Sukhani tropical semi-evergreen broadleaved forest; B- Subtropical semi-evergreen broadleaved forest; C- Lower temperate mixed broadleaved forest; and, D- Lower Mai valley (Photos by- Carol Inskipp).

2015 and 2018, ten species were added to the MVF list making a total of 372 species (Inskipp et al. 2019). A comprehensive review of the 209 bird species recorded in the upper Mai valley (2000 m – 3050 m) is described in Inskipp et al. (2019). However, the most recent detailed survey of the lower Mai valley (180 m – 2000 m) was in 2008 (Robson et al. 2008), The aim of this survey in March 2022 was to record bird species in the lower Mai valley, to assess the environmental condition of the forests and the Mai Khola, and current threats, and also to determine whether both the whole of MVF (upper and lower valley) still qualify as an IBA.

2 | Materials and methods

All bird species and their numbers of individuals and habitats were recorded on a trek in the lower Mai valley between 01 and 10 March 2022 undertaken by the three co-authors from 180 m up to 2200 m in the lower Mai valley up to Hangetham covering tropical, subtropical and lower temperate forests and river habitats. Details of locations and altitudes were taken for all notable species which comprised globally and nationally threatened species, restricted-range species and very rare species. Birds were identified using 10x40 Viking, 8x42 Nikon, 8x42 Swarovski and. Birds were identified

using Grimmett et al. (2011; 2016). Minimal use of a JBL Clip 3 speaker was used for playback to confirm identification of several species.

The trekking route taken was:

- 01 March Ilam
- 02 March Ilam – Bhaludunga Community Forest – Bipleter – Lamitar (1030 m)
- 03 March Lamitar (1030 m) – by Mai Khola (900 m) – Jamuna – lower Hangetham (1980 m)
- 04 March lower Hangetham (1980 m) – Hangetham (2210 m) – trail towards Gairibas (2150 m)
- 05 March Hangetham (2210 m) – trail towards Kaiyakatta – trail towards Gairibas (2150 m)
- 06 March Hangetham (2210 m) – Jamuna – by Mai Khola (900 m) – Lamitar (1030 m)
- 07 March Lamitar (1030 m) – Mai Besi (650 m)
- 08 March Mai Besi (650 m) – Chisapani (250 m)
- 09 March Chisapani (250 m) – Geruwa – Sukrabarey (175 m)
- 10 March Sukrabarey (175 m) – Sukhani forest (180 m)

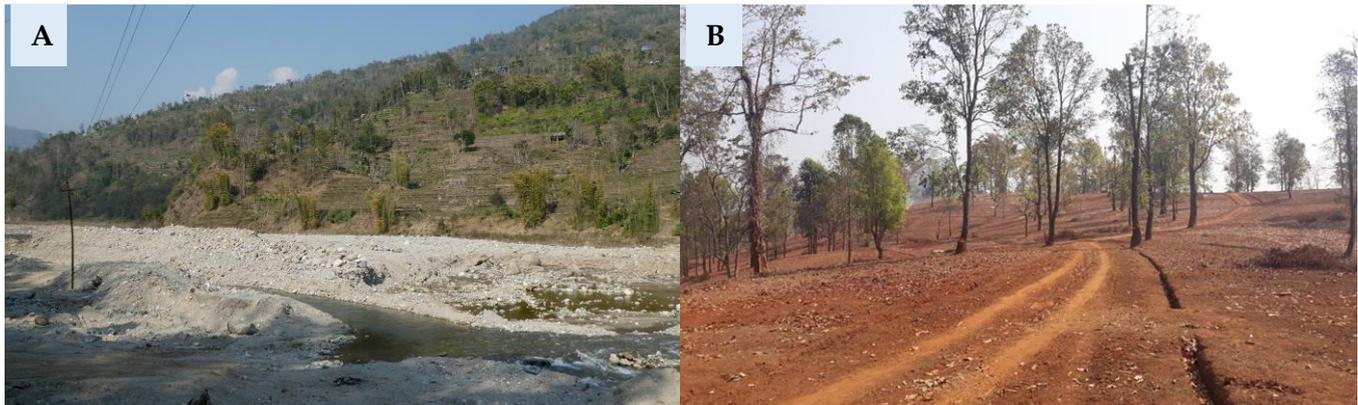


Figure 2. Photos showing anthropogenic threats to the habitat in study area. A. Mai Khola riverbed damaged by hydropower project (Photo by- Carol Inskipp); and B. Geruwa forest cleared for rubber plantation (Photo by- Sanjib Acharya).

Notes were made of the environmental condition of the forest and river and the extent and type of agriculture. Much of our route was the same as that taken by C. Inskipp in March 1981, when a diary was kept of habitats, agriculture and settlements. Notes were made on the environmental changes that were observed between March 1981 and March 2022.

3 | Results

The large number of 256 bird species was recorded, nearly 70 per cent of the total number recorded in the Mai Valley Forest IBA. These included one globally threatened, five globally near-threatened species, five restricted-range species, 20 nationally threatened and eight nationally near-threatened species. In addition, the survey recorded: one new species for Nepal, black-breasted thrush *Turdus dissimilis* (Acharya et al. in press), the second Nepal record of mountain tailorbird *Phyllergates cucullatus*, one very rare Nepal species (dusky thrush *Turdus eunomus*), and two unusual altitude records (for little cormorant *Phalacrocorax niger* and yellow-browed tit *Sylviparus modestus*). Three new species for the Mai Valley Forests IBA were recorded: black-breasted thrush, dusky thrush and common woodpigeon *Columba palumbus*. Three species were recorded that have not been found in the IBA for at least 20 years: Asian fairy-bluebird *Irena puella*, grey-crowned prinia *Prinia cinereocapilla*, and slaty-bellied tesia *Tesia olivea*.

The bird species list for the whole Mai Valley Forest IBA now totals 375 bird species.

Notable bird records

Global threat status is shown in italics and national threat status is in normal font.

Satyr tragopan *Tragopan satyra*

Globally Near-threatened NT; Nationally Vulnerable VU

On 04 March on the path from Hangetham to Gairibas several feathers of a male Satyr Tragopan adjacent to the remains of a recent fire were found, indicating the bird had been eaten. An uncommon resident that mainly occurs in protected areas in Nepal (Inskipp et al. 2016), with a number of records from the upper Mai valley where it is uncommon (Inskipp et al. 2019).

White-browed piculet *Sasia ochracea*

Nationally Critically Endangered CR

One bird was seen in Bhaludunga Community Forest near Ilam at 1300 m on 02 March in subtropical semi-evergreen mixed broadleaved forest with bamboo and one bird was photographed below Hangetham at 2070 m on 06 March in lower temperate bamboo. A rare resident in Nepal, with several previous records from the Mai valley IBA (Inskipp et al. 2016) e.g. in May 2016 (Coker & Hoyer 2016).

Alexandrine parakeet *Psittacula eupatria*

Globally Near-threatened NT; Nationally Near-threatened NT

Ten birds were seen in flight between Chisapani and Sukrabarey, Mai valley on 08 March and six in Sukhani forest, Jhapa district on 09 March in tropical semi-evergreen mixed broadleaved forest. A widespread resident in lowland Nepal and fairly common in the lower Mai valley (Inskipp et al. 2016).

Barred cuckoo-dove *Macropygia unchall*

Nationally Vulnerable VU

One bird was seen on 03 March, three birds on 06, seven birds on 07 and six birds on 08 March below Lamitar in

the Mai Valley in tropical, semi-evergreen, mixed broadleaved forest. A local resident in Nepal (Inskipp et al. 2016); frequent in the lower Mai valley (Robson et al. 2008; Inskipp et al. 2016) e.g. in February 2022 near Ilam (Chaudhary 2022a).

River lapwing *Vanellus duvaucelli*

Globally Near-threatened NT; Nationally Near-threatened NT

Single birds were seen by the Lodia River and by the Geruwa River, Jhapa district on 09 March. A fairly common and widespread resident in Nepal (Inskipp et al. 2016); previously frequent in small numbers in the lower Mai valley (Basnet & Sapkota 2006; Robson et al. 2008), but now it is uncommon there. Recent records include in March 2016 from Siddhithumka and at Sukrabare/Sitali, and in April 2016 near Danabari (van Riessen 2016a).

Collared falconet *Microhierax caerulescens*

Nationally Near-threatened NT

One bird was seen south of Chisapani, Ilam district at the edge of Sal *Shorea robusta* forest on 09 March. A local and uncommon or frequent resident in Nepal (Inskipp et al. 2016), with a few records near Chisapani and Saktim e.g. in January 2006 (Basnet & Sapkota 2006) and

in March 2008 (Robson et al. 2008), also in Sukhani forest e.g. in February 2016 (Acharya 2016).

Little cormorant *Microcarbo niger*

One bird was seen on the Mai Khola below Lamitar at the unusually high altitude of 900 m on 02 March. The species has previously been recorded mainly below 300 m in Nepal (Grimmett et al. 2016).

Asian woollyneck *Ciconia episcopus*

Globally Near-threatened NT; Nationally Near-threatened NT

Two birds were seen in flight between Hangetham and Lamitar, Mai valley, Ilam district on 05 March and one bird between Chisapani and Sukrabarey, Mai valley on 08 March. A fairly common and widespread resident in Nepal (Inskipp et al. 2016); previously frequent in the lower Mai valley (Basnet & Sapkota 2006; Robson et al. 2008), but there have been a very small number of later records e.g. a pair in January 2018 (C. Inskipp Pers. Obs.).

Asian Fairy-bluebird *Irena puella*

Nationally Critically Endangered CR

Photographed in Sukhani forest, Jhapa district in tropical, semi-evergreen, mixed broadleaved forest on

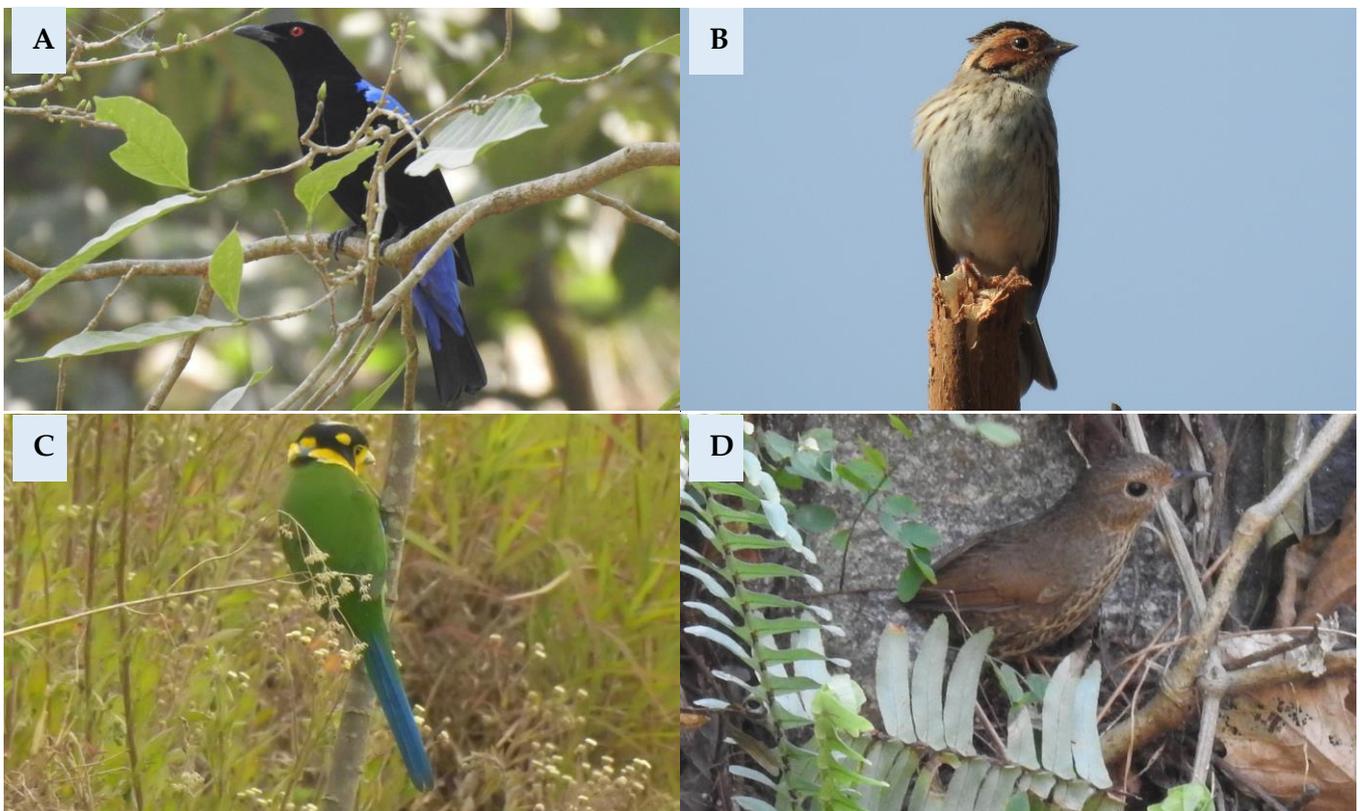


Figure 3. Some notable bird records from the study area. A. Asian fairy bluebird; B. little bunting (Photos by- Sanjib Acharya); C. long-tailed broadbill (Photo by- Tika Ram Giri); and, D. Nepal cupwing (Photo by- Sanjib Acharya).

10 March when two pairs were seen. Now very rare in Nepal (Inskipp et al. 2016). The species was regularly recorded in Sukhani forest in the 1970s and 1980s and the last known previous record here was of two birds in June 1997 (Hathan Chaudhary in Inskipp et al. 2016).

Dusky Thrush *Turdus eunomus*

One bird was photographed in fields between Lamitar and Mai Besi, Mai valley 26° 56' N 87° 57' E, at 680 m on 07 March, a new locality for this species. A rare and irregular winter visitor in Nepal, recorded less than annually (Inskipp et al. 2016).

Sapphire flycatcher *Ficedula sapphira*

Nationally Near-threatened NT

A pair was seen in Sukhani forest, Jhapa district in tropical semi-evergreen, mixed broadleaved forest on 10 March. Rare and possibly resident in eastern Nepal (Inskipp et al. 2016), with one other recent record from Sukhani, in November 1992 (Cox Jr 1992).

Yellow-browed tit *Sylviparus modestus*

One bird was seen near Mai Besi at the unusually low altitude of 690 m on 07 March. The species usually winters between 1830 m and 2800 m, although it has been recorded down to 1500 m (Grimmett et al. 2016).

White-throated bulbul *Alophoixus flaveolus*

Nationally Endangered EN

Photographed in Sukhani forest, Jhapa district in tropical semi-evergreen, mixed broadleaved forest where 15 birds were seen on 10 March. A local resident in Nepal, locally frequent in Chitwan National Park and mainly rare elsewhere (Inskipp et al. 2016). However, the species was fairly common in Sukhani forest from the 1970s to 1990s; recently it has been recorded there less often, though it is still frequent e.g. 12 seen in April 2022 (Chaudhary 2022b).

Grey-crowned prinia *Prinia cinereocapilla*

Globally Vulnerable VU; Nationally Critically Endangered CR

Recorded at three new Nepal localities for the species amongst tall grass and large boulders on hillsides: eight birds below Lamitar, Ilam district at 26° 58' N 87° 57' E at 970 m including one photographed on 03 March; eight birds below Lamitar at 26° 58' N 87° 58' E at 940 m and 970 m on 07 March, and heard calling near Rani, Ilam district at 26° 51' N 87° 55' E at 520 m on 08 March. A local resident in Nepal, mainly found in protected areas (Inskipp et al. 2016). There are only four known previous records from Ilam district: in 1979 and 1982

(Inskipp & Inskipp 1991; Inskipp et al. 2016), 1989 (Curson & Bose 1989), and in April 1999 (Perlman 1999a), however, the species may have been overlooked as suitable habitat was observed during the current survey.

Slaty-bellied tesia *Tesia olivea*

Nationally Critically Endangered CR

One was seen and heard calling and singing near Mai Besi 26° 53' N 87° 57' E in a gully of broadleaved trees and bushes at 690 m on 08 March; a new Nepal locality for this species. Very rare and local and only recorded in far eastern Nepal, probably resident (Inskipp et al. 2016). Only two other records from the Mai valley, both at Hangetham in April 1999 (Inskipp 2006; Basnet 2007).

Yellow-vented warbler *Phylloscopus cantator*

Restricted Range Species from the Eastern Himalayas Endemic Bird Area; Nationally Endangered EN

One bird was seen near Hangetham at the unusually high altitude of 2150 m on 03 March. The large number of 20 birds was seen together (probably moving up to their breeding grounds) near Mai Besi in bushes at the edge of tropical mixed broadleaved forest at 750 m on 08 March. Rare, local and only occurring in eastern Nepal, with at least one record from Sukhani. Some birds are probably resident and subject to altitudinal movements (Inskipp et al. 2016). Very few other recent records from the Mai valley, including in October 2016 in the Godak area (van Riessen 2016b).

Broad-billed warbler *Tickellia hodgsoni*

Restricted Range Species from the Eastern Himalayas Endemic Bird Area; Nationally Endangered EN

One bird was seen near Hangetham on the trail to Gairibas in lower temperate mixed broadleaved forest at 2200 m on 05 March and one bird below Hangetham in a crop of Nepalese broom grass *Thysanolaena maxima* at 1720 m on 06 March. Local and generally rare, only occurring in eastern Nepal, with most records from MVF where it is locally frequent. The species is probably resident (Inskipp et al. 2016), with several Mai valley records between 2008 and 2018 (Inskipp et al. 2019).

Yellow-bellied warbler *Abroscopus superciliosus*

Nationally Vulnerable VU

Four birds were seen above Ilam in the Bhaludunga Community Forest, Ilam district at 1300 m in subtropical semi-evergreen, mixed broadleaved forest with bamboo on 02 March and two birds near Mai Besi at 750 m in tropical mixed broadleaved forest on 08



Figure 4. Some notable bird records from the study area. A. rufous-throated wren-babbler; B. white-browed piculet (Photos by- Sanjib Acharya); C. slaty-backed forktail; and D. wedge-tailed green pigeon (Photos by- Tika Ram Giri).

March. Very local and very uncommon in Nepal, probably resident (Inskipp et al. 2016). Pre-1990 it was considered fairly common in the lower Mai valley (Inskipp & Inskipp 1991), but there are very few known later records e.g. in May 2016 near Ilam (Coker & Hoyer 2016).

Mountain tailorbird *Phyllergates cucullatus*

Nationally Data Deficient DD

One bird was heard singing near Hangetham on the trail to Gairibas on 05 March 2022 at 27° 02'N 88° 01' E at 2175 m from dense undergrowth below us in lower temperate mixed broadleaved forest. Second record for Nepal. In April 2015, the species' song was heard from dense forest undergrowth at several localities below Jaubari and Kalipokhari/Dobate, Ilam district in April 2015 (Martijn Bunscoek in Inskipp et al. 2016). Possibly a rare and local resident in eastern Nepal (Inskipp et al. 2016).

Lesser necklaced laughingthrush *Garrulax monileger*

Nationally Vulnerable VU

A flock of 12 birds was seen feeding on blooms of a Silk Cotton *Bombax ceiba* and a coral tree *Erythrina* sp. at Mai Besi, Ilam district at 600 m on 08 March. A local and frequent resident in Chitwan National Park, very uncommon in the lower Mai valley and probably rare

elsewhere (Inskipp et al. 2016). Post-1990 records from the lower Mai valley include Basnet and Sapkota (2006).

Greater necklaced laughingthrush *Garrulax pectoralis*

Nationally Vulnerable VU

A flock of eight birds was seen in Sukhani forest in tropical, semi-evergreen, mixed broadleaved forest on 10 March 2022. Local and uncommon in Nepal and only known to occur regularly in parts of Chitwan National Park where it is described as a frequent resident (Inskipp et al. 2016). Pre-1990 it was fairly common north of Sunishare, Jhapa district (Inskipp & Inskipp 1991), but post-1990 there have been few records including in Sukhani forest (Inskipp et al. 2016), and in Geruwa forest in March 2008 (Robson et al. 2008).

Scaly laughingthrush *Trochalopteron subunicolor subunicolor*

Nationally Near-threatened NT

Two birds were seen on 04 March and eight birds on 05 March near Hangetham at 2200 m in lower temperate mixed broadleaved forest. A local and uncommon resident in Nepal with several recent records from the Mai valley (Inskipp et al. 2016; 2019).



Figure 5. Some notable bird records from the study area. A. white-throated bulbul; and B. yellow-bellied warbler (Photos by-Tika Ram Giri).

White-browed scimitar-babbler *Pomatorhinus schisticeps*

Nationally Near-threatened NT

A One bird was heard above Ilam on 01 March, two birds were seen in Bhaludunga Community Forest, above Ilam, Ilam district, one bird was heard between Lamitar and Jamuna, Ilam district on 03 March and two birds were heard between Lamitar and Mai Besi, Ilam district on 07 March, all in subtropical semi-evergreen, mixed broadleaved forest. A local resident in Nepal (Inskipp et al. 2016), with few other records from the Mai valley e.g. in January 2006 (Basnet & Sapkota 2006).

Nepal cupwing *Pnoepyga immaculata*

Restricted Range species from the Central and Eastern Himalayas Endemic Bird Area

A pair was photographed on the bank of a small tributary of the Mai Khola between Lamitar and Mai Besi at 26° 57'N 87° 57'E at 800 m on 07 March. The birds crept amongst boulders and low herbaceous vegetation. This is a new wintering locality for Nepal Cupwing. A locally common resident, subject to altitudinal movements in Nepal (Inskipp et al. 2016), with few other known records from the lower Mai valley e.g. near Hangetham in March 2015 (Tek Bahadur Gurung Mighi in Inskipp et al. 2016).

Rufous-throated wren-babbler *Spelaornis caudatus*

Globally Near-threatened and Restricted Range Species from the Eastern Himalayas Endemic Bird Area; Nationally Critically Endangered (CR)

One was photographed and videoed in lower temperate mixed broadleaved forest on 05 March between Hangetham and Gairibas at 27° 02'N 88° 01'E at 2186 m. A very rare and very local resident in Nepal (Inskipp et al. 2016). The first Nepal record of the species was from near Hangetham at 2195 m in March 1961 (Fleming &

Traylor 1964). Subsequently one or two birds were regularly recorded from the same area until April 1993 (Inskipp et al. 2016). Since then, there have been a few confirmed reports from Hangetham, and also one in the upper Mai valley at Dobate on 11 December 2018 (Chaudhary 2018 and in litt. to C. Inskipp, 06 June 2022).

Silver-eared mesia *Leiothrix argenteauris*

Nationally Endangered EN

A large flock of 30 birds was seen in the Mai valley between Lamitar and Mai Besi on 09 March in tropical semi-evergreen, mixed broadleaved forest at 580 m. A local resident in Nepal; several records from the Mai valley in the 1980s (Inskipp et al. 2016) and a few post 1990 records from the lower Mai valley e.g. near Jamuna in 2009 (Bharat Subba in Inskipp et al. 2016).

Black-headed shrike-babbler *Pteruthius rufiventer*

Nationally Vulnerable VU

One bird was heard singing near Hangetham, from the path to Gairibas in lower temperate mixed broadleaved forest at 2150 m on 04 March. A rare and local resident in Nepal (Inskipp et al. 2016). There are a few other known post 1990 records from the lower Mai valley, mainly from Hangetham e.g. in January 2018 (Inskipp et al. 2019).

Rusty-fronted barwing *Actinodura egertoni*

Nationally Endangered EN

Two birds were seen on 4 March and six birds on 05 March near Hangetham from the path to Gairibas, in lower temperate mixed broadleaved forest at 2150 m. Generally, a rare and local resident in Nepal (Inskipp et al. 2016) with most records from the MVF where it is uncommon. There are a few earlier records from near Hangetham e.g. in January 2018 (Inskipp et al. 2019).

Hoary-throated barwing *Sibia nipalensis*

Restricted Range Species from the Central and Eastern Himalayas Endemic Bird Areas

Two birds were seen on 04 March and four birds on 05 March near Hangetham from the path to Gairibas in lower temperate mixed broadleaved forest at 2150 m. A locally fairly common and widespread resident in Nepal, especially from west-central Nepal eastwards with several lower Mai valley records (Inskipp et al. 2016; 2019), e.g. at Hangetham in September 2010 (Hem Sagar Baral in Inskipp et al. 2016).

Golden-breasted fulvetta *Lioparus chrysotis*

Nationally Vulnerable VU

On 05 March, least ten birds were seen in a fast-moving flock with 80 Black-throated Parrotbills *Paradoxornis nipalensis* near Hangetham from the path to Gairibas in bamboo in lower temperate mixed broadleaved forest at 2150 m. A local resident in Nepal (Inskipp et al. 2016). There are several records from the lower Mai valley, mainly near Hangetham e.g. in April 1999 (Perlman 1999b) and Inskipp et al. (2016)).

Black-chinned yuhina *Yuhina nigrimenta*

Nationally Vulnerable VU

The only record was of four birds seen between Lamitar and Mai Besi on 07 March in subtropical semi-evergreen, mixed broadleaved forest. A local and uncommon resident in Nepal with most recent records from within the protected areas' network. There are a few post-2000 records from the lower Mai valley e.g. in January 2007 in Sukhani forest (Badri Chaudhary & Som GC in Inskipp et al. 2016).

Yellow-vented flowerpecker *Dicaeum chrysorrheum*

Nationally Critically Endangered CR

Two records of single birds, seen and heard in Sukhani forest, Jhapa district on 10 March in tropical semi-evergreen, mixed broadleaved forest. A very rare and very local resident in Nepal (Inskipp et al. 2016). There were several records north of Sunischare in March and April between 1977 and 1987 (Inskipp et al. 2016), and a very few later records e.g. Geruwa forest in April 1999 (Perlman 1999c).

Scarlet finch *Carpodacus sipahi*

Nationally Near-threatened NT

A flock of eight birds was seen in flight at Jamuna on 06 March. A local and uncommon resident in Nepal (Inskipp et al. 2016), with a few known previous records from the lower Mai Valley e.g. between Jamuna and Gairibas in July 2016 (Kar 2016).

Little bunting *Emberiza pusilla*

Nationally Vulnerable VU

A total of 50 birds was seen on 05 March and 20 birds on 06 March in fallow fields at Hangetham at 2210 m. Considered fairly common in Nepal up to 1990, but since then its distributional range and the number of records has reduced, despite better coverage. Now an erratic winter visitor and generally very uncommon in Nepal (Inskipp et al. 2016), although still locally common in some years in the Mai Valley. Several records from Hangetham including the unusually large number of 500 birds in April 2013, but none found there in 2014 and 2015 (Suchit Basnet and Badri Chaudhary in Inskipp et al. 2016). Other Hangetham records include 20 birds in January 2018 (Inskipp et al. 2019).

Visit to Geruwa forest

After this survey, on 15 March 2022, members of the Koshi Bird Society visited a remnant of native forest at Geruwa. Species recorded included the nationally Critically Endangered Jerdon's baza *Aviceda jerdoni*, a new locality for this species which is very rare and very local in Nepal (Inskipp et al. 2016). A yellow-vented flowerpecker was also recorded here (S. Acharya Personal observation, 15 March 2022).

Environmental conditions of forests, river and streams

Forests comprised: tropical semi-evergreen mixed broadleaved (180 m – 1000 m); subtropical semi-evergreen mixed broadleaved with some bamboo (1000 m – 1700 m), and lower temperate mixed broadleaved with some bamboo (1700 m – 2400 m).

The greatest changes were observed in the tropical zone between March 1981 and March 2022. During the period, the tropical forests had been fragmented and much reduced with some remaining forests in a degraded condition. In March 1981, a continuous tropical, semi-evergreen mixed broadleaved forest extended from Sunischare to Sukhani and Geruwa. Between Geruwa and Saktim the forest was dominated by sal *Shorea robusta* and there were some tea plantations around Saktim. Tropical forest again dominated by sal was found between Saktim and Chisapani.

However, in the March 2022 survey, the tropical forests were found to comprise two separate forests at Geruwa and Sukhani separated by several square kilometres of tea and rubber plantations. Sukhani forest lay just south of the Sukrabarey settlement and extended to Sunischare (175 m – 116 m). It comprised a tropical

semi-evergreen broadleaved forest with thick undergrowth and in places, a closed canopy. Sukhani forest was divided by a 'black top' surfaced road. In the southern part of the forest near the town of Sunischara a memorial park and picnic site has been constructed. During their one-day survey of Geruwa forest on 15 March 2022, Koshi Bird Society members found this forest had largely been replaced by a rubber plantation and the remnant area of native forest was badly degraded (S. Acharya, Pers. Obs.).

The tropical sal forest that had existed in 1981 between Geruwa and Chisapani had been largely replaced by tea plantations and some agricultural fields, and only a much smaller area of sal forest remained.

Different routes were taken through the subtropical zone in March 2022 compared to March 1981. In the present survey, good quality subtropical semi-evergreen, mixed broadleaved forest with bamboo was observed in Bhaludunga Community Forest above Ilam. The forest between Bipletar and Lamitar and between Mai Besi and Chisapani was fragmented and partly degraded, with good quality forest confined to gullies, especially at stream edges. In March 2022, extensive tropical and subtropical semi-evergreen mixed broadleaved forests on steep slopes were found on either side of the Mai valley from below Lamitar to Mai Besi and there was very little sign of cultivation.

The whole hillside stretching between the Mai Khola and lower Hangetham is known as Jamuna and is privately owned. In March 1981, there were many scattered farms and associated terraces. Remaining forest and some bamboo were mainly limited to ravines and on sides of the path which wound up the hillside from the river to Hangetham. In March 2022, the path had been replaced by an unsurfaced road. Unlike in 1981, cash crops of cardamom *Amomum subulatum* and Nepalese broom grass *Thysanolaena maxima* were being grown on the terraces, as well as other crops for local community use, including millet, barley and mustard. The settlement of Jamuna had grown from a cluster of houses and a school in 1981 to into a large village.

Hangetham is a small settlement lying at 2210 m above Jamuna. In March 1981 large areas of lower temperate mixed broadleaved forest with some bamboo and other dense undergrowth extended to just outside the village. In the 1980s, near Hangetham, part of this forest was cleared to make way for a non-native conifer forest of *Cryptomeria japonica* which has since grown into tall mature trees with almost no understorey and very few birds. Hangetham forests have been managed as community forests for a number of years. Extensive

areas of the original forest still remain and cover the mountain sides between Hangetham and en route to Gairibas and also between Hangetham and en route to Kaiyakatta.

The lower Mai Khola has been severely disrupted by the Mai Hydroelectric Project; construction started in 2010 and the plant became operational in February 2015 (Sanima-Mai Hydropower Ltd. 2022). The large scale of the project is evidenced by numerous buildings, pipes and other infrastructure. However, it seems that no time was given to restoring the river-bed, which in March 2022, was mainly dry apart from scattered small pools and short sections of flowing water. In many places huge boulders and large heaps of sand and gravel covered the middle of a dry river-bed, which would surely impede the river flow in the monsoon season. Only small numbers of river birds were recorded.

4 | Discussion

Threats

Mai valley forests remain outside the network of protected areas. In the 1980s and 1990s they suffered from severe fragmentation and degradation through over-exploitation for fuelwood, fodder and bamboo and overgrazing by livestock. Illegal logging was also taking place (Halliday & McKnight 1990; 1993).

A 2008 survey of Mai valley forests found that the forests were facing the same threats as in the 1980s and 1990s and it was often difficult to locate large tracts of intact forest (Robson et al. 2008). However, deforestation may not be continuing in the subtropical and temperate zones. In contrast to the 2008 findings, our 2022 survey observed large areas of high-quality forest with mature trees and dense undergrowth in the subtropical and lower temperate zones still remained.

Robson et al. (2008) stated that their survey did not cover some of the higher parts of the Mai valley. During an April 2015 bird survey, Martijn Bunschoek reported there was good quality forest in the upper Mai valley on the slopes of Singhalila Ridge, near the border with India in the upper temperate and subalpine zones (Martijn Bunschoek in Inskipp et al. 2016). This finding was confirmed by H. Chaudhary and C. Inskipp in their January 2018 upper Mai valley survey (Inskipp et al. 2019).

In March 2022, Sukhani forest comprised a substantial area of intact forest in the tropical zone. However, this now isolated forest is seriously threatened by

conversion to tea and rubber plantations, as has happened to Geruwa forest.

Hunting is probably a significant threat to birds in the MVF. Relatively few individuals and species of Galliformes and Columbiformes, which are favoured birds for trapping and eating, were recorded during our survey, compared to other bird species. Gunshots were heard on 4 March from Hangetham forests. Feathers adjacent to the remains of a recent fire indicate that a satyr tragopan had been killed and eaten here.

Important Bird and Biodiversity Area (IBA) qualifying criteria

The current survey found that the Mai Valley Forests still qualify as an IBA based on three criteria.

The number of bird species recorded met the biome-restricted assemblage criteria for the Sino-Himalayan temperate and subtropical forest biomes (Baral & Inskipp 2005; BCN, DNPWC & DoFSC in press).

The MVF also qualifies as an IBA based on the restricted-range criterion (Baral & Inskipp 2005, BCN, DNPWC & DoFSC in press) as defined by BirdLife International (Stattersfield et al. 1998). Species with restricted-ranges are land-bird species which have had, throughout historical times (i.e. post-1800), a total global breeding range of less than 50,000 km² (an area about a third of the size of Nepal). BirdLife showed that restricted-range species often tend to occur together on islands or in isolated patches of a particular habitat. These areas of endemism are termed Endemic Bird Areas (EBAs) (Stattersfield et al. 1998). There are three EBAs in Nepal that support such concentrations of restricted-range bird species and are therefore of global conservation importance. These are the Western Himalayas, Central Himalayas and Eastern Himalayas EBAs. In the Mai valley, four restricted-range species have been recorded in recent years, including in this survey, and extensive suitable habitat occurs for all of them: yellow-vented warbler and broad-billed warbler from the Eastern Himalayas EBA, and hoary-throated barwing from the Central Himalayas EBA. Nepal cupwing, another species from the Central Himalayas EBA, was first recorded in March 2015 (Tek Bahadur Gurung Mighi in Inskipp et al. 2016). A pair of this species was also found in this survey in the lower Mai valley and it seems likely it has been under-recorded in the past. Rufous-throated wren-babbler *Spelaeornis caudatus*, an additional species from the Eastern Himalayas EBA was recorded. There are very few MVF records since 1993. However, one was found singing from the ground in suitable breeding habitat in thick

undergrowth in mixed broadleaved lower temperate forest near Hangetham in this survey; large areas of similar habitat remain.

The MVF also now qualify as an IBA based on the globally threatened species criterion for one species. It was previously considered that significant populations of globally threatened species no longer occur in the MVF (BCN, DNPWC & DoFSC in press). However, the globally Vulnerable grey-crowned prinia, which had earlier only been recorded four times in MVF in 1979, 1982, 1989 (Inskipp & Inskipp 1991; Inskipp et al. 2016) and 1999 (Perlman 1999a), was located at three new localities in the lower Mai valley in this survey. It is likely this species has been overlooked in the past as a number of areas of suitable habitat were observed during the 2022 survey.

Value of the tropical forest for birds

The tropical forest comprises sal *Shorea robusta* and semi-evergreen, mixed broadleaved forest. Although it is now fragmented and much reduced in area, the remaining tropical forest is important for a number of bird species, especially the Sukhani semi-evergreen, mixed broadleaved forest which is by far the largest remaining tropical forest. Notable species recorded during this survey were the globally near-threatened Alexandrine parakeet, restricted-range species Nepal cupwing (winter), nationally threatened barred cuckoo-dove, Asian fairy-bluebird, white-throated bulbul, slaty-bellied tesia, yellow-vented warbler, yellow-bellied warbler, lesser necklaced laughingthrush, greater necklaced laughingthrush, silver-eared mesia, yellow-vented flowerpecker and the nationally near-threatened collared falconet and sapphire flycatcher.

5 | Conclusions

This survey of the lower Mai valley found that extensive and intact subtropical and lower temperate forests, important for birds, still remain. These comprise semi-evergreen, mixed broadleaves, with some bamboo and other thick undergrowth in places.

Tropical forests of sal *Shorea robusta* and semi-evergreen, mixed broadleaves have been reduced and fragmented as a result of replacement by tea and rubber plantations and to a lesser extent because of the spread of other agriculture. However, one remaining forest, Sukhani, which comprises semi-evergreen, mixed broadleaved forest, is still important for a number of bird species, although it is highly threatened.

Hunting is probably a significant threat to bird species in the MVF.

Despite loss and degradation of some forests, especially in the tropical zone, MVF still qualify as an IBA based on the biome-restricted species assemblage, globally threatened species and restricted-range species criteria.

The Mai Valley Hydroelectric project which became operational in 2015, has severely damaged the river-bed, which has caused serious declines in river birds.

The Mai valley forests IBA is still outside the protected area network and so the future of these forests and their populations of birds and other wildlife are uncertain and are at risk of survival. While Nepal has a very good system of protected areas covering over 23 per cent of the country, the species-rich semi-evergreen, mixed broadleaved forests in the tropical and subtropical zones are still not represented. Including the MVF in the protected area system would ensure the conservation of these forests, which are especially important for birds and other wildlife. This recommendation for the protection of the whole of Mai valley forests IBA was also made in Inskipp (1989); Inskipp and Baral (2019), and Joshi et al. (2022). Establishing a conservation area that comprises all of the Mai Valley Forests Important Bird and Biodiversity Area is highly recommended. such as the Annapurna Conservation Area, which is based on participation by local communities.

Future research

Further bird surveys covering the entire altitudinal range of the IBA are likely to reveal more bird species, for example possibilities are White-spectacled Warbler *Phylloscopus intermedius* (altitudinal migrant) and Himalayan Forest Thrush (winter visitor) *Zoothera salimalii*, both of which would be new species for Nepal. A survey of the tropical and subtropical forests on the steep valley sides between Lamitar and Mai Besi is highly recommended as these forests seem to be intact and so far, have not been surveyed for birds.

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Authors' contributions

Acharya, S., Giri, T. and Inskipp, C. collected the data and compiled the bird species list; Acharya, S. and Giri, T. identified almost all of the bird species and took photographs of many species; Inskipp, C. wrote the manuscript. All authors contributed to the drafts and gave final approval for publication.

Conflicts of interest

Authors declare no conflict of interest.

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Appendix

Checklist of bird species recorded in Mai Valley Forests Important Bird and Biodiversity Area 01 to 10 March 2022

Vernacular name	Scientific name	Threat status	Biome-restricted species+	Status*
hill partridge	<i>Arborophila torqueola</i>		x	r
red junglefowl	<i>Gallus gallus</i>			r
satyr tragopan	<i>Tragopan satyra</i>	NT/VU	x	am
kalij pheasant	<i>Lophura leucomelanos</i>			am
goosander	<i>Mergus merganser</i>			wv, r
common pigeon	<i>Columba livia</i>			am
common woodpigeon	<i>Columba palumbus</i>			wv
oriental turtle-dove	<i>Streptopelia orientalis</i>			am, wv
western spotted dove	<i>Spilopelia suratensis</i>			r
barred cuckoo-dove	<i>Macropygia unchall</i>	VU		r
grey-capped emerald dove	<i>Chalcophaps indica</i>			r
wedge-tailed green-pigeon	<i>Treron sphenurus</i>			r
crested treeswift	<i>Hemiprocne coronata</i>			r
Asian palm-swift	<i>Cypsiurus balasiensis</i>			r
house swift	<i>Apus nipalensis</i>			am
green-billed malkoha	<i>Phaenicophaeus tristis</i>			am
banded bay cuckoo	<i>Cacomantis sonneratii</i>			sv
large hawk-cuckoo	<i>Hierococcyx sparveriooides</i>			sv
black ibis	<i>Pseudibis papillosa</i>			r
Asian woollyneck	<i>Ciconia episcopus</i>	NT/NT		r
Indian pond-heron	<i>Ardeola grayii</i>			r
cattle egret	<i>Bubulcus ibis</i>			r
little egret	<i>Egretta garzetta</i>			r
little cormorant	<i>Microcarbo niger</i>			r, wv, pm
river lapwing	<i>Vanellus duvaucelii</i>	NT/NT		r
red-wattled lapwing	<i>Vanellus indicus</i>			r
green sandpiper	<i>Tringa ochropus</i>			wv, pm
brown boobook	<i>Ninox scutulata</i>			r
collared owlet	<i>Glaucidium brodiei</i>			r
Asian barred owlet	<i>Glaucidium cuculoides</i>			r
jungle owlet	<i>Glaucidium radiatum</i>			r
spotted owlet	<i>Athene brama</i>			r
collared scops-owl	<i>Otus lettia</i>			r
mountain scops-owl	<i>Otus spilocephalus</i>			r
Oriental honey-buzzard	<i>Pernis ptilorhynchus</i>			r, pm
crested serpent-eagle	<i>Spilornis cheela</i>			am
black eagle	<i>Ictinaetus malaiensis</i>			r
Bonelli's eagle	<i>Aquila fasciata</i>			r
booted eagle	<i>Hieraaetus pennatus</i>			wv, pm
shikra	<i>Accipiter badius</i>			r
Eurasian sparrowhawk	<i>Accipiter nisus</i>			r, wv, pm
northern goshawk	<i>Accipiter gentilis</i>			r
black kite	<i>Milvus migrans</i>			r, pm
Himalayan buzzard	<i>Buteo refectus</i>			wv, pm, , r?
long-legged buzzard	<i>Buteo rufinus</i>			wv, pm

common hoopoe	<i>Upupa epops</i>			am
blue-bearded bee-eater	<i>Nyctyornis athertoni</i>			r
chestnut-headed bee-eater	<i>Merops leschenaulti</i>			sv, r
Indian roller	<i>Coracias benghalensis</i>			r
Indochinese roller	<i>Coracias affinis</i>			r
common kingfisher	<i>Alcedo atthis</i>			r
crested kingfisher	<i>Megaceryle lugubris</i>			am
white-breasted kingfisher	<i>Halcyon smyrnensis</i>			r
coppersmith barbet	<i>Psilopogon haemacephalus</i>			r
great barbet	<i>Psilopogon virens</i>			r
lineated barbet	<i>Psilopogon lineatus</i>			r
blue-throated barbet	<i>Psilopogon asiaticus</i>		x	r
white-browed piculet	<i>Sasia ochracea</i>	CR		r
speckled piculet	<i>Picumnus innominatus</i>			r
greater flameback	<i>Chrysocolaptes guttacristatus</i>			r
greater yellownape	<i>Chrysophlegma flavinucha</i>			r
lesser yellownape	<i>Picus chlorolophus</i>			r
black-naped woodpecker	<i>Picus guerini</i>			r
grey-capped woodpecker	<i>Picoides canicapillus</i>			r
fulvous-breasted woodpecker	<i>Dendrocopos macei</i>			r
Darjeeling woodpecker	<i>Dendrocopos darjellensis</i>		x	r
collared falconet	<i>Microhierax caerulescens</i>	NT		r
common kestrel	<i>Falco tinnunculus</i>			r, pm, wv
slaty-headed parakeet	<i>Psittacula himalayana</i>		x	am
plum-headed parakeet	<i>Psittacula cyanocephala</i>			r
Alexandrine parakeet	<i>Psittacula eupatria</i>	NT,/ NT		r
rose-ringed parakeet	<i>Psittacula krameri</i>			r
maroon oriole	<i>Oriolus traillii</i>		x	am
black-hooded oriole	<i>Oriolus xanthornus</i>			r
black-headed shrike-babbler	<i>Pteruthius rufiventer</i>	VU	x	r
white-browed shrike-babbler	<i>Pteruthius aeralatus</i>			am
green shrike-babbler	<i>Pteruthius xanthochlorus</i>		x	r
black-eared shrike-babbler	<i>Pteruthius melanotis</i>			am
white-bellied erpornis	<i>Erpornis zantholeuca</i>			r
short-billed minivet	<i>Pericrocotus brevirostris</i>		x	r
long-tailed minivet	<i>Pericrocotus ethologus</i>			am
scarlet minivet	<i>Pericrocotus flammeus</i>			r
Indian cuckooshrike	<i>Coracina macei</i>			am
black-winged cuckooshrike	<i>Lalage melaschistos</i>		x	am
bar-winged flycatcher-shrike	<i>Hemipus picatus</i>			r
large woodshrike	<i>Tephrodornis virgatus</i>			r
common iora	<i>Aegithina tiphia</i>			r
white-throated fantail	<i>Rhipidura albicollis</i>			r
ashy drongo	<i>Dicrurus leucophaeus</i>			r, sv
bronzed drongo	<i>Dicrurus aeneus</i>			r
lesser racquet-tailed drongo	<i>Dicrurus remifer</i>			r
hair-crested drongo	<i>Dicrurus hottentottus</i>			r
greater racquet-tailed drongo	<i>Dicrurus paradiseus</i>			r
black-naped monarch	<i>Hypothymis azurea</i>			r, sv
brown shrike	<i>Lanius cristatus</i>			wv
long-tailed shrike	<i>Lanius schach</i>			r
grey-backed shrike	<i>Lanius tephronotus</i>			am

rufous treepie	<i>Dendrocitta vagabunda</i>			r
grey treepie	<i>Dendrocitta formosae</i>		x	r
red-billed blue magpie	<i>Urocissa erythroryncha</i>			r
common green magpie	<i>Cissa chinensis</i>			r
large-billed crow	<i>Corvus macrorhynchos</i>			am
yellow-bellied fairy-fantail	<i>Chelidorhynch hypoxanthus</i>			am
grey-headed canary-flycatcher	<i>Culicicapa ceylonensis</i>			am, sv
yellow-browed tit	<i>Sylvioparus modestus</i>		x	am
coal tit	<i>Periparus ater</i>			am
green-backed tit	<i>Parus monticolus</i>		x	am
great tit	<i>Parus major</i>			am
black-lored tit	<i>Machlolophus xanthogenys</i>			am
striated prinia	<i>Prinia crinigera</i>		x	am
black-throated prinia	<i>Prinia atrogularis</i>			r
grey-crowned prinia	<i>Prinia cinereocapilla</i>	VU/ CR		r
grey-breasted prinia	<i>Prinia hodgsonii</i>			r
common tailorbird	<i>Orthotomus sutorius</i>			r
thick-billed warbler	<i>Arundinax aedon</i>			wv
Nepal cupwing	<i>Pnoepyga immaculata</i>	RR		am
pygmy cupwing	<i>Pnoepyga pusilla</i>			am
Asian house martin	<i>Delichon dasypus</i>			am
Nepal house martin	<i>Delichon nipalense</i>		x	am
barn swallow	<i>Hirundo rustica</i>			r, sv
red-rumped swallow	<i>Cecropis daurica</i>			am
white-throated bulbul	<i>Alophoixus flaveolus</i>	EN	x	r
ashy bulbul	<i>Hemixos flavala</i>			r
mountain bulbul	<i>Ixos mccllellandii</i>			r
black bulbul	<i>Hypsipetes leucocephalus</i>		x	r
black-crested bulbul	<i>Pycnonotus flaviventris</i>			r
Himalayan bulbul	<i>Pycnonotus leucogenys</i>		x	r
red-vented bulbul	<i>Pycnonotus cafer</i>			r
mountain tailorbird	<i>Phyllergates cucullatus</i>	DD		r?
Hume's leaf-warbler	<i>Phylloscopus humei</i>			am, pm
lemon-rumped leaf-warbler	<i>Phylloscopus chloronotus</i>			am
buff-barred warbler	<i>Phylloscopus pulcher</i>		x	am
ashy-throated Wwarbler	<i>Phylloscopus maculipennis</i>		x	am
dusky warbler	<i>Phylloscopus fuscatus</i>			wv
Tickell's leaf-warbler	<i>Phylloscopus affinis</i>			am
green-crowned warbler	<i>Phylloscopus burkii</i>			am
Whistler's warbler	<i>Phylloscopus whistleri</i>			am
chestnut-crowned warbler	<i>Phylloscopus castaniceps</i>			am
greenish warbler	<i>Phylloscopus trochiloides</i>			sv, wv, pm
yellow-vented warbler	<i>Phylloscopus cantator</i>	RR/ EN		r
Blyth's leaf-warbler	<i>Phylloscopus reguloides</i>			am
grey-hooded warbler	<i>Phylloscopus xanthoschistos</i>		x	am
slaty-bellied tesia	<i>Tesia olivea</i>	CR	x	r
grey-bellied tesia	<i>Tesia cyaniventer</i>		x	am
chestnut-headed tesia	<i>Cettia castaneocoronata</i>		x	am
yellow-bellied warbler	<i>Abroscopus superciliaris</i>	VU		r?
grey-sided bush-warbler	<i>Cettia brunnifrons</i>		x	am
broad-billed warbler	<i>Tickellia hodgsoni</i>	RR/ EN		r?

aberrant bush-warbler	<i>Horornis flavolivaceus</i>		x	am
red-headed tit	<i>Aegithalos iredalei</i>		x	r
golden-breasted fulvetta	<i>Lioparus chrysotis</i>	VU	x	r
white-browed fulvetta	<i>Fulvetta vinipectus</i>		x	am
black-throated parrotbill	<i>Suthora nipalensis</i>			r
black-chinned yuhina	<i>Yuhina nigrimenta</i>	VU	x	r
stripe-throated yuhina	<i>Yuhina gularis</i>		x	am
whiskered yuhina	<i>Yuhina flavicollis</i>			am
rufous-vented yuhina	<i>Yuhina occipitalis</i>		x	am
Oriental white-eye	<i>Zosterops palpebrosus</i>			am
rufous-throated wren-babbler	<i>Spelaornis caudatus</i>	RR/ CR		r
white-browed scimitar-babbler	<i>Pomatorhinus schisticeps</i>			r
streak-breasted scimitar-babbler	<i>Pomatorhinus ruficollis</i>			r
rusty-cheeked scimitar-babbler	<i>Erythrogonys erythrogonys</i>		x	r
grey-throated babbler	<i>Stachyris nigriceps</i>			r
pin-striped tit-babbler	<i>Mixornis gularis</i>			r
black-chinned babbler	<i>Cyanoderma pyrrhops</i>			r
rufous-capped babbler	<i>Cyanoderma ruficeps</i>		x	r
rufous-winged fulvetta	<i>Schoeniparus castaneiceps</i>			am
puff-throated babbler	<i>Pellorneum ruficeps</i>			r
Nepal fulvetta	<i>Alcippe nipalensis</i>		x	am
jungle babbler	<i>Turdoides striata</i>			r
striated laughingthrush	<i>Grammatoptila striata</i>		x	r
lesser necklaced laughingthrush	<i>Garrulax monileger</i>	VU		r
greater necklaced laughingthrush	<i>Garrulax pectoralis</i>	VU		r
white-crested laughingthrush	<i>Garrulax leucolophus</i>			r
white-throated laughingthrush	<i>Garrulax albogularis</i>		x	r
scaly laughingthrush	<i>Trochalopteron subunicolor</i>	NT	x	r
streaked laughingthrush	<i>Trochalopteron lineatum</i>		x	r
black-faced laughingthrush	<i>Trochalopteron affine</i>		x	r
chestnut-crowned laughingthrush	<i>Trochalopteron erythrocephalum</i>			r
rufous sibia	<i>Heterophasia capistrata</i>		x	am
silver-eared mesia	<i>Leiothrix argentauris</i>	EN		r
red-billed leiothrix	<i>Leiothrix lutea</i>		x	r
red-tailed minla	<i>Minla ignocincta</i>		x	am
hoary-throated barwing	<i>Sibia nipalensis</i>	RR		r
blue-winged minla	<i>Siva cyanouroptera</i>		x	am
bar-throated minla	<i>Chrysominla strigula</i>		x	am
rusty-fronted barwing	<i>Actinodura egertoni</i>	EN	x	r
chestnut-bellied nuthatch	<i>Sitta cinnamoventris</i>			r
white-tailed nuthatch	<i>Sitta himalayensis</i>		x	am
velvet-fronted nuthatch	<i>Sitta frontalis</i>			r
wallcreeper	<i>Tichodroma muraria</i>			wv
chestnut-tailed starling	<i>Sturnia malabarica</i>			r
common myna	<i>Acridotheres tristis</i>			r
common hill myna	<i>Gracula religiosa</i>			r
white-collared blackbird	<i>Turdus albocinctus</i>		x	am
dusky thrush	<i>Turdus eunomus</i>			wv
black-breasted thrush	<i>Turdus dissimilis</i>			v
Oriental magpie-robin	<i>Copsychus saularis</i>			r
white-rumped shama	<i>Kittacincla malabarica</i>			r

rufous-bellied niltava	<i>Niltava sundara</i>		x	am
small niltava	<i>Niltava macgrigoriae</i>		x	am
verditer flycatcher	<i>Eumyias thalassinus</i>			am, sv
pale-chinned flycatcher	<i>Cyornis poliogenys</i>			r
Siberian rubythroat	<i>Calliope calliope</i>			wv, pm
white-tailed blue robin	<i>Myiomela leucura</i>		x	am
Himalayan bush-robin	<i>Tarsiger rufilatus</i>			am
golden bush-robin	<i>Tarsiger chrysaesus</i>		x	am
slaty-backed forktail	<i>Enicurus schistaceus</i>		x	r
black-backed forktail	<i>Enicurus immaculatus</i>			r
blue whistling-thrush	<i>Myophonus caeruleus</i>			am
slaty-blue flycatcher	<i>Ficedula tricolor</i>		x	am
pygmy blue-flycatcher	<i>Ficedula hodgsoni</i>			am
rufous-gorgeted flycatcher	<i>Ficedula strophciata</i>		x	am
sapphire flycatcher	<i>Ficedula sapphira</i>	NT	x	am
little pied flycatcher	<i>Ficedula westermanni</i>			am
red-throated Flycatcher	<i>Ficedula albicilla</i>			wv, pm
blue-fronted redstart	<i>Phoenicurus frontalis</i>			am
white-capped water-redstart	<i>Phoenicurus leucocephalus</i>			am
plumbeous water-redstart	<i>Phoenicurus fuliginosus</i>			am
black redstart	<i>Phoenicurus ochruros</i>			wv
Hodgson's redstart	<i>Phoenicurus hodgsoni</i>			wv, pm
chestnut-bellied rock-thrush	<i>Monticola rufiventris</i>			am
blue rock-thrush	<i>Monticola solitarius</i>			wv
grey bushchat	<i>Saxicola ferreus</i>			am
common stonechat	<i>Saxicola torquatus</i>			r, wv, pm
goldcrest	<i>Regulus regulus</i>			am
Asian fairy-bluebird	<i>Irena puella</i>	CR		r
golden-fronted leafbird	<i>Chloropsis aurifrons</i>			r
orange-bellied leafbird	<i>Chloropsis hardwickii</i>		x	r
yellow-vented flowerpecker	<i>Dicaeum chrysorrheum</i>	CR		r
plain flowerpecker	<i>Dicaeum minullum</i>			r
fire-breasted flowerpecker	<i>Dicaeum ignipectus</i>			r
streaked spiderhunter	<i>Arachnothera magna</i>		x	r
fire-tailed sunbird	<i>Aethopyga ignicauda</i>		x	am
green-tailed sunbird	<i>Aethopyga nipalensis</i>			am
crimson sunbird	<i>Aethopyga siparaja</i>			r
maroon-backed accentor	<i>Prunella immaculata</i>		x	wv
rufous-breasted accentor	<i>Prunella strophciata</i>		x	am
white-rumped munia	<i>Lonchura striata</i>			am
scaly-breasted munia	<i>Lonchura punctulata</i>			r
house sparrow	<i>Passer domesticus</i>			r
russet sparrow	<i>Passer cinnamomeus</i>			r
Eurasian tree sparrow	<i>Passer montanus</i>			am
olive-backed pipit	<i>Anthus hodgsoni</i>			am, wv
rosy pipit	<i>Anthus roseatus</i>			am
paddyfield pipit	<i>Anthus rufulus</i>			r
grey wagtail	<i>Motacilla cinerea</i>			am
citrine wagtail	<i>Motacilla citreola</i>			wv, pm
white-browed wagtail	<i>Motacilla maderaspatensis</i>			r
white wagtail	<i>Motacilla alba</i>			am, pm, wv
common rosefinch	<i>Carpodacus erythrinus</i>			wv

scarlet finch	<i>Carpodacus sipahi</i>	NT	xc	r
dark-breasted rosefinch	<i>Procarduelis nipalensis</i>		x	wv
yellow-breasted greenfinch	<i>Chloris spinoides</i>		x	wv
little bunting	<i>Emberiza pusilla</i>	VU		wv

Keys: Global threat status is in italics; National threat status is in normal font; CR- Critically Endangered; EN- Endangered; VU- Vulnerable; NT- Near-threatened; RR- Global restricted-range species

*Status refers to status in the Mai valley: am = altitudinal migrant, sv = summer visitor, wv = winter visitor, r = resident and pm = passage migrant. ? indicates uncertainty about the Status

+ Biome-restricted species from the Sino-Himalayan subtropical forest biome and Sino-Himalayan temperate forest biome