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### REVIEW

#### NEPAL'S NATIONAL RED LIST OF BIRDS

Carol Inskipp, Hem Sagar Baral, Tim Inskipp, Ambika Prasad Khatiwada, Monsoon Pokharel Khatiwada, Laxman Prasad Poudyal & Rajan Amin

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## NEPAL'S NATIONAL RED LIST OF BIRDS

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**Abstract:** The main objectives of the Nepal National Bird Red Data Book were to provide comprehensive and up-to-date accounts of all the bird species found in Nepal, assess their status applying the IUCN Guidelines at Regional Levels, identify threats to all bird species and recommend the most practical measures for their conservation. It is hoped that the Bird RDB will help Nepal achieve the Convention on Biological Diversity target of preventing the extinction of known threatened species and improving their conservation status. As population changes of Nepal's birds have been studied for only a few species, assessments of species' national status were mainly made by assessing changes in distribution. Species distribution maps were produced for all of Nepal's bird species except vagrants and compared to maps that were produced in 1991 using the same mapping system. Of the 878 bird species recorded, 168 species (19%) were assessed as nationally threatened. These comprise 68 (40%) Critically Endangered species, 38 (23%) Endangered species and 62 (37%) Vulnerable species. A total of 62 species was considered Near Threatened and 22 species Data Deficient. Over 55% of the threatened birds are lowland grassland specialists, 25% are wetland birds and 24% tropical and sub-tropical broadleaved forest birds. Larger birds appear to be more threatened than smaller birds with 98 (25%) non-passerine species threatened and 67 (14%) passerine species. Habitat loss, degradation and fragmentation are the most important threats. Other threats include chemical poisoning, over-exploitation, climate change, hydropower, invasive species, intensification of agriculture, disturbance, and limited conservation measures and research. Measures to address these threats are described. It was also concluded that re-assessments of the status of certain bird groups carried out every five years and the setting up of a national online system for storing and reporting bird sightings would be useful.

**Keywords:** Biodiversity, birds, conservation, Nepal, Red List of Threatened Species.

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## INTRODUCTION

The IUCN Red List of Threatened Species is internationally recognised as the world's most authoritative and objective inventory for classifying species' extinction risk at the global scale. It is however not always possible to integrate this information into conservation planning and priority-setting at national level, where most conservation policies are implemented. Based on the same robust and objective process, National Red Lists can provide information about the rate of change of a nation's biodiversity over time, assess the extinction risk of native species and help in the development of effective conservation policies and action plans. The approach can provide an excellent basis for measuring a country's progress towards achieving the Convention on Biological Diversity (CBD) target "By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained".

Nepal harbours an extraordinary variety of landscapes, habitats, wildlife and cultures. Although it occupies only 0.1% of the world's total land mass, its diverse physiographic features range from the Arctic high Himalayan peaks (the highest terrestrial ecosystem in the world) to the tropical lowlands of the Terai. Also important is Nepal's geographical position in the central Himalaya, in a region of overlap between the Palearctic realm to the north and the Oriental (Indomalayan) realm to the south. In a relatively small area of 147,181km<sup>2</sup> Nepal is home to 3.2% and 1.1% of the world's known flora and fauna, respectively (MoFSc 2014), including around 8% of the world's known bird species (Inskipp et al. 2016).

A large proportion of over 23% of the country's landmass is designated as protected areas, with 10 national parks, three wildlife reserves, one hunting reserve and six conservation areas (Fig. 1). Between 2002 and 2013 eight areas were declared protected forests (1,336.85km<sup>2</sup>); and eight additional areas (6,700.96km<sup>2</sup>) have been proposed by the Government of Nepal because of their high biodiversity, wildlife habitats, and corridors (DoF 2015). In addition, 36 Important Bird and Biodiversity Areas (IBAs) have been identified (Baral & Inskipp 2005; BCN & DNPWC in prep.).

### Nepal bird Red Data Book

In April 2011 a team consisting mainly of Nepalis, and also three British scientists embarked on a project to compile the Nepal Bird Red Data Book (Inskipp et

al. 2016), which was completed in February 2016. This Red List is the first comprehensive status assessment of all Nepal's bird species using the IUCN categories and criteria. The results from this assessment are presented here.

## MATERIALS AND METHODS

Initially a desk study was undertaken of published and unpublished literature to compile a comprehensive bibliography of over 2000 references (Inskipp 2015a). Using this bibliography, a Nepal bird species reference document, where each species was annotated with relevant references, was compiled (Inskipp 2015b). This document was used as the reference source to draft detailed species accounts for all species except vagrants, and to assess the threat status of all species.

Population changes of Nepal's birds have been studied for only a few species, all of which have been assessed as globally threatened by BirdLife International. Assessments of species' national status were therefore mainly made by assessing changes in distribution. Species distribution maps were produced for all of Nepal's bird species except vagrants. The same mapping system was used as in Inskipp & Inskipp (1991), which mapped all bird species recorded up to 1990. The country was divided into squares (based on geographical coordinates for ease of reference), each one being half a degree square. Where species were recorded in squares pre-1990 they were marked with a closed circle and where they were recorded post-1990 they were marked with a square. Where species were recorded both pre- and post-1990, the square and circle were both included in the half degree square. Assessments were then made of the status of most species by comparing distribution in pre-1990 and post-1990.

During the assessment process two national Red-List workshops were held in Chitwan National Park, in October 2012 (three days) and October 2015 (five days). These workshops were each attended by over 60 bird experts who provided records and comments on the species' assessments. These were the largest and longest-running gatherings primarily of Nepalese and with an interest on birds at different levels. Following the workshops, draft species accounts were posted on Himalayan Nature's website requesting observers to help update the accounts by sending us their records and by providing comments.

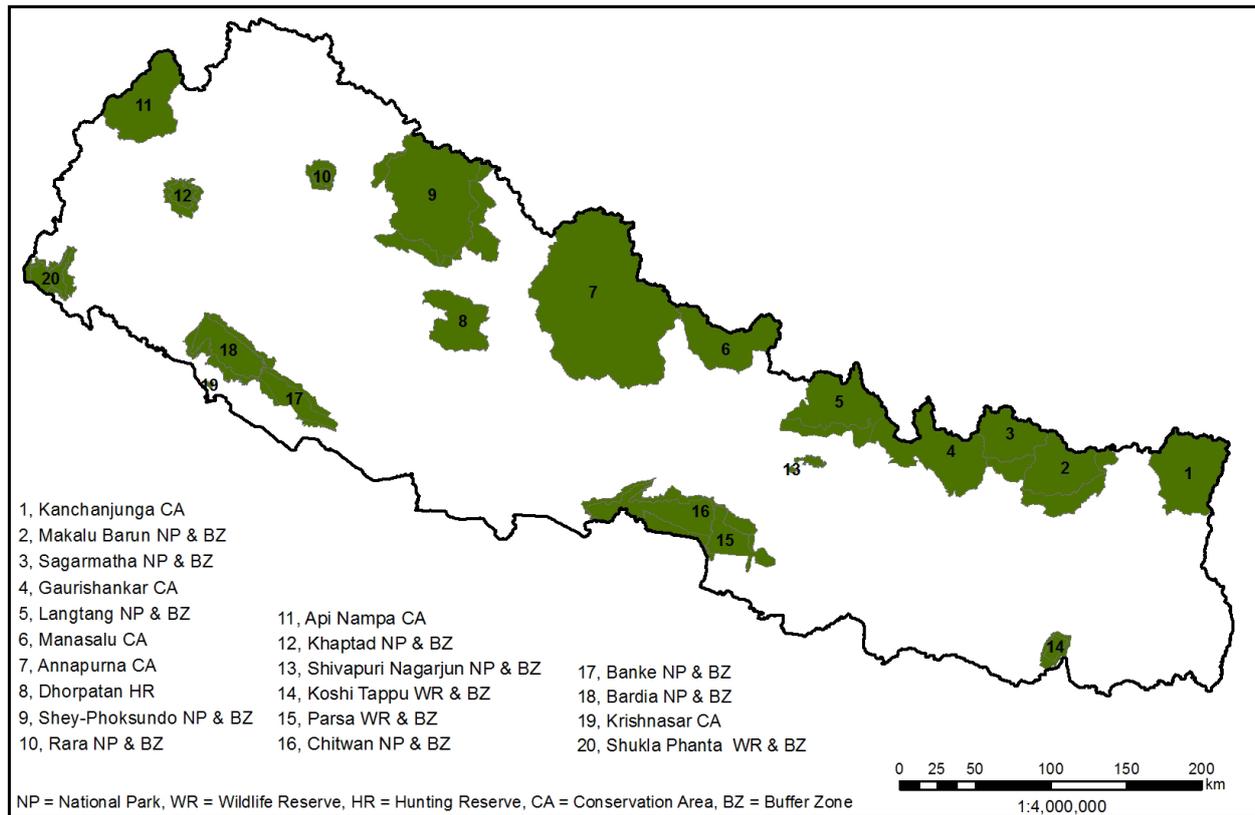


Figure 1. Protected areas of Nepal and buffer zones

## RESULTS

The species nomenclature used in the Nepal Bird Red Data Book follows names adopted by IUCN and BirdLife International in 2011, the year in which this project was initiated. Following this nomenclature, a total of 878 bird species has been recorded in Nepal. The total does not include the six species that have been split and are recognised in Grimmett et al. (2016). There are 74 vagrants (i.e., species which have been recorded 10 times or less).

BirdLife International (2015) has assessed 39 of Nepal's bird species as globally threatened, including two vagrants (Long-tailed Duck *Clangula hyemalis* and Indian Vulture *Gyps indicus*) and three Regionally Extirpated species (Appendix 1). Thirty-one species have been assessed as globally Near Threatened, including three vagrants (Eurasian Oystercatcher *Haematopus ostralegus*, Red Knot *Calidris canutus* and Curlew Sandpiper *C. ferruginea*; Appendix 1). Spiny Babbler *Turdoides nipalensis* is Nepal's only endemic bird species. It is fairly widespread and found from eastern to western Nepal (Grimmett et al. 2016; Inskipp et al. 2016).

Since 1990, a higher level of coverage of the country was achieved than the period up to 1990, which was to be expected considering the much larger number of observers, mainly Nepalis. The Terai and Kathmandu Valley are much better recorded than the mountains as most recorders live there. With the exception of two mountain conservation areas designated very recently (Api Nampa and Gaurishankar Conservation Areas) and Manaslu Conservation Area (designated in 1998), mountain protected areas (national parks, Dhorpatan Hunting Reserve and conservation areas) are much better recorded than areas outside. This is especially true of high altitude areas.

Of the 878 bird species recorded in Nepal, 168 species (19%) were assessed as nationally threatened. The nationally threatened species comprise 68 (40%) Critically Endangered species, 38 (23%) Endangered species and 62 (37%) Vulnerable species (Appendix 1). Over 55% of the threatened birds are lowland grassland specialist birds, 25% are wetland birds and 24% tropical and sub-tropical broadleaved forest birds.

A total of 22 species (2.5% of the total) including one globally threatened species were considered Data Deficient (Appendix 2).

A total of 62 species was assessed as Near Threatened (Appendix 1). Eight species (0.05% of the total threatened) are Regionally Extirpated; none of these has been recorded in Nepal since the 19<sup>th</sup> century (Appendix 1). However, Red-faced Liocichla *Liocichla phoenicea* was re-discovered in the Mahabharat range, Chitwan District, since the publication of this Red List data book (Mahato 2016; Baral et al. in prep.). Red-faced Liocichla is now considered Critically Endangered in Nepal.

Ten species are very rare passage migrants and sometimes over-winter, but their recorded pattern of occurrence and numbers of individuals have not significantly changed since 1990. None of these species is globally or regionally threatened and Nepal seems to be on the fringe of their migratory routes so they have been assessed as Least Concern. These species are: Common Goldeneye *Bucephala clangula*, Common Shelduck *Tadorna tadorna*, Black-winged Stilt *Himantopus himantopus*, Pied Avocet *Recurvirostra avosetta*, Ruff *Philomachus pugnax*, Jack Snipe *Lymnocyptes minimus*, Long-billed Plover *Charadrius placidus*, White-winged Tern *Chlidonias leucopterus*, Merlin *Falco columbarius* and Rufous-tailed Shrike *Lanius isabellinus*.

Larger birds appear to be more threatened than smaller birds with 98 (25%) non-passerine species threatened (Fig. 2) and 67 (14%) passerine species. Among the passerines, the babblers (36%) and warblers (17%) are the most threatened.

The national distributional range of a number of

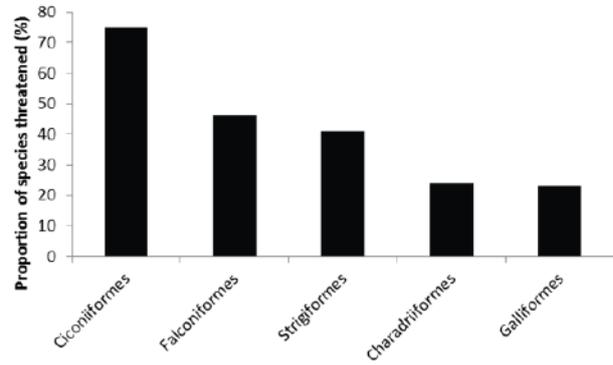


Figure 2. The most threatened non-passerine orders: Ciconiiformes (storks), Falconiformes (birds of prey), Strigiformes (owls), Charadriiformes (waders, gulls, terns, Indian Skimmer), Galliformes (pheasants and partridges)

species has been significantly extended to the west, for example Cheer Pheasant *Catreus wallichii*, a west Himalayan species, which has been assessed as globally Vulnerable (BirdLife International 2015) and nationally Endangered. Its national distribution has been extended west to the Indian border and north to Humla District near the Tibetan border (Fig. 3).

The known global distribution of some species has also been significantly extended to the west, e.g., Darjeeling Woodpecker *Dendrocopos darjellensis*, a fairly common resident (assessed as Least Concern globally and nationally). Its distribution east of the Kali Gandaki valley has not changed significantly pre-1990 compared to post-1990 (Fig. 4).

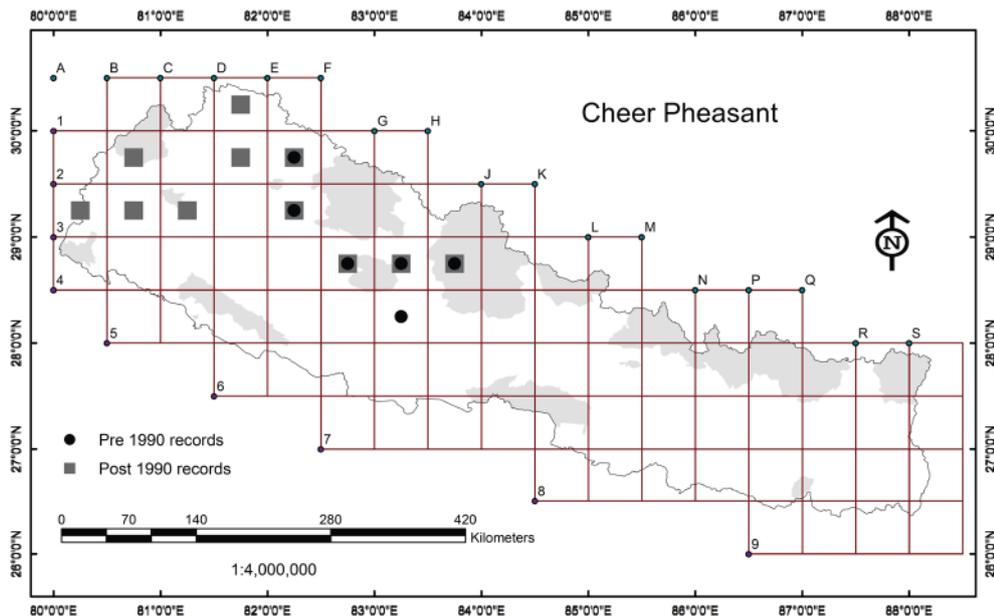


Figure 3. Distribution of Cheer Pheasant *Catreus wallichii* pre- and post-1990

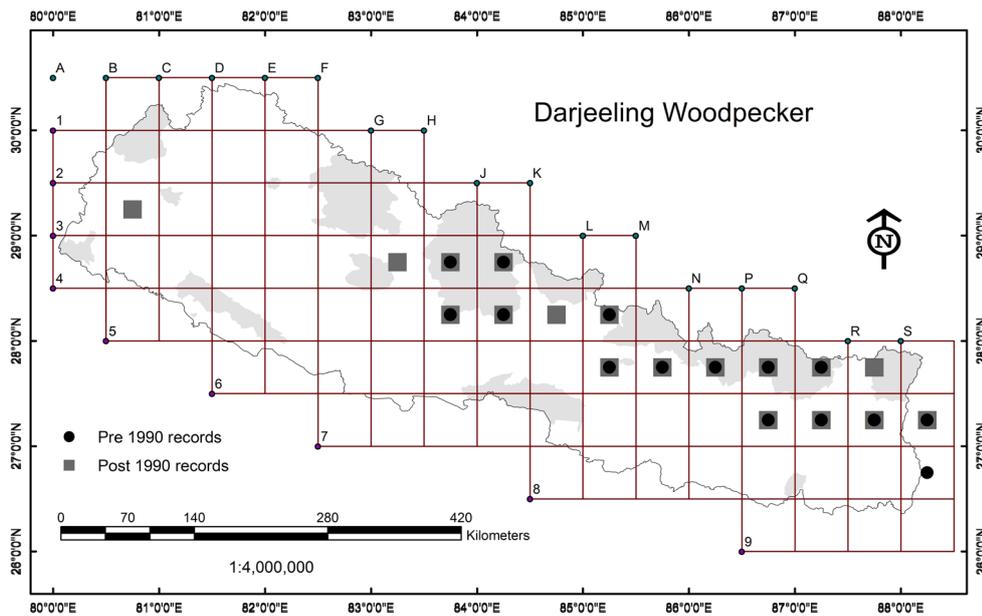


Figure 4. Distribution of Darjeeling Woodpecker *Dendrocopos darjellensis* pre- and post-1990

Despite improved coverage, the distributions of some species, especially birds of prey, were found to have reduced in east-central and eastern Nepal compared to western Nepal. One example is Red-headed Vulture *Sarcogyps calvus* (Fig. 5). This vulture is considered Critically Endangered globally (BirdLife International 2015) and Endangered nationally. As with all vulture species in Nepal there has been an especially increased survey effort. It is still resident and widespread from the mid-west to the far west. The species is, however, now virtually absent from most areas east of Kathmandu. Declines of several other vulture species have also been greater in east-central and eastern Nepal than in the west, for example White-rumped Vulture *Gyps bengalensis* (globally and nationally Critically Endangered) (Fig. 6).

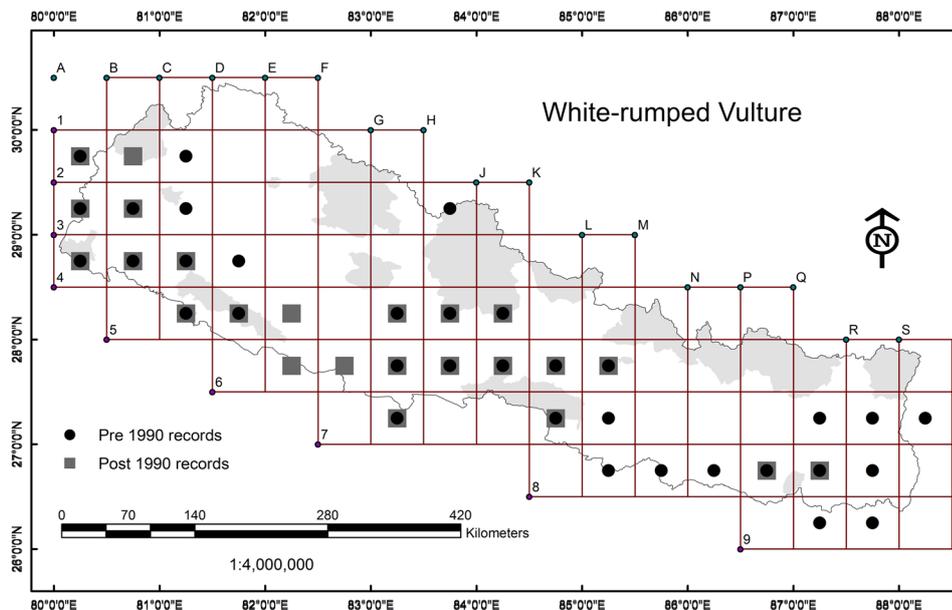
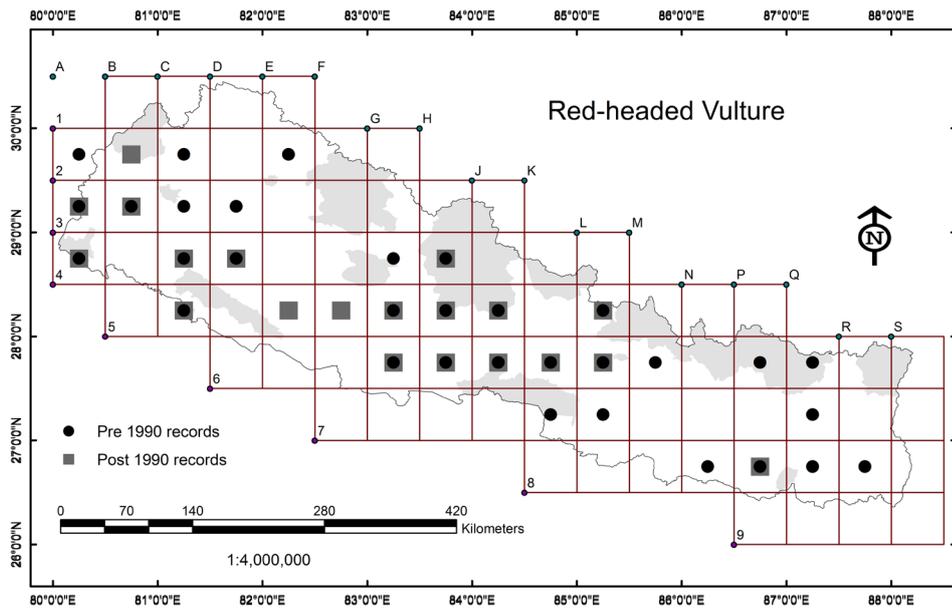
Several other birds of prey show similar changes in distribution post-1990 compared to pre-1990, with greater coverage resulting in new localities in the west but failing to confirm some pre-1990 localities in east-central Nepal and the east, for example Red-necked Falcon *Falco chicquera* (nationally Endangered) and Indian Spotted Eagle *Aquila hastata* (globally and nationally Vulnerable), see Figs. 7 and 8.

A total of 30 species is now only found or very largely found in protected areas and/or in buffer zones. Over half of these (17 species) are lowland grassland specialists including 12 nationally threatened and seven globally threatened species, highlighting the importance of protected areas for these species. The globally

threatened species are: Swamp Francolin *Francolinus gularis*, Bengal Florican *Houbaropsis bengalensis*, Lesser Florican *Sypheotides indica*, Jerdon's Babbler *Chrysomma altirostre*, Slender-billed Babbler *Turdoides longirostris*, Grey-crowned Prinia *Prinia cinereocapilla* and Yellow Weaver *Ploceus megarhynchus*. For example, Yellow Weaver (globally Vulnerable, nationally Critically Endangered) has been recorded regularly and breeds in Shukla Phanta Wildlife Reserve in the far west and has been recorded twice in Koshi Tappu Wildlife Reserve in the far-east (Fig. 10). Another example is Grey-crowned Prinia (globally Vulnerable, nationally Critically Endangered), which since 1990 has only been recorded in Bardia and Chitwan National Parks and Parsa Wildlife Reserve, with the exception of one record from Lendada, Makwanpur district (Fig. 11).

Rufous-vented Prinia *Prinia burnesii* (nationally Critically Endangered and globally Near Threatened) was discovered in Nepal in April 2005 and has been identified as a nationally endemic subspecies *nepalicola*. It is restricted to an isolated population in riverine grasslands in Koshi Tappu Wildlife Reserve (Baral et al. 2007, 2008).

In recent years a significant number of species have been found at higher altitudes than previously. This can be partly explained by improved coverage but also probably partly as a response to climate change. Several species from lower altitudes which have previously not been recorded in the Kathmandu Valley, or only recorded very rarely, are now resident or are regular



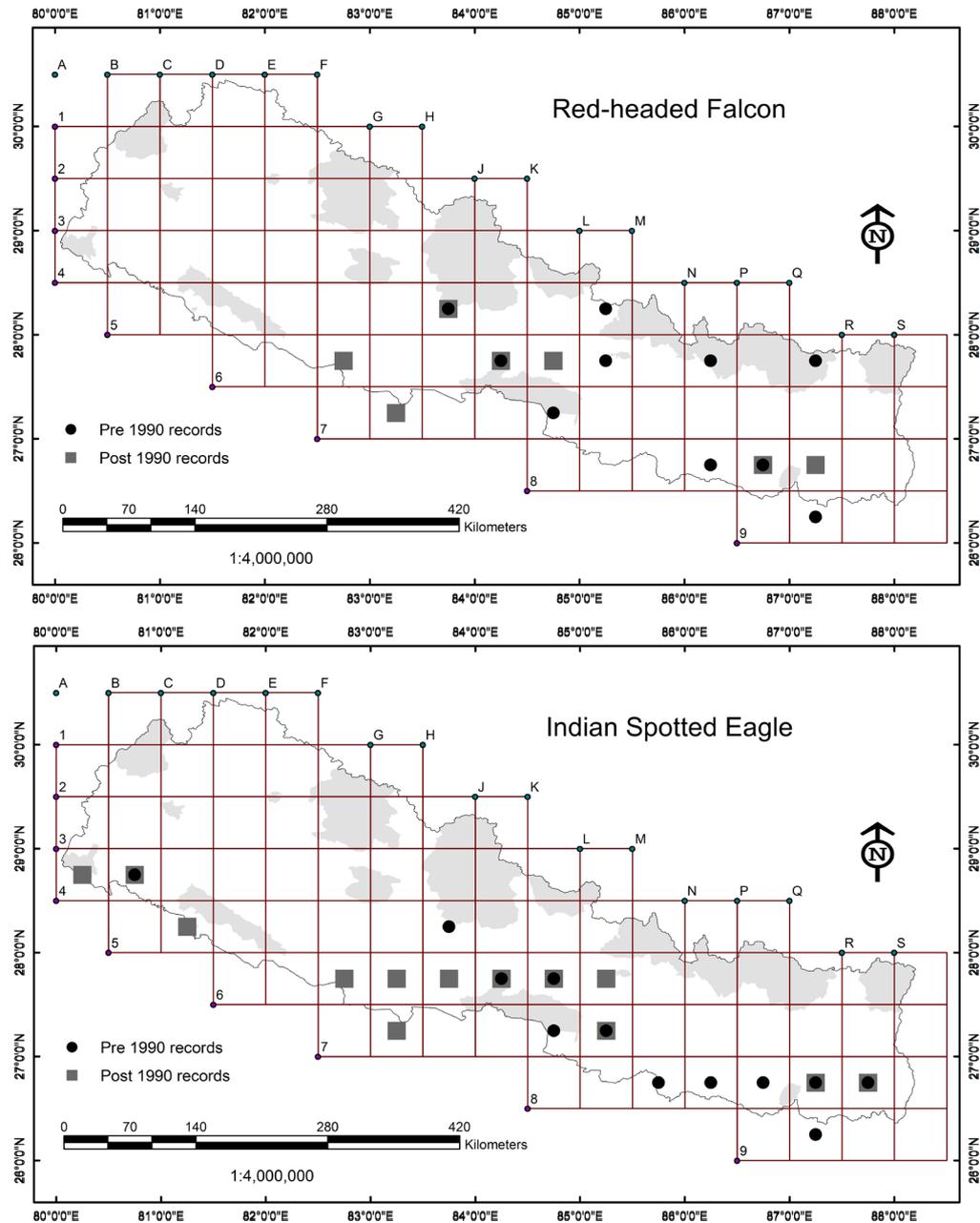
Figures 5 & 6. Distribution of Red-headed Vulture *Sarcogyps calvus* and White-rumped Vulture *Gyps bengalensis* pre- and post-1990

summer visitors, for example Pale Blue Flycatcher *Cyornis unicolor* and Greater Coucal *Centropus sinensis*. House Crow *Corvus splendens* was recorded moving up by an altitude of 136m annually on average from 2,000m to 4,200m between 1999 and 2011 by Acharya & Ghimirey (2013), who suggested that climate change was a possible reason for this upward movement.

**DISCUSSION**

**Threats to Nepal's birds**

Whilst Nepal is rich in biodiversity, it is one of the least developed countries in the world, ranked in the low human development category, positioned at 145 out of 187 countries and territories in 2014 (UNDP 2014). The country's rapidly increasing human population is putting huge pressure on natural resources and wildlife and with shortages of water and electricity; even meeting basic human needs is a struggle. The main threats to



Figures 7 & 8. Distribution of Red-necked Falcon *Falco chichquera* and Indian Spotted Eagle *Aquila hastata* pre- and post-1990

Nepal's birds include:

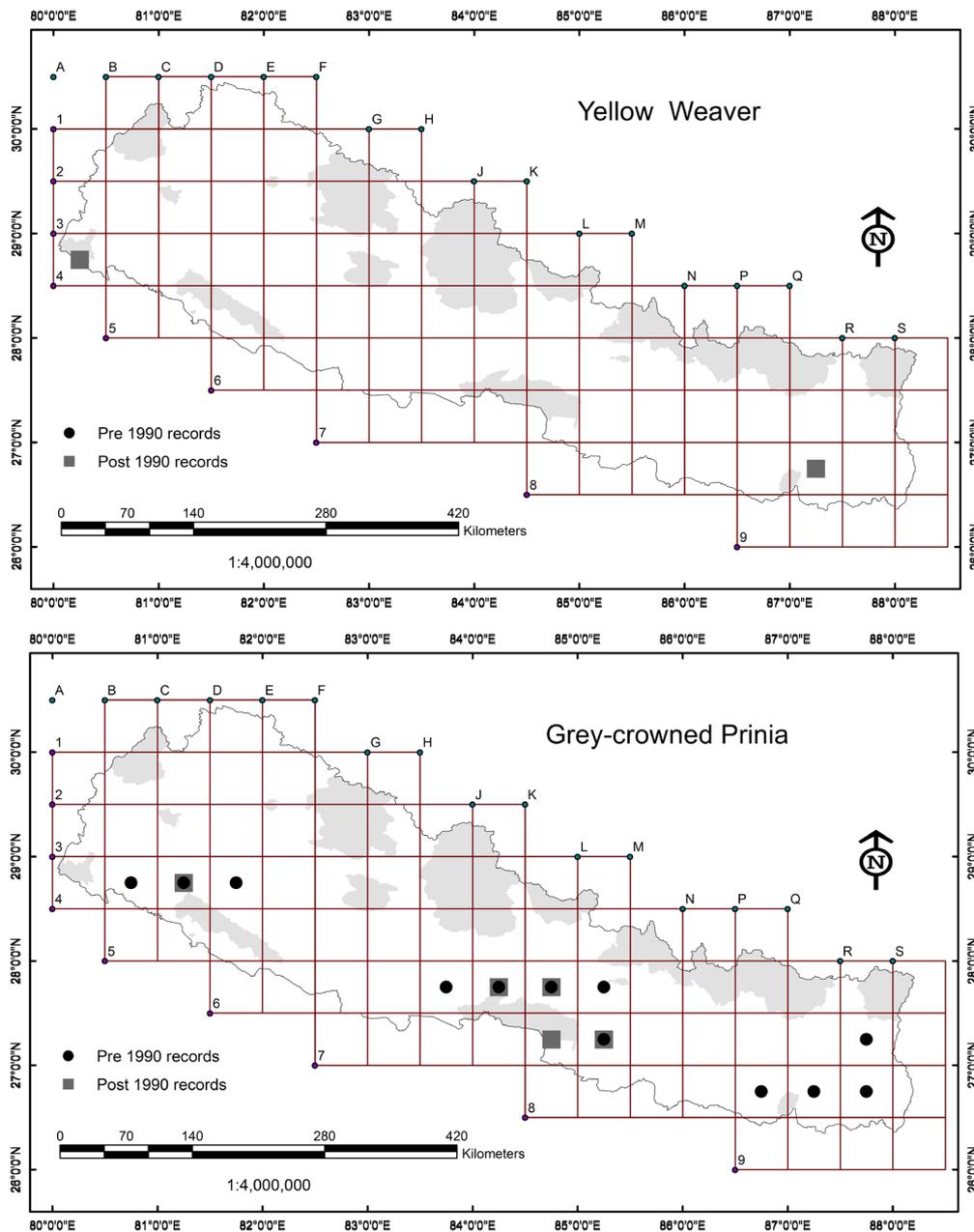
**Habitat loss, degradation and fragmentation**

Habitat loss, degradation and fragmentation are the most important threats to Nepal's birds. These include loss of forests, wetlands and grasslands due to the encroachment of settlements and especially due to agriculture and unsustainable resource extraction, such as logging for local and commercial use and sand and gravel mining of river beds, as well as natural processes.

Fragmentation of habitats is particularly affecting

lowland grassland bird specialists, such as Jerdon's Babbler *Chrysomma altirostre* (globally Vulnerable, nationally Critically Endangered) and Eastern Grass Owl *Tyto longimembris* (nationally Critically Endangered). Outside protected areas there are no significant remaining grassland areas that are capable of supporting lowland grassland specialists, as most of these grasslands are heavily grazed by domestic livestock, harvested for thatch or panelling walls, and subject to overwhelming levels of human disturbance (Baral 2001).

Forests and grasslands are being degraded by



Figures 9 & 10. Distribution of Yellow Weaver *Ploceus megarhynchus* and Grey-crowned Prinia *Prinia cinereocapilla* pre- and post-1990

overgrazing and excessive burning, and removal of undergrowth to provide fodder for livestock also threatens forests. One quarter of Nepal's forest area is heavily degraded (World Bank 2008). The 2015 India/Nepal dispute led to a blockade-like situation, which resulted in a dire fuel crisis. This caused widespread forest losses as people were forced to turn to wood for fuel.

Lowland grasslands in protected areas are suffering from inappropriate grassland management including intensive annual cutting and burning, and also ploughing,

which alter species composition (Baral 2001). Overgrazing by domestic livestock, fodder collection and human disturbance are also degrading grasslands (Baral 2000).

Currently, grassland management measures are carried out specifically for mammals and not for birds. For example, in Chitwan National Park's new management plan, cutting and/or controlled burning are planned to remove dry, coarse and unpalatable grasses and produce a new flush which will be highly palatable and nutritious for some mammals. However, these

practices are reducing the area of suitable grassland habitat for some globally threatened species such as Bengal Florican *Houbaropsis bengalensis*, which has declined in the park.

### Chemical poisoning

Water pollution from households and industrial discharges and agricultural run-off is seriously degrading lowland wetlands. Diffuse pollution from fertilisers has led to over-enrichment in many wetlands in the lowlands. The impacts of diffuse pollution from pesticides in agricultural run-off on wildlife are poorly understood in Nepal, but are likely to be highly significant and could be a major factor in the decline of large wading birds.

In Europe, use of some pesticides has been shown to cause widespread declines of numerous bird species, many of which were previously common, including birds of prey and finches (Tucker & Heath 1994). While the effect of pesticides on wildlife and the environment in Nepal is poorly known, the over-use of pesticides in the country and evidence of failing to adhere to government regulations for pesticide use has been well documented (e.g., Palikhe 2005; Nepal Forum for Justice 2006; Paudel 2009a,b).

Pesticides may be a major factor in the widespread decline of birds of prey, although this has still to be proven.

The major cause of decline of White-rumped Vulture and other *Gyps* vultures has been proved to be the use of the anti-inflammatory drug, diclofenac, in livestock (Oaks et al. 2004; Shultz et al. 2004; Cuthbert et al. 2006). The sharp decline in the Red-headed Vulture population in India has also been attributed to diclofenac use (Cuthbert et al. 2006). Poisoning of carcasses may be a contributory factor in vulture declines.

### Over-exploitation

Hunting and trapping are contributing to the decline of many bird species identified as nationally threatened and in some areas these activities are increasing as traditional values wane. Galliformes (pheasants, partridges and francolins) are popular targets for hunters and trappers in some parts of Nepal, resulting in much reduced populations, even in protected areas, for example Satyr Tragopan *Tragopan satyra* (globally and nationally Vulnerable) in Kanchenjunga Conservation Area (Inskipp et al. 2008). The hunting of owls for meat has been reported; as they are cheaper than chicken they are preferred by many people (Paudel 2016).

Some birds are hunted for traditional medicine. For example, the oil from the casque and the beak of Great

Hornbill *Buceros bicornis* (globally Near-threatened, nationally Endangered) is much valued (Fleming et al. 1984). Eggs are stolen from species such as Sarus Crane *Grus antigone* (globally and nationally Vulnerable).

Nepal is often a safe market for illegal bird traders. Several nationally threatened bird species, including Cheer Pheasant *Catreus wallichii* and owls, have been found to be traded (Thapa & Thakuri 2009).

Overfishing, which has led to a marked fish decline in wetlands especially in the Terai, is a major threat to all large fish-eating birds including Pallas's Fish Eagle *Haliaeetus leucoryphus* and Indian Skimmer *Rynchops albicollis* (both globally Vulnerable and nationally Critically Endangered).

The gathering of NTFPs (non-timber forest products), including the highly valuable yarsagumba *Ophiocordyceps sinensis* and MAPs (medicinal and aromatic plants), by influxes of large numbers of people annually, is affecting many high-altitude protected areas. This is leading to high levels of disturbance to birds, including poaching (especially of pheasants), and forest losses and degradation due to fuelwood collection (BCN and DNPWC in prep.).

### Climate change

The impacts of climate change on Nepal's birds are poorly understood. Some species will be able to migrate through fragmented landscapes whilst others may not be able to do so. Some of Nepal's threatened birds are largely confined to protected areas, notably grassland birds. As the climate changes, habitats, particularly floodplain grasslands, in these protected areas may eventually become no longer suitable for these birds. Furthermore, as natural habitats outside protected areas have been converted to agriculture or development, the grassland birds will have no suitable habitat to colonise (BCN & DNPWC 2011).

The gradual drying-out of lowland habitats resulting from climate change has been identified as a long-term threat to successful breeding of Sarus Crane *Grus antigone* (Gopi Sundar pers. comm. to Carol Inskipp, December 2015). Many forest birds, including a high proportion of threatened forest species, depend on moist forests and are likely to lose their habitat if the climate becomes drier (BCN & DNPWC 2011).

### Hydropower

Nepal's high annual precipitation and dense river networks provide high potential for hydroelectricity resulting in a significant increase in hydropower plants in recent years. Dams can inundate important habitats,

lead to associated development, displace people into new sensitive habitats, and can alter local microclimates.

### Intensification of agriculture

In recent years, agriculture has been intensified in many areas, especially in the Terai. This has led to a loss of uncultivated field corners and edges, which often supported bushes and herbaceous vegetation. Trees have been lost from field boundaries. All these microhabitats form valuable feeding and breeding sites for birds and, as a result, many farmland birds have undergone significant declines (Inskipp & Baral 2011).

### Invasive species

The spread of invasive plant species is making it very difficult for some bird species to feed. One rapidly spreading invasive is *Mikania micrantha*, which is blanketing Terai floodplain vegetation (Murphy et al. 2013). Water Hyacinth *Eichhornia crassipes* rapidly covers water surfaces and creates feeding problems for surface-feeding waterbirds (Dahal 2007).

### Disturbance

Disturbance is a widespread threat to bird populations, especially during the breeding season, for example exploitation of river beds for gravel is a serious threat to riverine breeding birds, including Black-bellied Tern *Sterna acuticauda* (globally Endangered, nationally Critically Endangered).

### Persecution

Some bird species, notably owls, are persecuted because of negative social and cultural beliefs, while some young people kill birds, often using catapults purely for entertainment (Acharya & Ghimirey 2009). Persecution by humans may be a contributory factor in vulture declines.

### Limited conservation measures and lack of bird research

Only nine bird species are legally protected in Nepal and are covered by the National Parks and Wildlife Conservation Act (1973): White Stork *Ciconia ciconia*, Black Stork *Ciconia nigra*, Himalayan Monal *Lophophorus impejanus*, Satyr Tragopan *Tragopan satyra*, Cheer Pheasant *Catreus wallichii*, Bengal Florican *Houbaropsis bengalensis*, Lesser Florican *Sypheotides indicus*, Sarus Crane *Grus antigone*, and Great Hornbill *Buceros bicornis*.

Nepal's national policy and research priorities are ambitious, but targets have not been met due to lack

of funding and support in already poorly resourced government departments. Since the early years of its establishment, the Department of National Parks and Wildlife Conservation (DNPWC) has been under-resourced in terms of finances and trained manpower, so crippling its effective conservation work in the country.

Despite the many conservation awareness programmes on bird conservation that have taken place in the country, especially in recent years, there is still an urgent need for the continuation of such programmes with innovative ideas to put across the conservation message and more widely throughout Nepal.

Bird research and conservation are heavily biased in Nepal because overseas conservation agencies, which have very largely funded this work, are interested mainly in the globally prioritised list of species, i.e., globally threatened and Near-threatened species, while species that are only nationally threatened have been very largely unstudied (Baral et al. 2012).

While a successful Vulture Conservation Programme has been implemented, including a second Vulture Conservation Action Programme (DNPWC 2015), conservation strategies are lacking for most threatened bird species and conservation priorities have been given to mammals, rather than birds.

The main threats to Nepal's threatened bird species are summarised in Appendices 3 and 4.

## CONSERVATION RECOMMENDATIONS

### Minimising habitat losses, degradation and fragmentation

There is enormous potential for improved management of existing low density and depleted forests. The 2014–2020 National Biodiversity Strategy and Action Plan includes a target of a significant reduction (by at least 75% of the current rate) in the loss and degradation of forest. Another valuable target is the promotion of alternative energy sources (such as biogas, solar energy, and hydropower) and fuel-efficient technologies (such as bio-briquettes, improved stoves) to reduce demand of firewood (MoFSC 2014). Other important targets include the development and implementation of plans to reduce occurrence of forest fires and overgrazing; reclaiming at least 10,000ha of encroached forestland through effective implementation of the Forest Encroachment Control Strategy (2012) and the establishment of protected forests where necessary and feasible (MoFSC 2014).

The provision of more resources to park and forestry field staff should help improve their monitoring of forest exploitation.

Degraded forests with on-going people pressure can be handed over to the community for management through the District Forest Office. Under community management, protection of most forest areas has been extremely successful and regeneration of lost cover has been phenomenal. Communities throughout Nepal have demonstrated that they can effectively protect and sustainably use the forests under their care. The community forestry programs should therefore be extended and strengthened (MoFSC 2014). MoFSC (2014) also aims to improve conservation of biodiversity in community-managed forests. Another target is to promote mixed forests of native plant species in community managed forests (MoFSC 2014).

Effective control of NTFP and MAP harvesting would reduce pressure on forests, which annually results from the influx of huge numbers of people to harvest these products. This will also reduce disturbance to bird and other wildlife, especially during the breeding season (MoFSC 2014).

The effective implementation of Nepal's National Wetland Policy is urgently needed. This policy aims to put people at the centre of conservation and natural resource management. While all communities benefit from wetlands, about 17% of the populations from 21 ethnic communities have traditionally based their livelihoods on wetlands. These are some of the most marginalised and poorest people in Nepal.

The participation by user groups and community-based organisations in collaborative management of wetland resources, as advocated in Nepal's Wetland Policy, will be key to achieving sustainable resource use. These measures should help to prevent over-exploitation including over-fishing, the use of poisons to kill fish, over-grazing and excessive grass cutting along watercourses.

Control of sand and gravel mining of rivers is urgently needed. MoFSC (2014) includes a target for the development and implementation, by 2015, of an effective mechanism to control mining of gravel and sand from rivers and streams. Areas suitable for sand mining and quarrying should be identified and designated and mining banned in the protected areas and Important Bird and Biodiversity Areas.

Reducing pollution of wetlands is very important, especially in the rivers of Chitwan National Park which are particularly affected. Enforcement of the Industrial Policy (2011) should help reduce water pollution.

MoFSC (2014) states that plans should be developed and implemented to control industrial pollution in five major rivers and five major wetlands, by 2020. MoFSC (2014) also includes a target to control encroachment and eutrophication in at least ten major wetlands and restore at least five major degraded wetlands by 2020.

Strict enforcement of Nepal's already existing pesticide regulations would greatly reduce the threat from pesticides to people, wildlife and the environment. The Integrated Pest Management (IPM) approach was emphasised in Nepal's National Agricultural Perspective Plan to try and reduce pesticide use. An increase in training of IPM use is badly needed. The use of effective microorganisms (EM) technology should be encouraged by running training camps for farmers in the buffer zones of lowland protected areas, modeled on those run by the Bird Education Society in Chitwan National Park's buffer zone. Using EM technology, a combination of various beneficial organisms is formed, that is helpful for plant growth, acting as a fertiliser. The combination of organisms can also act as a bio-pesticide.

Effective grassland management is vital for biodiversity conservation; grassland birds are often highly sensitive to changes in habitat quality and the microenvironment around them (Baral 2001). People are allowed into Terai protected areas for three to ten days annually to cut grass, at which time the grasslands are also burned; in the case of Chitwan this involves an influx of many thousands of people (Peet et al. 1999). Management should therefore aim to maintain areas of intact grassland that are not cut or burnt, on a rotational basis, whilst allowing other areas to be harvested by local people (Peet 1997; Peet et al. 1999). Saplings of various trees and bushes should be removed from grasslands to prevent succession to shrubland and eventually forest. Ploughing has been found to be counterproductive and should be avoided (Peet 1997; Baral 2001). Burning is an important management tool for the conservation of threatened grassland taxa and should be carried out on a rotational basis before or after the birds' breeding season (Inskipp & Inskipp 1983; Baral 2001;). In addition to better management of existing grasslands, the expansion and conservation of new grassland areas are recommended (Baral 2001; Poudyal et al. 2008a,b) and degraded grasslands should be restored. Livestock grazing should be stopped in protected areas by improving law enforcement. Livestock management practices should be improved, for example by including stall-feeding. Grazing pastures outside protected areas should be identified, promoted and managed.

More community-managed grasslands should be

set up in lowland Nepal (Baral 2001). This is already happening in Chitwan National Park buffer zone in Nawalparasi District, where a community-managed grassland is working along similar lines to that of community forestry and fulfills the needs of local village people for cattle fodder and thatch grasses (Dhan Bahadur Chaudhary pers. comm.).

Corridors to connect fragmented habitats such as isolated grasslands and forest patches should be restored, and land use planning and policies should be improved to ensure these areas are conserved. Urgent action is needed to control the spread of invasive alien plant species, especially *Mikania micrantha* and Water Hyacinth *Eichhornia crassipes*. MoFSC (2014) includes a target for nation-wide survey and research on the control of at least five most problematic invasive alien plant species by 2020, although no specific species has been suggested. Nesting colonies, e.g., vultures and storks, should be identified and protected through community awareness. The erection of nest boxes, e.g., for owls, should be encouraged. A code of good conduct should be established for photographers, birders and researchers.

The planting of fruiting trees, including fig trees, and flowering trees should be carried out especially in urban areas and along highways. In towns and cities, people should be encouraged to put up nest boxes and bird feeders, and put out water for birds in their gardens. Environmental Impact Assessments should be ensured with compulsory input from bird and biodiversity experts on development projects, including hydropower dams and infrastructure such as road construction, power lines and bridges. The long-term impacts of large scale development projects, such as hydropower dams and the proposed east-west railway network and postal road, on birds and other wildlife need to be studied. Some of these projects would be highly detrimental to wildlife, including birds. Therefore, before embarking on any large infrastructure projects, consultation should be made with bird and biodiversity experts.

### Reducing over-exploitation

The current legislation to protect birds from hunting and trapping should be enforced and strengthened. There should be a strict ban on catapult selling and illegal firearms should be confiscated. Studies on factors driving hunting should also be carried out. More conservation awareness programmes should be implemented, especially in buffer zones of protected areas. These should be targeted at local communities and schools, also in the army camps stationed in

protected areas. Influential local people in communities, such as religious and political leaders, and witch doctors should also be targeted to raise conservation awareness. It is recommended that programmes are modelled on the successful owl conservation awareness programmes that have been carried out by Friends of Nature in communities and schools.

In protected areas, laws should be enforced by monitoring through river patrols, especially during the breeding season and in high priority areas. The currently used highly destructive fishing methods of poisoning, electrocution and gill-nets should be stopped. All licences to fish inside protected areas should be revoked. Outside protected areas fishing should be reduced or banned during the breeding seasons in wetlands. Alternative livelihoods for the fishing (local) communities should be promoted.

### Improvements in bird conservation measures and in bird research

The current list of birds protected by law in the country is in urgent need of revision and expansion to cover many more bird species than the nine species currently protected. In 2010, a recommendation was put forward to revise this list after rigorous consultation and discussion (Shah & Baral 2010). The protected areas' system should be extended to cover unprotected Important Bird and Biodiversity Areas (IBAs). Unprotected forested IBAs, such as Reshunga IBA could be designated Protected Forests. Other unprotected IBAs, such as the Ghodaghodi Tal area, a Ramsar site that is under high pressure from local communities, could be designated as Wildlife Reserves.

Bird conservation projects should support livelihood development of local communities to ensure their active participation. More conservation engagement programmes are urgently needed. Capacity building of local communities including active participation of local people in bird monitoring is important. The programmes should also aim to improve understanding of the global and national importance of Nepal's IBAs amongst government and civil society. Bird conservation awareness activities should be targeted at schools, colleges, community groups, farmers, and army staff in protected areas using electronic and print media, radio and TV programmes, street dramas, talks and presentations, bird fair / festivals, media campaigns, celebrities, sports icons and documentaries. It is important that conservation messages are relevant and effective. Nature clubs should be established in schools and within communities and bird watching activities

carried out regularly for school children. Awards and recognition of local achievements should be established. A National Bird Day could be introduced; each district could adopt its own bird species to celebrate.

Conservation strategies for threatened groups of bird species based on appropriate baseline data should be developed and implemented. Birds could be used as indicator species in forest management programmes. Key bird research projects need to be identified, especially on nationally threatened species and data deficient species. Collaboration between universities and NGOs needs to be developed. An annual funding programme should be established with a committee set up to review proposals and monitor research projects, so enabling bird research capacity to be developed.

Protected area staff and the Nepal Army working in protected areas should be trained in the importance of bird conservation. The DNPWC urgently needs adequate funding for protection and management. Protected areas' staff should also be provided with adequate resources including field equipment such as binoculars and field guides and training so they can carry out regular bird population monitoring in protected areas. The Government should establish strong networking between national and local NGOs and agencies; annual national meetings should be held with representatives from relevant organizations ensuring implementation and enforcement of existing laws for the protection of birds.

Re-assessments of the status of certain bird groups, for example game birds, birds of prey, wetland birds and lowland grassland birds, carried out every five years would be useful. There is an urgent need for an online system for storing and reporting bird sightings, as currently there is no system in place. As there are several online databases already operating, it would be sensible to use an existing system rather than developing a new one. ebird is the most widely used online database for archiving and sharing bird records on a global scale. It works well in India, for instance. At the present time using ebird in the field in Nepal can be slow because of poor broadband connection, but developing a phone app that would record and store data and then send it to when in GSM coverage is currently being investigated. An online database would greatly help in updating the Red List in the future and also for land-use planning and policies.

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**Appendix 1. Birds nationally assessed as Regionally Extirpated (RE), Threatened [Critically Endangered (CR), Endangered (EN) and Vulnerable (VU)], and Near Threatened (NT)**

RE	CR	EN	VU	NT
Jungle Bush Quail <i>Perdica asiatica</i> (Phasianidae)	Blue Quail <i>Coturnix chinensis</i> (Phasianidae)	*Cheer Pheasant <i>Catreus wallichii</i> (Phasianidae)	Grey Francolin <i>Francolinus pondicerianus</i> (Phasianidae)	Chukar Partridge <i>Alectoris chukar</i> (Phasianidae)
*Pink-headed Duck <i>Rhodonessa caryophyllacea</i> (Anatidae)	+Falcated Duck <i>Anas falcata</i> (Anatidae)	*Swamp Francolin <i>Francolinus gularis</i> (Phasianidae)	Koklass Pheasant <i>Pucrasia macrolopha</i> (Phasianidae)	Himalayan Monal <i>Lophophorus impejanus</i> (Phasianidae)
*White-bellied Heron <i>Ardea insignis</i> (Ardeidae)	*Baer's Pochard <i>Aythya baeri</i> (Anatidae)	Knob-billed Duck <i>Sarkidiornis melanotos</i> (Anatidae)	+Satyr Tragopan <i>Tragopan satyra</i> (Phasianidae)	Himalayan Snowcock <i>Tetraogallus himalayensis</i> (Phasianidae)
*Rufous-necked Hornbill <i>Aceros nipalensis</i> (Bucerotidae)	Mountain Imperial Pigeon <i>Ducula badia</i> (Columbidae)	Northern Pintail <i>Anas acuta</i> (Anatidae)	Cotton Pygmy-goose <i>Nettapus coromandelianus</i> (Anatidae)	Indian Peafowl <i>Pavo cristatus</i> (Phasianidae)
Silver-breasted Broadbill <i>Serilophus lunatus</i> (Eurylaimidae)	Water Rail <i>Rallus aquaticus</i> (Rallidae)	Thick-billed Green Pigeon <i>Treron curvirostra</i> (Columbidae)	+Ferruginous Duck <i>Aythya nyroca</i> (Anatidae)	Rufous-throated Partridge <i>Arborophila rufogularis</i> (Phasianidae)
Brown Bush Warbler <i>Bradypterus luteoventris</i> (Sylviidae)	*Bengal Florican <i>Houbaropsis bengalensis</i> (Otididae)	Indian Nightjar <i>Caprimulgus asiaticus</i> (Caprimulgidae)	Garganey <i>Anas querquedula</i> (Anatidae)	Bar-headed Goose <i>Anser indicus</i> (Anatidae)
*Black-breasted Parrotbill <i>Paradoxornis flavirostris</i> (Timaliidae)	*Lesser Florican <i>Sypheotides indicus</i> (Otididae)	Slaty-legged Crane <i>Rallina eurizonoides</i> (Rallidae)	Barred Cuckoo Dove <i>Macropygia unchall</i> (Columbidae)	*Common Pochard <i>Aythya ferina</i> (Anatidae)
Green Cochoa <i>Cochoa viridis</i> (Turridae)	+Black-necked Stork <i>Ephippiorhynchus asiaticus</i> (Ciconiidae)	+Painted Stork <i>Mycteria leucocephala</i> (Ciconiidae)	Tibetan Sandgrouse <i>Syrhaptes tibetanus</i> (Pteroclididae)	Greylag Goose <i>Anser anser</i> (Anatidae)
	*Greater Adjutant <i>Leptoptilos dubius</i> (Ciconiidae)	Black Bittern <i>Dupetor flavicollis</i> (Ardeidae)	Baillon's Crane <i>Porzana pusilla</i> (Rallidae)	Ruddy Shelduck <i>Tadorna ferruginea</i> (Anatidae)
	Eurasian Spoonbill <i>Platalea leucorodia</i> (Threskiornithidae)	Great Bittern <i>Botaurus stellaris</i> (Ardeidae)	Demoiselle Crane <i>Grus virgo</i> (Gruidae)	Spot-billed Duck <i>Anas poecilorhyncha</i> (Anatidae)
	Malayan Night Heron <i>Gorsachius melanolophus</i> (Ardeidae)	Ibisbill <i>Ibidorhyncha struthersii</i> (Ibidorhynchidae)	*Sarus Crane <i>Grus antigone</i> (Gruidae)	Ashy-headed Green Pigeon <i>Treron phayrei</i> (Columbidae)
	Spot-billed Pelican <i>Pelecanus philippensis</i> (Pelecanidae)	Indian Courser <i>Cursorius coromandelicus</i> (Glareolidae)	Asian Openbill <i>Anastomus oscitans</i> (Ciconiidae)	Pin-tailed Green Pigeon <i>Treron apicauda</i> (Columbidae)
	Great Thick-knee <i>Esacus recurvirostris</i> (Burhinidae)	Spot-bellied Eagle Owl <i>Bubo nipalensis</i> (Strigidae)	Black Stork <i>Ciconia nigra</i> (Ciconiidae)	Large-tailed Nightjar <i>Caprimulgus macrurus</i> (Caprimulgidae)
	+Eurasian Curlew <i>Numenius arquata</i> (Scolopacidae)	+Cinereous Vulture <i>Aegypius monachus</i> (Accipitridae)	*Lesser Adjutant <i>Leptoptilos javanicus</i> (Ciconiidae)	Savanna Nightjar <i>Caprimulgus affinis</i> (Caprimulgidae)
	*Black-bellied Tern <i>Sterna acuticauda</i> (Laridae)	*Red-headed Vulture <i>Sarcogyps calvus</i> (Accipitridae)	Yellow-wattled Lapwing <i>Vanellus malabaricus</i> (Charadriidae)	White-rumped Spinetail <i>Zoonavena sylvatica</i> (Apodidae)
	Caspian Tern <i>Sterna caspia</i> (Laridae)	Red-headed Trogon <i>Harpactes erythrocephalus</i> (Trogonidae)	Pheasant-tailed Jacana <i>Hydrophasianus chirurgus</i> (Scolopacidae)	Chestnut-winged Cuckoo <i>Clamator coromandus</i> (Cuculidae)
	Gull-billed Tern <i>Sterna nilotica</i> (Laridae)	+Great Hornbill <i>Buceros bicornis</i> (Bucerotidae)	*Wood Snipe <i>Gallinago nemoricola</i> (Scolopacidae)	Watercock <i>Gallinago cinerea</i> (Rallidae)
	*Indian Skimmer <i>Rynchops albicollis</i> (Laridae)	Blue-eared Kingfisher <i>Alcedo meninting</i> (Alcedinidae)	Black-headed Gull <i>Larus ridibundus</i> (Laridae)	Common Crane <i>Grus grus</i> (Gruidae)
	+River Tern <i>Sterna aurantia</i> (Laridae)	+Yellow-rumped Honeyguide <i>Indicator xanthonotus</i> (Indicatoridae)	Brown-headed Gull <i>Larus brunnicephalus</i> (Laridae)	*Asian Woollyneck <i>Ciconia episcopus</i> (Ciconiidae)
	Eastern Grass Owl <i>Tyto longimembris</i> (Tytonidae)	*Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i> (Picidae)	Little Tern <i>Sterna albifrons</i> (Laridae)	+Black-headed Ibis <i>Threskiornis melanocephalus</i> (Threskiornithidae)
	Dusky Eagle Owl <i>Bubo coromandus</i> (Strigidae)	Red-necked Falcon <i>Falco chicquera</i> (Falconidae)	Barn Owl <i>Tyto alba</i> (Tytonidae)	Great Cormorant <i>Phalacrocorax carbo</i> (Phalacrocoracidae)
	Tawny Fish Owl <i>Ketupa flavipes</i> (Strigidae)	*Saker Falcon <i>Falco cherrug</i> (Falconidae)	Brown Fish Owl <i>Ketupa zeylonensis</i> (Strigidae)	+Oriental Darter <i>Anhinga melanogaster</i> (Anhingidae)
	Brahminy Kite <i>Haliastur indus</i> (Accipitridae)	Blue-naped Pitta <i>Pitta nipalensis</i> (Pittidae)	Brown Wood Owl <i>Strix leptogrammica</i> (Strigidae)	Lesser Sand Plover <i>Charadrius mongolus</i> (Charadriidae)

RE	CR	EN	VU	NT
	*Eastern Imperial Eagle <i>Aquila heliaca</i> (Accipitridae)	Sultan Tit <i>Melanochlora sultanea</i> (Paridae)	Rock Eagle Owl <i>Bubo bengalensis</i> (Strigidae)	+Northern Lapwing <i>Vanellus vanellus</i> (Charadriidae)
	+Grey-headed Fish Eagle <i>Ichthyophaga ichthyaeus</i> (Accipitridae)	White-throated Bulbul <i>Alophoixus flaveolus</i> (Pycnonotidae)	Short-eared Owl <i>Asio flammeus</i> (Strigidae)	Pacific Golden Plover <i>Pluvialis fulva</i> (Charadriidae)
	Jerdon's Baza <i>Aviceda jerdoni</i> (Accipitridae)	Broad-billed Warbler <i>Tickellia hodgsoni</i> (Sylviidae)	Egyptian Vulture <i>Neophron percnopterus</i> (Accipitridae)	+River Lapwing <i>Vanellus duvaucelii</i> (Charadriidae)
	+Lesser Fish Eagle <i>Ichthyophaga humilis</i> (Accipitridae)	+Rufous-rumped Grassbird <i>Graminicola bengalensis</i> (Sylviidae)	Golden Eagle <i>Aquila chrysaetos</i> (Accipitridae)	Black-tailed Godwit <i>Limosa limosa</i> (Scolopacidae)
	Montagu's Harrier <i>Circus pygargus</i> (Accipitridae)	Yellow-vented Warbler <i>Phylloscopus cantator</i> (Sylviidae)	*Greater Spotted Eagle <i>Aquila clanga</i> (Accipitridae)	Small Buttonquail <i>Turnix sylvaticus</i> (Turnicidae)
	*Pallas's Fish Eagle <i>Haliaeetus leucoryphus</i> (Accipitridae)	Abbott's Babbler <i>Malacocincla abbotti</i> (Timaliidae)	+Himalayan Vulture <i>Gyps himalayensis</i> (Accipitridae)	Yellow-legged Buttonquail <i>Turnix tanki</i> (Turnicidae)
	Rufous-bellied Eagle <i>Lophotriorchis kienerii</i> (Accipitridae)	Golden Babbler <i>Stachyris chrysaea</i> (Timaliidae)	*Indian Spotted Eagle <i>Aquila hastata</i> (Accipitridae)	Oriental Pratincole <i>Glareola maldivarum</i> (Glareolidae)
	*Slender-billed Vulture <i>Gyps tenuirostris</i> (Accipitridae)	Rusty-fronted Barwing <i>Actinodura ebertoni</i> (Timaliidae)	+Lammergeier <i>Gypaetus barbatus</i> (Accipitridae)	Small Pratincole <i>Glareola lactea</i> (Glareolidae)
	*White-rumped Vulture <i>Gyps bengalensis</i> (Accipitridae)	Silver-eared Mesia <i>Leiothrix argentauris</i> (Timaliidae)	Northern Harrier <i>Circus cyaneus</i> (Accipitridae)	Common Tern <i>Sterna hirundo</i> (Laridae)
	White-tailed Eagle <i>Haliaeetus albicilla</i> (Accipitridae)	Tawny-bellied Babbler <i>Dumetia hyperythra</i> (Timaliidae)	Pallid Harrier <i>Circus macrourus</i> (Accipitridae)	Black Baza <i>Aviceda leuphotes</i> (Accipitridae)
	+Blyth's Kingfisher <i>Alcedo hercules</i> (Alcedinidae)	Gould's Shortwing <i>Brachypteryx stellata</i> (Turdidae)	Pied Harrier <i>Circus melanoleucos</i> (Accipitridae)	Oriental Pied Hornbill <i>Anthracoceros albirostris</i> (Bucerotidae)
	Ruddy Kingfisher <i>Halcyon coromanda</i> (Alcedinidae)	Purple Cochoa <i>Cochoa purpurea</i> (Turdidae)	*Steppe Eagle <i>Aquila nipalensis</i> (Accipitridae)	Bay Woodpecker <i>Blythipicus pyrrhotis</i> (Picidae)
	Blue-eared Barbet <i>Megalaima australis</i> (Megalaimidae)	*White-throated Bushchat <i>Saxicola insignis</i> (Muscicapidae)	Western Marsh Harrier <i>Circus aeruginosus</i> (Accipitridae)	Collared Falconet <i>Microhierax caerulescens</i> (Falconidae)
	Pale-headed Woodpecker <i>Gecinulus grantia</i> (Picidae)	Ruby-cheeked Sunbird <i>Anthreptes singalensis</i> (Nectariniidae)	+Red-breasted Parakeet <i>Psittacula alexandri</i> (Psittacidae)	Lesser Kestrel <i>Falco naumanni</i> (Falconidae)
	White-browed Piculet <i>Sasia ochracea</i> (Picidae)	Chestnut Munia <i>Lonchura atricapilla</i> (Estrildidae)	Hooded Pitta <i>Pitta sordida</i> (Pittidae)	+Alexandrine Parakeet <i>Psittacula eupatria</i> (Psittacidae)
	+Laggar Falcon <i>Falco jugger</i> (Falconidae)		*Bristled Grassbird <i>Chaetornis striata</i> (Sylviidae)	+Blossom-headed Parakeet <i>Psittacula roseata</i> (Psittacidae)
	Oriental Hobby <i>Falco severus</i> (Falconidae)		Hume's Bush Warbler <i>Cettia brunnescens</i> (Sylviidae)	Plain Martin <i>Riparia paludicola</i> (Hirundinidae)
	Vernal Hanging Parrot <i>Loriculus vernalis</i> (Psittacidae)		Pale-footed Bush Warbler <i>Cettia pallidipes</i> (Sylviidae)	Crested Lark <i>Galerida cristata</i> (Alaudidae)
	Great Grey Shrike <i>Lanius excubitor</i> (Laniidae)		Yellow-bellied Warbler <i>Abroscopus superciliosus</i> (Sylviidae)	Golden-headed Cisticola <i>Cisticola exilis</i> (Cisticolidae)
	Yellow-cheeked Tit <i>Parus sibilans</i> (Paridae)		Black-chinned Yuhina <i>Yuhina nigrimenta</i> (Timaliidae)	Yellow-bellied Prinia <i>Prinia flaviventris</i> (Cisticolidae)
	*Grey-crowned Prinia <i>Prinia cinereocapilla</i> (Cisticolidae)		Black-headed Shrike-babbler <i>Pteruthius rufiventer</i> (Timaliidae)	Clamorous Reed Warbler <i>Acrocephalus stentoreus</i> (Sylviidae)
	+Rufous-vented Prinia <i>Prinia burnesii</i> (Cisticolidae)		Brown Parrotbill <i>Paradoxornis unicolor</i> (Timaliidae)	Grey-cheeked Warbler <i>Seicercus poliogenys</i> (Sylviidae)
	Rufous-faced Warbler <i>Abroscopus albugularis</i> (Sylviidae)		Common Babbler <i>Turdoides caudata</i> (Timaliidae)	Blue-winged Laughingthrush <i>Garrulax squamatus</i> (Timaliidae)

RE	CR	EN	VU	NT
	Slaty-bellied Tesia <i>Tesia olivea</i> (Sylviidae)		Fulvous Parrotbill <i>Paradoxornis fulvifrons</i> (Timaliidae)	Chestnut-capped Babbler <i>Timalia pileata</i> (Timaliidae)
	Striated Grassbird <i>Megalurus palustris</i> (Sylviidae)		Golden-breasted Fulvetta <i>Alcippe chrysotis</i> (Timaliidae)	Himalayan Cutia <i>Cutia nipalensis</i> (Timaliidae)
	+Blackish-breasted Babbler <i>Sphenocichla humei</i> (Timaliidae)		Great Parrotbill <i>Conostoma oemodium</i> (Timaliidae)	Rufous-chinned Laughingthrush <i>Garrulax rufogularis</i> (Timaliidae)
	Coral-billed Scimitar Babbler <i>Pomatorhinus ferruginosus</i> (Timaliidae)		Greater Necklaced Laughingthrush <i>Garrulax</i> <i>pectoralis</i> (Timaliidae)	Scaly Laughingthrush <i>Garrulax subunicolor</i> (Timaliidae)
	*Jerdon's Babbler <i>Chrysomma altirostre</i> (Timaliidae)		Grey-sided Laughingthrush <i>Garrulax caerulatus</i> (Timaliidae)	White-browed Scimitar Babbler <i>Pomatorhinus schisticeps</i> (Timaliidae)
	Long-tailed Sibia <i>Heterophasia picaoides</i> (Timaliidae)		Lesser Necklaced Laughingthrush <i>Garrulax monileger</i> (Timaliidae)	Yellow-eyed Babbler <i>Chrysomma sinense</i> (Timaliidae)
	Red-faced Liocichla <i>Liocichla phoenicea</i> (Timaliidae)		Slender-billed Scimitar Babbler <i>Xiphirhynchus</i> <i>superciliaris</i> (Timaliidae)	Ferruginous Flycatcher <i>Muscicapra ferruginea</i> (Muscicapidae)
	Rufous-backed Sibia <i>Heterophasia annectans</i> (Timaliidae)		Dark-sided Thrush <i>Zoothera marginata</i> (Turdidae)	Large Niltava <i>Niltava grandis</i> (Muscicapidae)
	Rufous-necked Laughingthrush <i>Garrulax ruficollis</i> (Timaliidae)		*Kashmir Flycatcher <i>Ficedula subrubra</i> (Muscicapidae)	Sapphire Flycatcher <i>Ficedula sapphira</i> (Muscicapidae)
	+Rufous-throated Wren Babbler <i>Spelaeornis caudatus</i> (Timaliidae)		White-gorgeted Flycatcher <i>Ficedula monileger</i> (Muscicapidae)	Slaty-backed Flycatcher <i>Ficedula hodgsonii</i> (Muscicapidae)
	*Slender-billed Babbler <i>Turdoides longirostris</i> (Timaliidae)		Black-breasted Weaver <i>Ploceus bengalensis</i> (Ploceidae)	White-tailed Stonechat <i>Saxicola leucurus</i> (Muscicapidae)
	Spotted Wren Babbler <i>Spelaeornis formosus</i> (Timaliidae)		Golden-naped Finch <i>Pyrhoptectes epauletta</i> (Fringillidae)	Baya Weaver <i>Ploceus</i> <i>philippinus</i> (Ploceidae)
	White-hooded Babbler <i>Gampsorhynchus rufulus</i> (Timaliidae)		Tibetan Serin <i>Serinus thibetanus</i> (Fringillidae)	Red Avadavat <i>Amandava amandava</i> (Estrildidae)
	White-naped Yuhina <i>Yuhina bakeri</i> (Timaliidae)		Black-faced Bunting <i>Emberiza spodocephala</i> (Emberizidae)	White-throated Munia <i>Lonchura malabarica</i> (Estrildidae)
	Asian Fairy Bluebird <i>Irena</i> <i>puella</i> (Irenidae)		Black-headed Bunting <i>Emberiza melanocephala</i> (Emberizidae)	Scarlet Finch <i>Haematospiza sipahi</i> (Fringillidae)
	Jerdon's Bushchat <i>Saxicola jerdoni</i> (Muscicapidae)		Little Bunting <i>Emberiza pusilla</i> (Emberizidae)	Spot-winged Grosbeak <i>Mycerobas melanozanthos</i> (Fringillidae)
	Scarlet-backed Flowerpecker <i>Dicaeum cruentatum</i> (Dicaeidae)			
	Yellow-vented Flowerpecker <i>Dicaeum chrysorrheum</i> (Dicaeidae)			
	Little Spiderhunter <i>Arachnothera longirostra</i> (Nectariniidae)			
	Streaked Weaver <i>Ploceus manyar</i> (Ploceidae)			
	*Yellow Weaver <i>Ploceus megarhynchus</i> (Ploceidae)			
	*Yellow-breasted Bunting <i>Emberiza aureola</i> (Emberizidae)			

\* indicates globally threatened

+ indicates globally Near Threatened

Threat criteria are given in each species account at the Nepal Bird Red List web address:

<https://www.zsl.org/conservation/regions/asia/national-red-list-of-nepals-birds>

## Appendix 2. Data Deficient species

*Black-necked Crane <i>Grus nigricollis</i>
Black-and-yellow Grosbeak <i>Mycerobas icteroides</i>
Black-naped Oriole <i>Oriolus chinensis</i>
Black-tailed Crake <i>Amaurornis bicolor</i>
Eurasian Eagle Owl <i>Bubo bubo</i>
Eurasian Skylark <i>Alauda arvensis</i>
Griffon Vulture <i>Gyps fulvus</i>
Hodgson's Hawk Cuckoo <i>Hierococcyx fugax</i>
Lesser Shortwing <i>Brachypteryx leucophris</i>
Long-billed Wren Babbler <i>Rimator malacoptilus</i>
Mottled Wood Owl <i>Strix ocellata</i>
Mountain Tailorbird <i>Orthotomus cucullatus</i>
Oriental Scops Owl <i>Otus sunia</i>
Pale Martin <i>Riparia diluta</i>
Red-breasted Flycatcher <i>Ficedula parva</i>
Sand Martin <i>Riparia riparia</i>
Singing Bush Lark <i>Mirafra cantillans</i>
Tawny Eagle <i>Aquila rapax</i>
Tibetan Lark <i>Melanocorypha maxima</i>
Twite <i>Carduelis flavirostris</i>
Tytler's Leaf Warbler <i>Phylloscopus tytleri</i>
Upland Buzzard <i>Buteo hemilasius</i>

\* indicates globally threatened

## Appendix 3. Summary of the main threats to threatened bird species of Nepal

	Specific key threats/drivers to species declines
	<b>Habitat loss, degradation and fragmentation</b>
1	Degradation of forests (fuel and fodder collection, logging, selective timber felling, burning, overgrazing)
2	Degradation of grasslands and pastures (livestock over-grazing, inappropriate grassland management in protected areas, vegetation succession leading to scrub encroachment)
3	Fragmentation (human encroachment, clearance for agriculture, urbanization)
4	Wetland habitat loss and degradation
5	Invasive plant species
6	Water pollution (agricultural, domestic, industrial)
7	Pesticides
8	Diclofenac use
9	Disturbance (to breeding, roosting and feeding areas)
10	Sand and gravel mining of river beds and other surface quarrying
11	Dams
12	Climate change
	<b>Over-exploitation</b>
13	Hunting and trapping for food and for medicinal purposes
14	Persecution
15	Illegal bird trade
16	Over-fishing (leads to reduction in food for fish-eating birds)
17	Exploitation of NTFPs and MAPs
	<b>Other</b>
18	Predation (feral dogs)
19	Competition with introduced species
20	Intensification of agriculture
21	Predators at unnaturally high population levels
22	Conflict with local communities
23	Electric power cables
24	Loss of open stony habitat

**Appendix 4. Primary, secondary and potential/suspected threats to threatened bird species of Nepal**  
(Colour red - Primary threat; Colour orange - Secondary threat; Colour grey - Potential/suspected threat)

Category of threat (at National level)	Species	Habitat loss, degradation and fragmentation	Over-exploitation	Other
CR	<i>Abroscopus albogularis</i> , Rufous-faced Warbler	1,3		
	<i>Alcedo hercules</i> , Blyth's Kingfisher	1,3,4,9	16	
	<i>Anas falcata</i> , Falcated Duck	4,9	13	
	<i>Aquila heliaca</i> , Eastern Imperial Eagle	4,7		
	<i>Arachnothera longirostra</i> , Little Spiderhunter	1,3		
	<i>Aviceda jerdoni</i> , Jerdon's Baza	1,3		
	<i>Aythya baeri</i> , Baer's Pochard	4,9	13	
	<i>Bubo coromandus</i> , Dusky Eagle Owl	1,3	13, 14, 15	
	<i>Chrysomma altirostre</i> , Jerdon's Babbler	2,3,12		
	<i>Circus pygargus</i> , Montagu's Harrier	7		
	<i>Coturnix chinensis</i> , Blue Quail	2,3,4,9	13	
	<i>Dicaeum chrysorrheum</i> , Yellow-vented Flowerpecker	1,3		
	<i>Dicaeum cruentatum</i> , Scarlet-backed Flowerpecker	1,3		
	<i>Ducula badia</i> , Mountain Imperial Pigeon	1,3	13	
	<i>Emberiza aureola</i> , Yellow-breasted Bunting	7	13	20
	<i>Ephippiorhynchus asiaticus</i> , Black-necked Stork	4,9,7	13	
	<i>Esacus recurvirostris</i> , Great Thick-knee	4,9,10,11	17	
	<i>Falco jugger</i> , Laggar Falcon	7		
	<i>Falco severus</i> , Oriental Hobby	1,3,7		
	<i>Gampsorhynchus rufulus</i> , White-hooded Babbler	1,3		
	<i>Garrulax ruficollis</i> , Rufous-necked Laughingthrush	1,3,4		
	<i>Gecinulus grantia</i> , Pale-headed Woodpecker	1,3		
	<i>Gorsachius melanolophus</i> , Malayan Night Heron	1,3		
	<i>Gyps bengalensis</i> , White-rumped Vulture	1,7,8,9		
	<i>Gyps tenuirostris</i> , Slender-billed Vulture	1,7,8,9		
	<i>Halcyon coromanda</i> , Ruddy Kingfisher	1,3		
	<i>Haliaeetus albicilla</i> , White-tailed Eagle	4,6,7,9	13,16	
	<i>Haliaeetus leucoryphus</i> , Pallas's Fish Eagle	4,6,7,9	13,16	
	<i>Haliastur indus</i> , Brahminy Kite	4,6,7	13,16	
	<i>Heterophasia annectans</i> , Rufous-backed Sibia	1,3		
	<i>Heterophasia picaoides</i> , Long-tailed Sibia	1,3		

Category of threat (at National level)	Species	Habitat loss, degradation and fragmentation	Over-exploitation	Other
	<i>Houbaropsis bengalensis</i> , Bengal Florican	2,3,9,5,12	13,17	18, 21
	<i>Ichthyophaga humilis</i> , Lesser Fish Eagle	1,3,4,7,9	16	
	<i>Ichthyophaga ichthyaetus</i> , Grey-headed Fish Eagle	1,3,4,7,9	16	
	<i>Irena puella</i> , Asian Fairy Bluebird	1,3		
	<i>Ketupa flavipes</i> , Tawny Fish Owl	1,3,9	14,15, 16	
	<i>Lanius excubitor</i> , Great Grey Shrike	7		20
	<i>Leptoptilos dubius</i> , Greater Adjutant	4,7,9	13	
	<i>Liocichla phoenicea</i> Red-faced Liocichla	1,3		
	<i>Lophotriorchis kienerii</i> , Rufous-bellied Eagle	1,3		
	<i>Loriculus vernalis</i> , Vernal Hanging Parrot	1,3		
	<i>Megalaima australis</i> , Blue-eared Barbet	1,3		
	<i>Megalurus palustris</i> , Striated Grassbird	2,3,5,12		
	<i>Numenius arquata</i> , Eurasian Curlew	4,9	13	
	<i>Parus spilnotus</i> , Yellow-cheeked Tit	1,3		
	<i>Pelecanus philippensis</i> , Spot-billed Pelican	4,9	13,16	
	<i>Platalea leucorodia</i> , Eurasian Spoonbill	4	13	
	<i>Ploceus manyar</i> , Streaked Weaver	3,4		
	<i>Ploceus megarhynchus</i> , Yellow Weaver	2,3,12		
	<i>Pomatorhinus ferruginosus</i> , Coral-billed Scimitar Babbler	1,3		
	<i>Prinia burnesii</i> , Rufous-vented Prinia	2,3,12		
	<i>Prinia cinereocapilla</i> , Grey-crowned Prinia	2,3,12		
	<i>Rallus aquaticus</i> , Water Rail	4,9	13	
	<i>Rynchops albicollis</i> , Indian Skimmer	4,9	13,16	
	<i>Sasia ochracea</i> , White-browed Piculet	1,3		
	<i>Saxicola jerdoni</i> , Jerdon's Bushchat	2,3,12		
	<i>Spelaornis caudatus</i> , Rufous-throated Wren Babbler	1,3		
	<i>Spelaornis formosus</i> , Spotted Wren Babbler	1,3		
	<i>Sphenocichla humei</i> , Blackish-breasted Babbler	1,3		
	<i>Sterna acuticauda</i> , Black-bellied Tern	4,9,10,11	13,16	
	<i>Sterna aurantia</i> , River Tern	4,9	13,16	

Category of threat (at National level)	Species	Habitat loss, degradation and fragmentation	Over-exploitation	Other
	<i>Sterna caspia</i> , Caspian Tern	4,9	13,16	
	<i>Sterna nilotica</i> , Gull-billed Tern	4,9	13,16	
	<i>Sypheotides indicus</i> , Lesser Florican	2,3,9,5,12	13,17	18, 21
	<i>Tesia olivea</i> , Slaty-bellied Tesia	1,3		
	<i>Turdoides longirostris</i> , Slender-billed Babbler	2,3,12		
	<i>Tyto longimembris</i> , Eastern Grass Owl	2,3,12	13,14, 15	
	<i>Yuhina bakeri</i> , White-naped Yuhina	1,3		
EN	<i>Actinodura egertoni</i> , Rusty-fronted Barwing	1,3		
	<i>Aegypius monachus</i> , Cinereous Vulture	8		
	<i>Alcedo meninting</i> , Blue-eared Kingfisher	1,3,6,9		
	<i>Alophoixus flaveolus</i> , White-throated Bulbul	1,3		
	<i>Anas acuta</i> , Northern Pintail	4,5,9	13	
	<i>Anthreptes singalensis</i> , Ruby-cheeked Sunbird	1,3		
	<i>Botaurus stellaris</i> , Great Bittern	3,4,7,9	13	
	<i>Brachypteryx stellata</i> , Gould's Shortwing	1,3		
	<i>Bubo nipalensis</i> , Spot-bellied Eagle Owl	1,3,9	13,14, 15	
	<i>Buceros bicornis</i> , Great Hornbill	1,3	13	
	<i>Caprimulgus asiaticus</i> , Indian Nightjar	7		
	<i>Catreus wallichii</i> , Cheer Pheasant	1,3,9	13	
	<i>Cochoa purpurea</i> , Purple Cochoa	1,3		
	<i>Cursorius coromandelicus</i> , Indian Courser	9	13	24
	<i>Dumetia hyperythra</i> , Tawny-bellied Babbler	2,3,12		
	<i>Dupetor flavicollis</i> , Black Bittern	4,7,9	13	
	<i>Falco cherrug</i> , Saker Falcon	7	15	
	<i>Falco chicquera</i> , Red-necked Falcon	7		
	<i>Francolinus gularis</i> , Swamp Francolin	2,3,5,9,12	13	21
	<i>Graminicola bengalensis</i> , Rufous-rumped Grassbird	2,3,5,9,12		
	<i>Harpactes erythrocephalus</i> , Red-headed Trogon	1,3		
	<i>Ibidorhyncha struthersii</i> , Ibisbill	4,6,9,10,12	13	
	<i>Indicator xanthonotus</i> , Yellow-rumped Honeyguide	1,3	17	
	<i>Leiothrix argentauris</i> , Silver-eared Mesia	1,3		
	<i>Lonchura atricapilla</i> , Chestnut Munia	2,3,4		19

Category of threat (at National level)	Species	Habitat loss, degradation and fragmentation	Over-exploitation	Other
	<i>Malacocincla abbotti</i> , Abbott's Babbler	1,3		
	<i>Melanochlora sultanea</i> , Sultan Tit	1,3		
	<i>Mulleripicus pulverulentus</i> , Great Slaty Woodpecker	1,3		
	<i>Mycteria leucocephala</i> , Painted Stork	4,9	13	
	<i>Phylloscopus cantator</i> , Yellow-vented Warbler	1,3		
	<i>Pitta nipalensis</i> , Blue-naped Pitta	1,3		
	<i>Rallina eurizonoides</i> , Slaty-legged Crane	1,3,4,9	13	
	<i>Sarcogyps calvus</i> , Red-headed Vulture	1,7, 8		
	<i>Sarkidiornis melanotos</i> , Knob-billed Duck	4,9	13	
	<i>Saxicola insignis</i> , White-throated Bushchat	2,9		
	<i>Stachyris chrysaea</i> , Golden Babbler	1,3		
	<i>Tickellia hodgsoni</i> , Broad-billed Warbler	1,3		
	<i>Treron curvirostra</i> , Thick-billed Green Pigeon	1,3		
VU	<i>Abroscopus superciliosus</i> , Yellow-bellied Warbler	1,3		
	<i>Alcippe chrysotis</i> , Golden-breasted Fulvetta	1,3		
	<i>Anas querquedula</i> , Garganey	4,5,7,9	13	
	<i>Anastomus oscitans</i> , Asian Openbill	4,7,9	13	
	<i>Aquila chrysaetos</i> , Golden Eagle	7	14	22
	<i>Aquila clanga</i> , Greater Spotted Eagle	7		
	<i>Aquila hastata</i> , Indian Spotted Eagle	7		23
	<i>Aquila nipalensis</i> , Steppe Eagle	7		
	<i>Asio flammeus</i> , Short-eared Owl	2,3	13,14, 15	
	<i>Aythya nyroca</i> , Ferruginous Duck	4	13	
	<i>Bubo bengalensis</i> , Rock Eagle Owl		13,14, 15	
	<i>Cettia brunnescens</i> , Hume's Bush Warbler	1,3		
	<i>Cettia pallidipes</i> , Pale-footed Bush Warbler	2,3,5		
	<i>Chaetornis striata</i> , Bristled Grassbird	2,3,5		
	<i>Ciconia nigra</i> , Black Stork	3,4,7,9	13	
	<i>Circus aeruginosus</i> , Western Marsh Harrier	4,7		
	<i>Circus cyaneus</i> , Northern Harrier	7		
	<i>Circus macrourus</i> , Pallid Harrier	7		
	<i>Circus melanoleucos</i> , Pied Harrier	7		

Category of threat (at National level)	Species	Habitat loss, degradation and fragmentation	Over-exploitation	Other
	<i>Conostoma oemodium</i> , Great Parrotbill	1,3		
	<i>Emberiza melanocephala</i> , Black-headed Bunting	2,3	13	
	<i>Emberiza pusilla</i> , Little Bunting	7	7	20
	<i>Emberiza spodocephala</i> , Black-faced Bunting	2,3,4	13	
	<i>Ficedula monileger</i> , White-gorgeted Flycatcher	1,3		
	<i>Ficedula subrubra</i> , Kashmir Flycatcher	1,3		
	<i>Francolinus pondicerianus</i> , Grey Francolin	7,9	13	20
	<i>Gallinago nemoricola</i> , Wood Snipe	1,3,4,9		
	<i>Garrulax caerulatus</i> , Grey-sided Laughingthrush	1,3		
	<i>Garrulax monileger</i> , Lesser Necklaced Laughingthrush	1,3		
	<i>Garrulax pectoralis</i> , Greater Necklaced Laughingthrush	1,3		
	<i>Grus antigone</i> , Sarus Crane	3,4,7,9,12	14	23
	<i>Grus virgo</i> , Demoiselle Crane	4,7,9	13	
	<i>Gypaetus barbatus</i> , Lammergeier	7,8	14	
	<i>Gyps himalayensis</i> , Himalayan Vulture	7,8		
	<i>Hydrophasianus chirurgus</i> , Pheasant-tailed Jacana	4,9	13	
	<i>Ketupa zeylonensis</i> , Brown Fish Owl	1,3,9	14,15,16	
	<i>Larus brunnicephalus</i> , Brown-headed Gull	4,5	16	
	<i>Larus ridibundus</i> , Black-headed Gull	4,5	16	
	<i>Leptoptilos javanicus</i> , Lesser Adjutant	3,7,9	13	
	<i>Macropygia unchall</i> , Barred Cuckoo Dove	1,3		
	<i>Neophron percnopterus</i> , Egyptian Vulture	1,8,9		
	<i>Nettapus coromandelianus</i> , Cotton Pygmy-goose	4,9	13	
	<i>Paradoxornis fulvifrons</i> , Fulvous Parrotbill	1,3		
	<i>Paradoxornis unicolor</i> , Brown Parrotbill	1,3		
	<i>Pitta sordida</i> , Hooded Pitta	1,3		
	<i>Ploceus bengalensis</i> , Black-breasted Weaver	2,3,12		
	<i>Porzana pusilla</i> , Baillon's Crake	4,5		
	<i>Psittacula alexandri</i> , Red-breasted Parakeet	1,3	15	
	<i>Pteruthius rufiventer</i> , Black-headed Shrike-babbler	1,3		
	<i>Pucrasia macrolopha</i> , Koklass Pheasant	1,3,9	13,17	
	<i>Pyrrhoplectes epauletta</i> , Golden-naped Finch	1,3		

Category of threat (at National level)	Species	Habitat loss, degradation and fragmentation	Over-exploitation	Other
	<i>Serinus thibetanus</i> , Tibetan Serin	12		
	<i>Sterna albifrons</i> , Little Tern	4,9,11	13,16	
	<i>Strix leptogrammica</i> , Brown Wood Owl	1,3	13,14,15	
	<i>Syrrhaptes tibetanus</i> , Tibetan Sandgrouse	2,9	13	
	<i>Tragopan satyra</i> , Satyr Tragopan	1,3,9	13,17	
	<i>Turdoides caudata</i> , Common Babbler	7		20
	<i>Tyto alba</i> , Barn Owl	7	13,14,15	20
	<i>Vanellus malabaricus</i> , Yellow-wattled Lapwing	2,9		
	<i>Xiphirhynchus superciliosus</i> , Slender-billed Scimitar Babbler	1,3		
	<i>Yuhina nigrimenta</i> , Black-chinned Yuhina	1,3		
	<i>Zoothera marginata</i> , Dark-sided Thrush	1,3		
NT	<i>Acrocephalus stentoreus</i> , Clamorous Reed Warbler	4		
	<i>Alectoris chukar</i> , Chukar Partridge	7	13,15	
	<i>Amandava amandava</i> , Red Avadavat	2,3,4	15	
	<i>Anas poecilorhyncha</i> , Spot-billed Duck	4,7,9	13	
	<i>Anhinga melanogaster</i> , Oriental Darter	4,5	16	
	<i>Anser anser</i> , Greylag Goose	4,9	13	
	<i>Anser indicus</i> , Bar-headed Goose	4,6	13	
	<i>Anthracoceros albirostris</i> , Oriental Pied Hornbill	1,3	13	
	<i>Arborophila rufogularis</i> , Rufous-throated Partridge	1,3,9	13	
	<i>Aviceda leuphotes</i> , Black Baza	1,3		
	<i>Aythya ferina</i> , Common Pochard	4,9	13	
	<i>Blythipicus pyrrhotis</i> , Bay Woodpecker	1,3		
	<i>Caprimulgus affinis</i> , Savanna Nightjar	2,7	13g	
	<i>Caprimulgus macrurus</i> , Large-tailed Nightjar	1,7	13g	
	<i>Charadrius mongolus</i> , Lesser Sand Plover	3,9,10	13	
	<i>Chrysomma sinense</i> , Yellow-eyed Babbler	2,3,12		
	<i>Ciconia episcopus</i> , Asian Woollyneck	4,7,9	13	
	<i>Cisticola exilis</i> , Golden-headed Cisticola	2,3,12		
	<i>Clamator coromandus</i> , Chestnut-winged Cuckoo	1,3	13	
	<i>Cutia nipalensis</i> , Himalayan Cutia	1,3		
	<i>Falco naumanni</i> , Lesser Kestrel	7		

Category of threat (at National level)	Species	Habitat loss, degradation and fragmentation	Over-exploitation	Other
	<i>Ficedula hodgsonii</i> , Slaty-backed Flycatcher	1,3		
	<i>Ficedula sapphira</i> , Sapphire Flycatcher	1,3		
	<i>Galerida cristata</i> , Crested Lark	7		20
	<i>Gallinix cinerea</i> , Watercock	4,7	13	
	<i>Garrulax rufogularis</i> , Rufous-chinned Laughingthrush	1,3		
	<i>Garrulax squamatus</i> , Blue-winged Laughingthrush	1,3		
	<i>Garrulax subnivalis</i> , Scaly Laughingthrush	1,3		
	<i>Glareola lactea</i> , Small Pratincole	4,7,9,10, 11	13	
	<i>Glareola maldivarum</i> , Oriental Pratincole	4,9	13	
	<i>Grus grus</i> , Common Crane	4,7,9	13	20
	<i>Haematospiza sipahi</i> , Scarlet Finch	1,3		
	<i>Limosa limosa</i> , Black-tailed Godwit	4,9	13	
	<i>Lonchura malabarica</i> , White-throated Munia	2	13,15	20
	<i>Lophophorus impejanus</i> , Himalayan Monal	1,3,9	13,17	
	<i>Microhierax caerulescens</i> , Collared Falconet	1,3		
	<i>Muscicapa ferruginea</i> , Ferruginous Flycatcher	1,3		
	<i>Mycerobas melanozanthos</i> , Spot-winged Grosbeak	1,3		
	<i>Niltava grandis</i> , Large Niltava	1,3		
	<i>Pavo cristatus</i> , Indian Peafowl	1,3,9		
	<i>Phalacrocorax carbo</i> , Great Cormorant	4,7,9	13,16	
	<i>Ploceus philippinus</i> , Baya Weaver	7	13	20
	<i>Pluvialis fulva</i> , Pacific Golden Plover	7,9		
	<i>Pomatorhinus schisticeps</i> , White-browed Scimitar Babbler	1,3		
	<i>Prinia flaviventris</i> , Yellow-bellied Prinia	2,3,12		
	<i>Psittacula eupatria</i> , Alexandrine Parakeet	1,3	15	
	<i>Psittacula roseata</i> , Blossom-headed Parakeet	1,3		
	<i>Riparia paludicola</i> , Plain Martin	10		
	<i>Saxicola leucurus</i> , White-tailed Stonechat	2,3,12		
	<i>Seicercus poliogenys</i> , Grey-cheeked Warbler	1,3		
	<i>Sterna hirundo</i> , Common Tern	4,9	13,16	
	<i>Tadorna ferruginea</i> , Ruddy Shelduck	4,5,7,9	13	
	<i>Tetraogallus himalayensis</i> , Himalayan Snowcock	9,12	13,17	

Category of threat (at National level)	Species	Habitat loss, degradation and fragmentation	Over-exploitation	Other
	<i>Threskiornis melanocephalus</i> , Black-headed Ibis	4,7,9	13	
	<i>Timalia pileata</i> , Chestnut-capped Babbler	2,3,12		
	<i>Treron apicauda</i> , Pin-tailed Green Pigeon	1,3		
	<i>Treron phayrei</i> , Ashy-headed Green Pigeon	1,3		
	<i>Turnix sylvaticus</i> , Small Buttonquail	2,3,5		
	<i>Turnix tanki</i> , Yellow-legged Buttonquail	2,3,5		
	<i>Vanellus duvaucelii</i> , River Lapwing	6,9,10	13	
	<i>Vanellus vanellus</i> , Northern Lapwing	4,7,9	13	
	<i>Zoonavena sylvatica</i> , White-rumped Spinetail	1,3		
DD	<i>Alauda arvensis</i> , Eurasian Skylark			20
	<i>Amaurornis bicolor</i> , Black-tailed Crane	4,9	13	
	<i>Aquila rapax</i> , Tawny Eagle	7		
	<i>Brachypteryx leucophris</i> , Lesser Shortwing	1,3		
	<i>Bubo bubo</i> , Eurasian Eagle Owl		13,14, 15	
	<i>Buteo hemilasius</i> , Upland Buzzard	7		
	<i>Carduelis flavirostris</i> , Twite	unknown		
	<i>Ficedula parva</i> , Red-breasted Flycatcher	1		
	<i>Grus nigricollis</i> , Black-necked Crane	9	13	
	<i>Gyps fulvus</i> , Griffon Vulture	8		
	<i>Hierococyx fugax</i> , Hodgson's Hawk Cuckoo	1,3	13	
	<i>Melanocorypha maxima</i> , Tibetan Lark	unknown		
	<i>Mirafra cantillans</i> , Singing Bush Lark	2,3		
	<i>Mycerobas icteroides</i> , Black-and-yellow Grosbeak	unknown		
	<i>Oriolus chinensis</i> , Black-naped Oriole	1		
	<i>Orthotomus cucullatus</i> , Mountain Tailorbird	1,3		
	<i>Otus sunia</i> , Oriental Scops Owl	1,3	13,14, 15	
	<i>Phylloscopus tytleri</i> , Tytler's Leaf Warbler	unknown		
	<i>Rimator malacoptilus</i> , Long-billed Wren Babbler	1,3		
	<i>Riparia diluta/riparia</i> , Pale/Sand Martin	unknown		
	<i>Strix ocellata</i> , Mottled Wood Owl	1,9	14,15	

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**Author Contribution:** CI drafted the text for this paper. For the project she assisted in: compiling and analysing species information and making the overall analysis of status, ecology, threats, conservation measures and threat status of all of Nepal birds. HSB assisted in compiling species information, organised the Nepal team of workers on the project and helped to make the overall analysis of Nepal's birds. TI compiled the bibliography on Nepal birds and prepared a document listing all references for each species which were vital in preparing species accounts. APK and MPK prepared the species' maps. LPP contribution included advice on interpretation of results and important comments on pheasant species. RA provided invaluable guidance on methods, interpretation of results and contributions to drafting this paper.





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