

Bengal Florican Conservation Action Plan (2024-2033)



Government of Nepal
Ministry of Forests and Environment
Department of National Parks and Wildlife Conservation
Babar Mahal, Kathmandu



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Foreword

Nepal is globally renowned for its biological diversity with a diverse range of both vegetation and wildlife. The birdlife is more diverse than other fauna in terms of species diversity. As many as 894 bird species have been identified so far in the country. The government in collaboration with local communities, civil society and conservation partners is strongly committed to conserving biodiversity through various policy, legal and institutional mechanisms. There are 12 National Parks, 1 Wildlife Reserve, 1 Hunting Reserve, 6 Conservation Areas, 13 Buffer Zones, 11 Forest Conservation Areas and 10 Ramsar Sites covering nearly a quarter of the country's total area. The protected areas are primarily home to hundreds of bird species. Besides, forest areas outside protected areas are also sustainably managed in a way that biodiversity including birdlife is conserved. Nonetheless, several bird species residing in the country are on the verge of extinction while others are endangered due to several drivers including, but are not limited to, deforestation, forest degradation, and different forms of pollution, unplanned urbanization and use of toxic chemicals.

The Bengal Florican is classified as Critically Endangered by the IUCN, while the government has also listed the species as one of the nine protected bird species in Nepal pursuant to clause 10 of National Park and Wildlife Conservation Act 1973. Once widely found in the grasslands of the Terai region, Bengal Florican is now confined to only four protected areas. Besides limited suitable habitats, their post breeding movement from protected areas to farmland make them more vulnerable to anthropogenic disturbances jeopardizing their survival. Therefore, planned conservation efforts are crucial for the recovery of the species in their historical range habitats.

Scientific studies and population survey reports have been the basis for Bengal Florican Conservation Action Plan (2024-2033) for Nepal. The conservation action plan will address the identified threats by guiding the conservation actions for restoration and management of grassland habitats. The cooperation and collaboration among the stakeholders are fundamental to safeguard this species in its habitat within and outside protected areas.

I would like to thank Mr. Bed Kumar Dhakal, DDG, DNPWC and Mr. Dipak Inawali, DDG, DoFSC for their leading role in giving the final shape of this action plan. My special thanks go to Mr. Shyam Kumar Shah, Senior Ecologist, Mr. Rishi Ram Dhakal, and Mr. Ashim Thapa, DNPWC for taking the painstaking effort to get the document in this shape.

I highly appreciate Dr. Narendra Man Babu Pradhan, Dr. Hem Sagar Baral, Mr. Rajendra Suwal and Ishana Thapa for their contribution to this Action Plan. I would like to extend my sincere gratitude to Bird Conservation Nepal (BCN) for its technical and financial supports in consultation process and drafting of this Action Plan. Finally, I urge all the government agencies, conservation partners and local communities for the successful implementation of this action plan.


Sindhu Prasad Dhungana, PhD
Director General



Female Bengal Florican by Santosh Bajain

Acronymes and Abbreviations

AD	Anno Domini
BFCAP	Bengal Florican Conservation Action Plan
BNP	Bardiya National Park
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNP	Chitwan National Park
DNPWC	Department of National Parks and Wildlife Conservation
DFO	Division Forest Office
DoFSC	Department of Forest and Soil Conservation
IUCN	International Union for Conservation of Nature
KTWR	Koshi Tappu Wildlife Reserve
MoFE	Ministry of Forest and Environment
NTNC	National Trust for Nature Conservation
PAs	Protected Areas
NBSAP	National Biodiversity Strategy and Action Plan
ShNP	Suklaphanta National Park
WWF	World Wildlife Fund for Nature
ZSL	Zoological Society of London

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Executive Summary

Bengal Florican *Houbaropsis bengalensis* is one of the world's rarest bustard species. The International Union for Conservation of Nature (IUCN) has designated the Bengal Florican as a Critically Endangered species, with a global population of less than 1000 individuals. It is one of Nepal's nine protected species, according to clause 10 of the National Parks and Wildlife Conservation Act 2029 (1973). Furthermore, its placement in CITES Appendix I emphasizes the need for more stringent approach to species recovery.

The global distribution is quite uneven, with Cambodia in South East Asia and India and Nepal in South Asia. Historically, the bird was found throughout the Terai's lowland grassland. However, because to habitat loss caused by grassland conversion into agricultural land and human settlements; plantation; natural succession; and hunting, the current breeding distribution is restricted to a few, mostly protected, grassland areas, and to farmlands during the non-breeding season. There are fewer than 100 Bengal Floricans in Nepal. Suklaphanta National Park, Chitwan National Park and Koshi Tappu Wildlife Reserve and Koshi Barrage area have recorded its existence, whereas it has not been seen in Bardiya National Park since 2012.

The bird is a habitat specialist, favoring alluvial grasslands and grasses of a certain height. Terai grasslands have historically been maintained by regular changes in river flows, as well as grazing and trampling by wild herbivores such as Greater One-horned rhinoceros *Rhinoceros unicornis*, Wild water buffalo *Bubalus arnee* and deer species. The expansion of human settlements and agricultural land along river belts has transformed these natural grasslands. As a result, most grassland patches are now small and isolated, and they are under threat from encroachment and unregulated

livestock grazing, particularly outside the protected areas. While, the grassland within protected areas has been transitioning to unfavorable habitat for Bengal Florican because of succession.

Little was known about the species' population size, distribution and habitat ecology particularly during the non-breeding season, when the bird remained unrecorded. However, research has substantially increased our understanding of the potential distribution, seasonal movement and habitat needs of the species during both the breeding and non-breeding seasons. Bengal Florican are known to move outside protected areas during non-breeding season and spend time in degraded grasslands and farmlands near human settlements exposing themselves to various threats. There are also trans-boundary movements between India and Nepal during the non-breeding season.

The goal of this action plan is to recover Bengal Florican population, restore and fully maintain its habitat thereby improving national status. The prime objective is to maintain a healthy and viable population of Bengal Florican expanding its quality habitat, gaining better understanding of its ecology, reducing threats and exploring ex-situ conservation practices for its recovery. The specific objectives are:

- 1 Restore and manage breeding and non-breeding sites and habitats
- 2 Increase science-based knowledge on Bengal Florican
- 3 Increase Bengal Florican conservation awareness among all key stakeholders
- 4 Establish and maintain partnership among national and international organizations
- 5 Explore Bengal Florican conservation ex-situ practices and feasibility study in Nepal

Each objective is further detailed with outputs and actions. The total estimated cost for the ten-year plan is NRs 145,700,000 (145.7 million). The DNPWC will coordinate with all the stakeholders to ensure the successful implementation of this action plan.



Bengal Florican, Male: BON Archive

Introduction



Satellite tagged Male Bengal Florican by Prabhat Rijal

1.1 Relevance of the action plan

Bengal Florican *Houbaropsis bengalensis* (J.F. Gmelin, 1789) is one of the world's most endangered bustards, listed as Critically Endangered species on the IUCN RedList. Studies identified loss and degradation of grassland habitats as the major threats for Bengal Florican population decline. Recent population monitoring of Bengal Florican obtained decreasing of Bengal Florican in all the protected areas with no record from Bardiya National Park. Moreover, inadequate conservation awareness among the local communities and less attention of conservation stakeholders for Bengal Florican conservation have aided further decline of this species. Aiming to ensure its continued survival, Bengal Florican Conservation Action Plan (BFCAP) 2016-2020 was formulated and implemented in concord with the vision of National Biodiversity Strategy and Action Plan (NBSAP) 2014-2020. BFCAP (2016-2020) was successful in implementing some activities. Majority of the activities are yet to be completed. Therefore, Department of National Parks and Wildlife Conservation (DNPWC) initiated the process to formulate a revised and updated BFCAP 2024-2033 to ensure

better conservation initiative for the recovery of this threatened species. This revised and updated action plan intends to prevent the further decline of population and a meaningful conservation of Bengal Florican in Nepal.

1.2 Action plan revision process

Nepal has been formulating the species conservation action plans to keep better track of the iconic species. The Government of Nepal is committed to develop and implement conservation action plans for at least 10 rangeland dependent plants and animal species as mentioned in its National Biodiversity Strategy and Action Plan 2014-2020 (MoFSC, 2014). A national workshop, namely "Bengal Florican Conservation in Nepal" was held to seek the experts' opinion to formulate the former Bengal Florican Conservation Action Plan (BFCAP) 2016-2020. Again, a meeting was held to elicit the status, shortcomings and initiatives for recovery and conservation of Bengal Florican in DNPWC in 2022.

DNPWC commissioned a task force to revise, update and develop Bengal Florican conservation action plan. A meeting of task force held in DNPWC authorized a

core team to prepare the revised draft action plan. This draft action plan was shared with the participants from the Ministry of Forest and Environment (MoFE), DNPWC, DoFSC, IUCN, Zoological Society of London (ZSL)-Nepal, BCN, World Wildlife Fund (WWF)-Nepal, National Trust for Nature Conservation (NTNC) and other experts during the meeting held in DNPWC, Kathmandu. The team revised the BFCAP (2016-2020), and prepared a revised draft action for 2024-2033 on the basis of recent study, findings, stakeholder discussions, field visits and habitat site level consultation workshops. The draft revised action plan was shared with the technical team of DNPWC for their invaluable input and suggestions. Thereafter, the draft plan was reviewed by the experts and the government endorsed the action plan. Feedback and comments from participants were incorporated and reviewed by the experts. Having considered all the valuable input from all the possible sources, the action plan was finalizing and proceeded for the government's approval.



Consultation workshop in Koshi Tappu Wildlife Reserve (top left), Chitwan National Park (top right), Bardiya National Park (Bottom left) and Shuklaphanta National Park (Bottom right).

1.3 Scope of the action plan

Government of Nepal is committed to make every possible effort to save the CITES listed and Critically Endangered species in Nepal. Based on the findings of recent scientific studies, two departments, i.e., DNPWC and Department of Forest and Soil Conservation (DoFSC), are committed to magnify the conservation efforts to ensure the conservation of this bird species. The timely implementation of this action plan with adequate resource allocation will ensure not only the conservation this species but also of other highly threatened species such as Lesser Florican (*Syphotides indicus*), Finn's Weaver (*Ploceus megarhynchus*), Bristled Grassbird (*Chaetorinis striata*),

Hispid Hare (*Caprolagus hispidus*) and Pygmy Hog (*Procula salvania*) that share the same habitat. It will also contribute the conservation of the important habitat, i.e., Terai grassland, in Terai Arc Landscape and other protected areas beyond.

The preparation of the action plan is primarily guided by National Biodiversity Strategy and Action, 2014-2020. Other national legal instruments such as National Parks and Wildlife Conservation Act 2029 (1973); Forest Act 2049 (1993); Forest Policy 2075 (2018); and the management plans of respective protected areas (PAs) with Bengal Florican habitats. The cardinal focus of the plan is to address the need for long-term conservation requirements of the species. It seeks the collaborative efforts of an array of stakeholders-policy makers, protected

area managers, wildlife law enforcement agencies, conservation partners, research and academic institutions and community-based organization. All stakeholders will collectively address the conservation issues of Bengal Florican with their respective expertise, capacity and experience for the successful implementation the plan. The conservation measures outlined in the document will be equally applicable to all the areas within the country where it is distributed. Since the satellite telemetry study has established that the species moves frequently between Nepal and India: the plan emphasizes on the transboundary cooperation and coordination to protect the species. In fact, range countries should make some strategic effort to safeguard the species.

Background

2.1 General introduction

Bengal Florican is a highly threatened and rare bustard listed as Critically Endangered by IUCN (BirdLife International 2018). Globally, it is distributed in two isolated populations, one in South East Asia in Cambodia (subspecies, *Houbaropsis bengalensis blandini*) and other in South Asia in India and Nepal (subspecies, *Houbaropsis bengalensis bengalensis*). With fewer than 1,000 mature individuals remaining, it is already extinct from Bangladesh and Vietnam (Birdlife International 2022a).

Although, India is likely to hold higher population of Bengal Florican compared to Nepal, no recent estimates are available from India (BirdLife International 2022a). In Nepal, it is restricted to sites in an around protected areas (PAs) with small numbers (less than 100 individuals) susceptible to local extinction. This solitary and territorial bird is a habitat specialist preferring open short alluvial grassland with scattered bushes (Inskipp & Inskipp 1983, Narayan & Rosalind 1990, Sankaran 1996, Baral et al. 2003 and Poudyal et al. 2008a, 2008b & 2008c). Loss and degradation of Terai grassland within and outside PAs has been the major threats to its survival. Until recently, limited information on population and ecology has only been available from the breeding season when the bird becomes more conspicuous during display flight. However, past satellite telemetry studies in Nepal and Indian have increased our understanding of its ecology, habitat requirement and seasonal movements especially during the non-breeding season (BCN 2016).

Although Bengal Florican is one of the nine protected birds listed in National Parks and Wildlife Conservation (NPWC)

Act 2029 (1973); it has received little conservation attention, especially outside PAs. The PAs in the Terai where Bengal Florican inhabit have been managed primarily for mega fauna such as Greater one-horned Rhinoceros *Rhinoceros unicornis*, Asian Elephant *Elephas maximus* and Bengal Tiger *Panthera tigris tigris* etc. This approach often overlooks the special needs of habitat specialist birds like Bengal Florican. Not being armed with better understanding of the species is a constraint in its better management. Due to its critical conservation status across the globe, the DNPWC has geared up its conservation effort since a decade.

2.2 Taxonomy

Bengal Florican is a member of the order Gruiformes and further classified into suborder Otides. The family Otididae has 11 genera comprising 24 species worldwide, six species are found in South Asia with two species in Nepal (Table 1). It was first described by Gmelin in 1789 as *Otis bengalensis*. Blandford termed it *Sypheotis bengalensis* (1898), while Baker in his Fauna volumes (1929) termed it *Houbaropsis bengalensis*. Ali and Ripley (1969) and Sibley and Monroe (1990) termed it *Eupodotis bengalensis* but BirdLife International (2001) and all other specialists called it *Houbaropsis*

bengalensis. There are two subspecies, *H.b. bengalensis* and *H.B. blandini* (Delacour 1928).

The systematic classification is as follows:

Kingdom: **Animalia**

Phylum: **Chordata**

Class: **Aves**

Order: **Gruiformes**

Family: **Otididae**

Genus: ***Houbaropsis***

Species: ***bengalensis***

Subspecies: ***bengalensis***

Local Names: **Kharmujur, खरमुजुर**



Male Bengal Florican by Bed Bahadur Khadka

Table 1: Asian Bustards and Conservation Status

Species	IUCN/Global Status	National Status	Distribution in Asia
Bengal Florican <i>Houbaropsis bengalensis</i>	Critically Endangered	Critically Endangered	Nepal, India and Cambodia (Extinct from Bangladesh and Vietnam)
Lesser Florican <i>Sypheotides indicus</i>	Critically Endangered	Critically Endangered	Nepal and India (Extinct from Pakistan)
Little Bustard <i>Tetrax tetrax</i>	Near Threatened		Afghanistan, Pakistan
Great Bustard <i>Otis tarda</i>	Vulnerable		Afghanistan, Pakistan
Great Indian Bustard <i>Ardeotis nigriceps</i>	Critically Endangered		India, Pakistan
Macqueen's Bustard <i>Chlamydotis macqueenii</i>	Vulnerable		India, Pakistan, Afghanistan

Source: Birdlife International (2022), DNPWC and BCN (2022), Inskipp et al. (2016), IUCN (2022)

Ali and Ripley (1995), Grimmett et al. (2012), Rasmussen and Anderton (2012) have described the Bengal Florican as a distinct sexually dimorphic bird. It is a medium sized ground-nesting bird with long neck and legs; the female is slightly taller (66cm) than the male (55cm). The adult males have black head, neck and underparts with a white wings patch which is distinctly visible while flying. However, when during the breeding season males have a thick bunch of feathers hanging under the breast. The non-breeding male is like the female but slightly darker above, with broad white wing patch and black on breast through vent. On the other hand, the female has dulled brown and black feather.

Bengal Florican and Lesser Florican *Sypheotides indicus* are found in Nepal. Six species of bustard under family Otidae are found in South Asia and all are threatened with extinction, listed in different category of IUCN RedList (Grimmett et al. 2012, Rasmussen and Anderton 2012 and BirdLife International 2022).

2.3 Status and distribution

2.3.1 Global

The Bengal Florican is considered to be one of the rarest bustard species (Hoyo et al 1996). Globally, the Bengal Florican is distributed in two isolated populations; *Houbaropsis bengalensis bengalensis* is found in South Asia in the Terai area of Nepal and India while *H. b. blandini* is distributed in South East Asia in Cambodia. In south Asia, the Bengal Florican was once widely distributed in the Gangetic and Brahmaputra plains south of the Himalayas from the Kumaon Terai of Uttar Pradesh through Bihar and southern Nepal, to northern West Bengal, and the foothills and plains of Assam and Arunachal Pradesh (BirdLife International 2001 and 2022a).

In Nepal it is recorded below 305m in the Terai, restricted to a few Protected Areas and adjacent sites: Suklaphanta National

Park (ShNP), Bardiya National Park (BNP), Chitwan National Park (CNP) and Koshi Tappu Wildlife Reserve (KTWR) (Baral and Inskipp 2004), BCN and DNPWC 2011 and Inskipp et al. 2016)

Various surveys on breeding population were carried out in known occupied sites in Nepal since 1982. Inskipp and Inskipp (1983) represent the first survey, other notable surveys include Weaver (1991) in 1990, Pokharel & Dhakal (1998), Tamang (2001), Tamang et al (2001), Baral et al (2001 and 2003) in 2000-2001, Thapa and Khaling (2006), Poudyal (2007) and Poudyal et al (2008a, 2008b) & 2008c) in 2006-2007, Baral et al. (2013) in 2012, Khadka et al (2013) in 2012, BCN (2014 and 2015), Baral et al (2020) in 2017 and BCN (2021) in 2021 and BCN (2023) in 2023, as summarized in table 2 below.

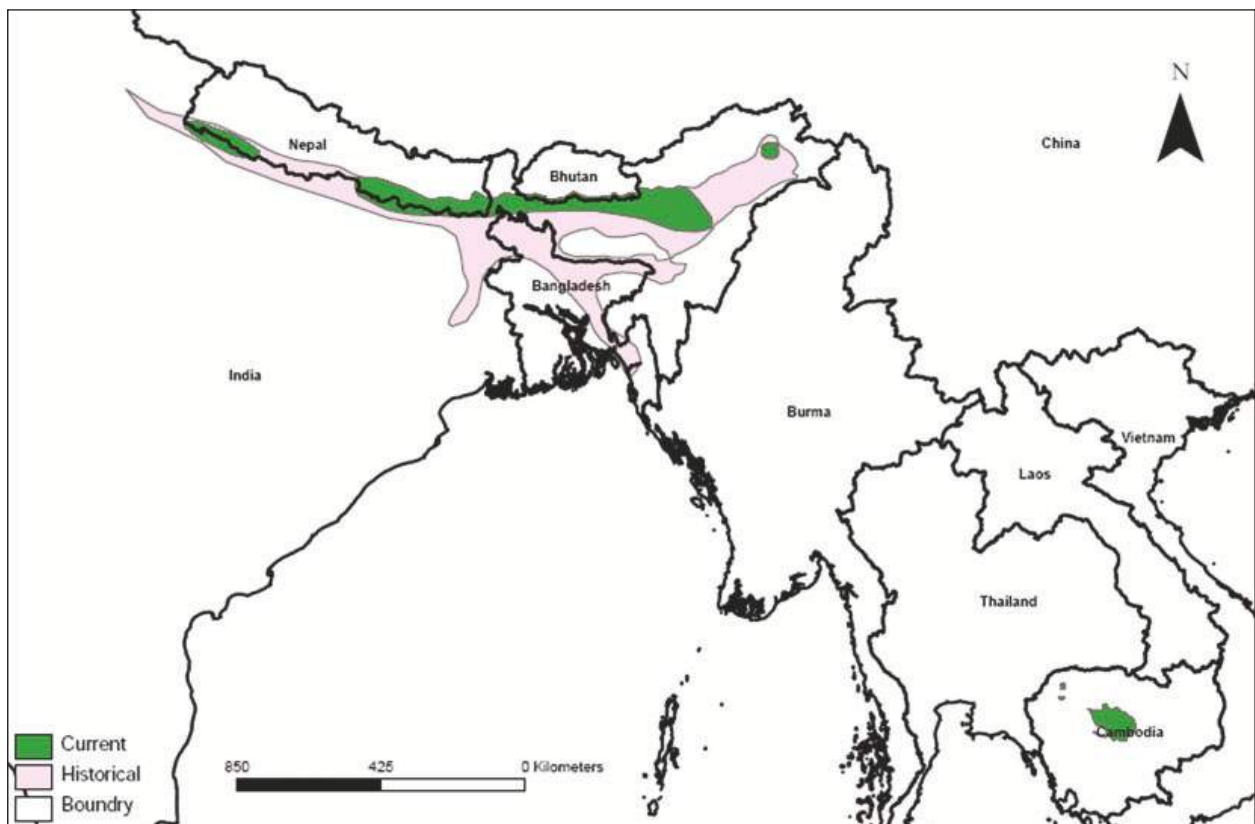
ShNP used to inhabit a good Bengal Florican population but there has been a continuous decline of population; 53.33% of population has declined

when compared with 1982 population. Suklaphanta grassland within ShNP is a regular breeding habitat but there has been no record at Karaiya grassland since 2000. BNP was one of the best sites for Bengal Florican with habitats at Lamkauli grassland, Baghaura grassland and Khauraha grassland but there has been a continuous decline since 2000 with just two recorded in 2006-2007, and no record since then. CNP shows a fluctuation in population with Bengal Florican being lost from previous known sites, but making a comeback at created and managed habitat inside the park and recorded in newly managed grassland in the buffer zone (Chaudhary 2007 and Khadka et al 2013). Single Bengal Florican was recorded in 2021 (BCN, 2021). Bengal Florican made a comeback

at Koshi flood plains including KTWR in 2011 after a long absence (Baral et al. 2012), this represents the largest known population in Nepal, and perhaps the most densely populated area in the Indian subcontinent (Baral et al. 2013 and BCN 2014 and 2015). The 2021 survey showed further decline in the population by 48.78% from that of 2017 (BCN, 2021). The 2023 survey showed hopeful population in KTWR and surrounding area and CNP with addition of few individuals than 2021 survey whereas, the population in ShNP further decreased with count of 5 individuals (BCN, 2023). It is estimated that the Bengal Florican population is no more than 100 individuals in Nepal (BCN and DNPWC 2011, BCN 2016, Inskipp et al. 2016)



Male Bengal Florican by Mohan Bikram Shrestha

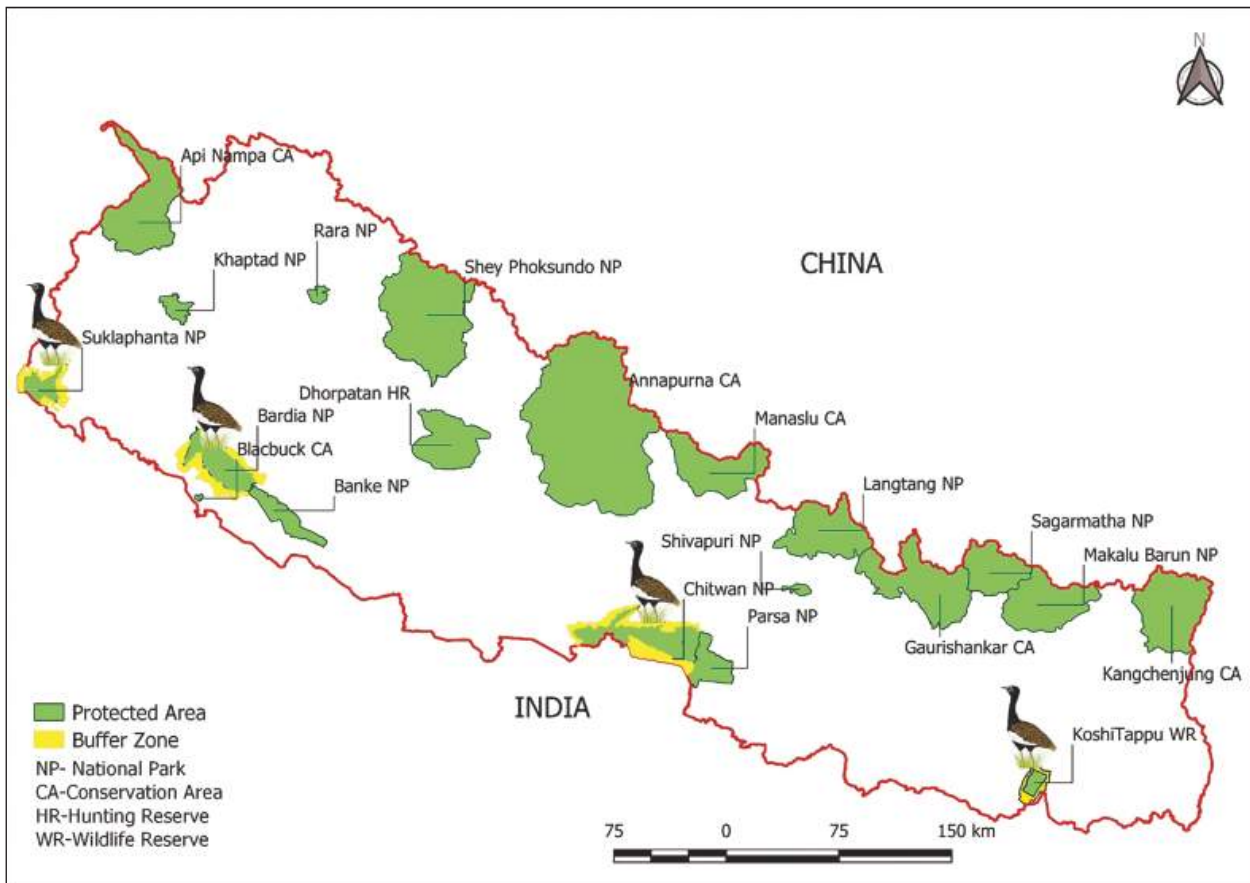


Map 1: Global Distribution Range of Bengal Florican

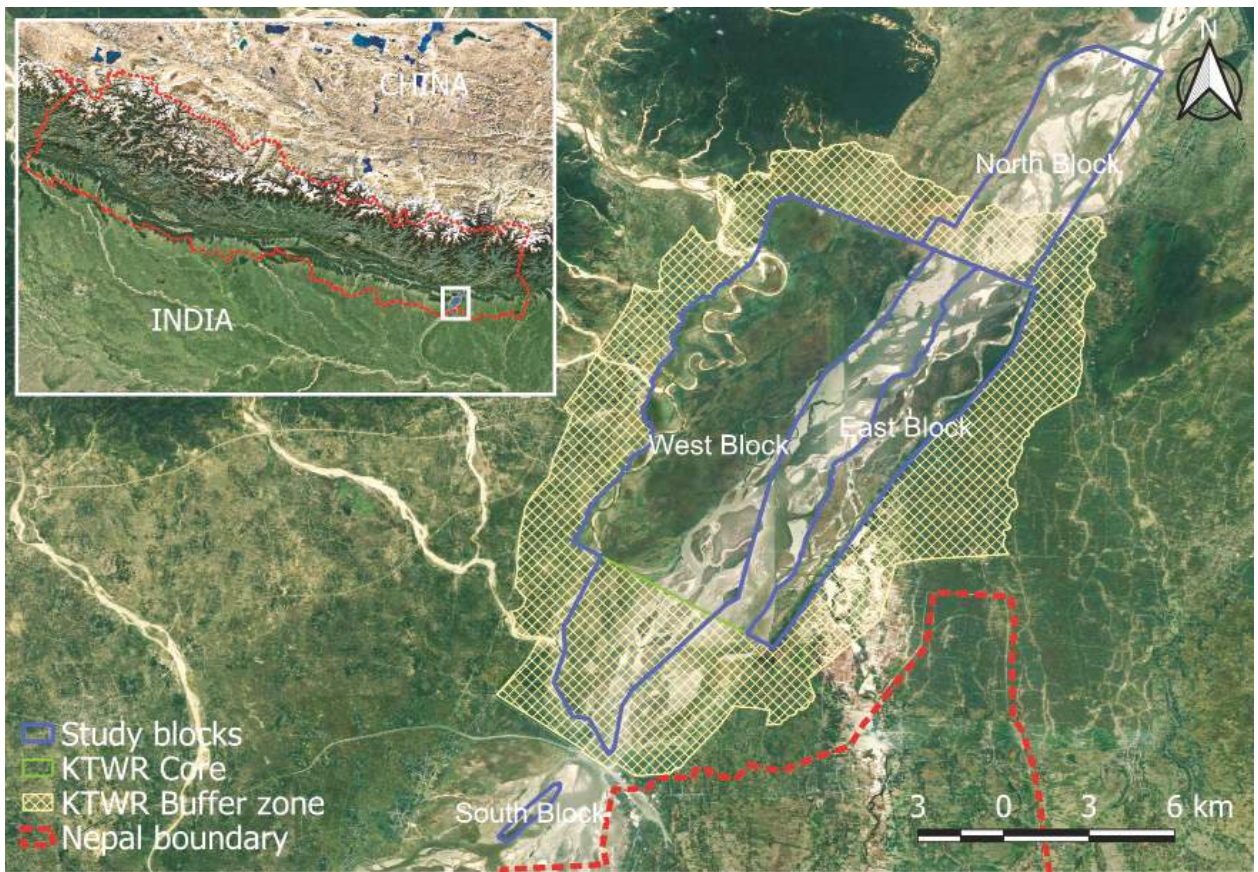
Table 2: Population of Bengal Florican in Nepal

Area	1982	1990	1998	2000-01	2006-07	2012-13	2014-15	2017	2021	2023
ShNP	15	17		12	11		8		7	5
BNP	10-11	6	9	2	2					
CNP	8-21			5	5	11	6		1	2
KTWR and surrounding areas	4					47	35	41	21	24

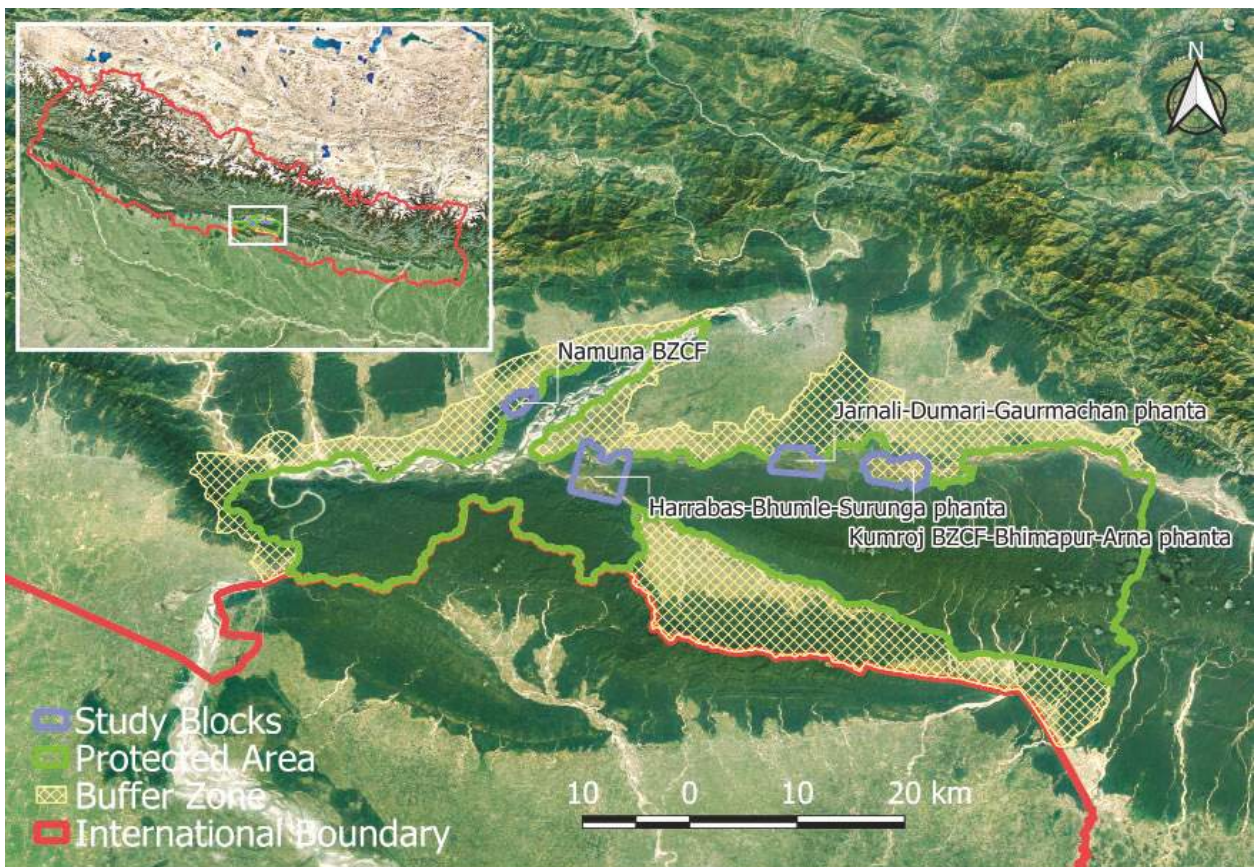
Source: Bird Conservation Nepal



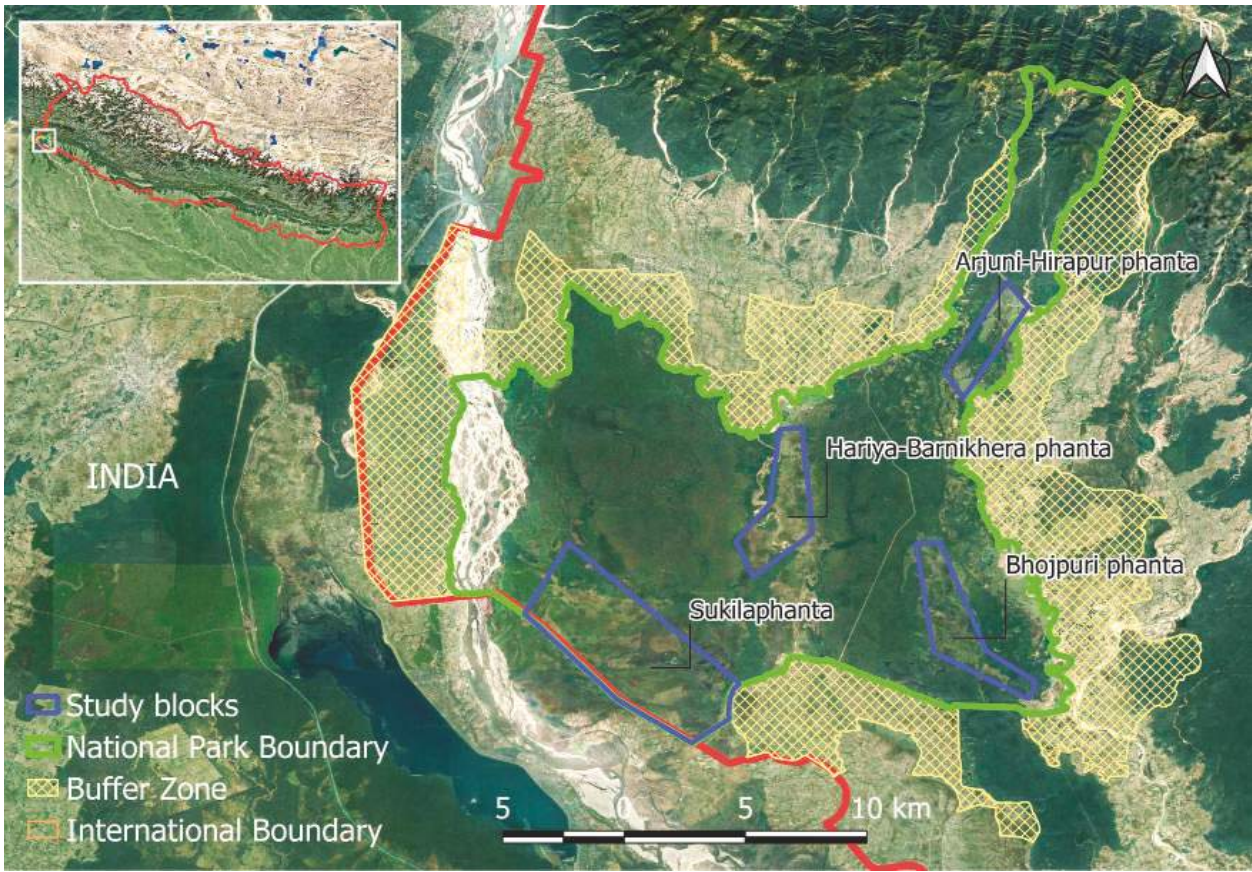
Map 2: Distribution of Bengal Florican in Nepal



Map 3: Bengal Florican population Survey block in Koshi Tappu Wildlife Reserve and surrounding area



Map 4: Bengal Florican population Survey block in Chitwan National Park and its Buffer Zone



Map 5: Bengal Florican population Survey block in Shuklaphanta National Park and its Buffer Zone



Map 6: Bengal Florican population Survey block in Bardiya National Park and its Buffer Zone

2.4 Conservation status

BirdLife International, the official IUCN Red List authority for birds, has listed the Bengal Florican as Critically Endangered. In 1988 it was in the threatened category whereas it was listed in the Endangered category from 1994 to 2004. Later it was upgraded as the Critically Endangered in 2007. The estimated global population is less than 1000 mature individuals (BirdLife International 2022a).

In national level, assessment of threatened birds of Nepal carried in 1996 evaluated Bengal Florican as Endangered (Baral et al 1996). This report was updated as the state of Nepal's Birds in 2004 (Baral and Inskipp 2004) and in 2010 (BCN and DNPWC 2011) upgrading it in Critically Endangered. Recent work on the assessment of Nepal's bird species has treated the species as Critically Endangered at a national level (Inskipp et al. 2016)

2.5 Habitat and ecology

The Bengal Florican favors relatively open short grass (25-50 cm) for establishing territories, often within an expanse of tall grass (1-2m) and scattered bushes (Inskipp & Inskipp 1983, Narayan & Rosalind 1990, Baral & Inskipp 2004, Baral et al, 2003). Although short grassland appears to be favored for foraging and displaying, the birds seek shelter in tall grass during the heat of the day, and females spend much of their time in the tall grass for breeding (Inskipp & Inskipp 1983). During the non-breeding season, they move to short grassland and farmlands. Recent studies (BCN 2014, 2015 and DNPWC 2016) indicate that the birds leave their breeding grasslands when the vegetation height is higher than optimal. However, the ecology during the non-breeding season and reasons behind leaving its breeding grassland still need to be investigated. Migration of both polytypic species (*H. b. blandini*) was reported up to 60 km annually to escape

rising floodwater after breeding (Gray et al 2009, Packman 2011). The Bengal Florican is omnivorous and feeds on fruits, shoots and flowers, and insects such as grasshoppers and beetles and even frogs and small reptiles (Ali and Ripley 1987 and Choudhury 2000)

The breeding season starts from late March and lasts till the early part of July (Ali and Ripley 1987, Rasmussen and Anderton 2012). Female Bengal Florican are elusive and males become highly territorial and cryptically colored against burnt grass and flowering *Imperata cylindrica* during the breeding season. Males are normally solitary and highly territorial in the breeding season and perform aerial displays, but some males may come together for short period lasting several minutes, chasing and fighting each other for display. The flight display usually takes place in an open patch of the males' fixed territories. Territorial males make long circular flight with shallow, rapid wing-bear, with their white wings extremely conspicuous. Display flight of the Bengal Florican is properly discussed by Sankaran (1991), Narayan (1992) and Rasmussen and Anderton (2012)

Major Conservation Efforts and Achievements



Male Bengal Florican by Mohan Bikram Shrestha

3.1 Policy and legislative Arrangements

NBSAP 2014-2020 emphasize priority actions in conserving national and globally importation species included of Bengal Florican (MoFSC, 2014). Bengal Florican is listed as “critically endangered” in the IUCN Red Data Book (Inskipp et al., 2016); and as an Appendix I of the Convention of International Trade on Endangered Species of Fauna and Flora (CITES) (CITES 2022), prohibiting international trade of the species. The species is included in the protected mammals listed under schedule I of NPWC Act, 2029 (1973). Nepal This NPWC Act, 1973 provisions a fine from NPR 15,000 to 30,000 or shall face imprisonment from three months to nine months or both for offenders and accomplices convicted for hunting and killing or injures Bengal Florican. Besides this parent law, i.e., NPWC Act, 1973, many other legal instruments

are in place with adequate provisions to ensure the safety of wildlife- NPWC regulation, 2030; Chitwan National Park regulation, 2030; and Bardiya National Park regulation, 2053; Wildlife Reserve Regulation 2034 and many more.

The recent Forest act 2019 (2076 BS), forest policy has focused mainly the conservation of biodiversity, wetland and protected areas (DFRS 2018). Likewise, the forestry sector strategy (2016-2025) also aims to protect and sustainably manage forest, plant resources, wildlife, watersheds and representative ecosystems with an inclusive, decentralized, competitive and well-governance approach providing equitable employment, income and livelihood opportunities.

In Addition, Buffer zone management regulation, 1996 (2052 BS) prohibited actions that degrade habitat, and damaging wildlife within the buffer zone thus safeguarding wildlife habitat and wildlife.

3.2 Achievements

3.2.1 Research and conservation initiatives

The subsequent population studies have generated the status of population of Bengal Florican in Nepal. These studies have been the baseline for implementation of conservation initiatives and awareness campaigns. The foremost Bengal Florican population study was carried out in 1982 with an estimate of 35-51 in Nepal; major populations were recorded from CNP, BNP and ShNP while Bengal Florican was not recorded from KTWR (Inskipp and Inskipp, 1983). Since then, subsequent population studies were carried primarily in CNP, BNP and ShNP in different years. While, Bengal Florican population survey continued in KTWR from 2012 after it made come back after a long gap.

The 1990 survey in BNP and ShNP counted 23 individuals of Bengal Florican (Weaver 1991). The 2000-01 study in

CNP, BNP and ShNP estimated 32-60 adult Bengal Florican (Baral et al, 2003); Poudyal et al. (2007) in 2006-07 study in CNP, BNP and ShNP estimated 28-36 adults. The 2012-13 study in CNP recorded 11 individuals (Khadka et al., 2013). After a long gap, a 2012 study in KTWR counted 47 individuals; the largest recorded population in Nepal (Baral et al., 2013). And, the 2017 study in KTWR recorded 41 (Baral et al., 2020). In the study carried across all known sites (KTWR, CNP, BNP and ShNP) in 2014 and 2015 counted 49 Bengal Florican population with no record from BNP and declining population in ShNP (BCN 2014 and 2015). Survey of Bengal Florican carried in Koshi Tappu and surrounding area in 2017 counted 41 individuals (Baral et al. 2020). The population count of Bengal Florican carried in 2021 counted 28 individuals with further decline of its population in Nepal (BCN. 2021). Whilst, the most recent survey carried in 2023 counted 31 individuals, with addition of

few individuals relating to 2021 Bengal Florican population in Nepal (BCN, 2023) (table 2).

Decline of Bengal Florican in Nepal is linked with improper and unscientific grassland management practices. Fire line construction (in BNP), uncontrolled grazing, human presence, vehicle safari, herbivore-centered grassland management involving ploughing and leaving tall grass (in CNP), habitat encroachment for agriculture and human settlement (in KTWR); late grassland management practices through fire during breeding season are identified as the threats behind the declining population of Bengal Florican (DNPWC, 2016). In addition, degradation of grassland by invasive species (*Mikania micrantha*), increase in predators: Asiatic Golden Jackal, Indian Grey Mongoose and feral dogs are considered other potential threats for the survival of Bengal Florican (Poudyal et al, 2008c; DNPWC 2016).

However, the impact of natural predators on Bengal Florican is required to be validated through study.

3.2.2 Information on seasonal movement

The mystery of seasonal movements of Bengal Florican has largely been resolved through satellite tracking studies conducted in both Nepal and India. In Nepal, total of seven birds were fitted with satellite transmitters (Argos PTT100) as detailed in Table 4.

The satellite tracking studies in KTWR, ShNP and CNP showed that Bengal Florican leave their breeding areas for more degraded grassland and farmland areas near human settlements outside the PAs from late August to March. The bird is therefore exposing themselves to additional threats such as hunting, disturbance, pesticides and power line collision for approximately seven months of the year.

Table 3: Details of Bengal Florican fitted with satellite transmitters

Date Tag Fitted	Bengal Florican	Tag ID	Location
01 April 2013	Male	123075	Jabdi, North of KTWR
02 April 2013	Male	123071	Jabdi, North of KTWR
19 April 2014	Female	123074	Kamalpur, KTWR
04 June 2014	Male	123076	Suklaphanta, ShNP
04 June 2014	Female	123070	Suklaphanta, ShNP
22 May 2015	Male	123072	Suklaphanta, ShNP
14 May 2016	Male	136678	Harrabasa, CNP

Source: BCN (2014, 2015 and 2016)

Conservation Threats

4.1 Grassland habitat Loss, degradation and isolation

The key threat to the species is grassland loss and modification throughout its range (BirdLife International 2001). In Nepal, after the eradication of malaria there was a great loss in grassland areas as a result of increased human population and agriculture expansion (Peet 1997). The grassland ecosystem is one of the most threatened ecosystems in the Indian Subcontinent (Grimmett et al. 1998). Nowadays, most known and occupied

grassland patches are small, isolated and restricted to protected areas. Therefore, the population of this species are highly susceptible to local extinction. Short grassland area either is converted into tall grassland and scrub either by succession or an inappropriate management. At CNP, ploughing in known Bengal Florican grasslands (Inskipp and Inskipp 1983) appeared to be counterproductive leaving tall grass *Narenga porphyrocoma* and *Scaccharum benghalensis* (Baral 2001). Encroachment of bushes and construction of fire line crisscrossing known grassland are the reasons for habitat loss in BNP. Grasslands at known non-breeding sites north of KTWR are heavily encroached for agriculture and human settlement expansion.

Late grassland management practices adopted between April and June, especially by fire, is detrimental to Bengal Florican and other breeding birds. Grassland outside the PA system mostly along river banks are poorly identified and managed.

4.2 Lack of protection in non-breeding areas

The satellite tracking studies of Bengal Florican showed that the species refuges in degraded grassland and farmland areas near human settlements outside the PAs during non-breeding season; exposing themselves to threat of being hunted and



Bengal Florican Habitat: infested by invasive species by Mohan Bikram Shrestha



killed and poisoned from pesticides and fertilizer applied in farmland. This might exacerbate population decline further.

4.3 Overgrazing and disturbance

Disturbance from people and cattle grazing during the breeding season is a serious threat at KTWR and adjacent areas. Around 3278 domestic cattle and 148 people were encountered during the breeding season (Baral et al 2013). Although the impact of grazing on grassland ecology is poorly understood, some level of cattle grazing may, in fact, be beneficial to Bengal Florican. Therefore,

further detailed research is required.

At KTWR many people entered the reserve in the early morning and late afternoon to collect cattle dung which corresponds with peak activity for Bengal Florican. Uncontrolled human presence inside KTWR leads to untimely, accidental and repeated fire events during the breeding season. The use of heavy machinery for flood control structure near the breeding island at KTWR is causing disturbance during the breeding season. Uncontrolled grazing and human presence are threats at Grassland at CNP; this route is used by local people for illegal grass cutting inside the CNP. Disturbance by vehicle and people is a threat at the breeding grasslands of BNP.

4.4 Invasive alien species and natural predators

Degradation of grassland by *Mikania micrantha* is another serious problem at KTWR and CNP. Studies reported the increase of predators like Asiatic golden jackal, Indian grey mongoose and feral dogs are marked as other potential threats at KTWR (Baral et al. 2013)

Challenges and Opportunities

5.1 Challenges

5.1.1 Insufficient knowledge and research

The knowledge on ecology and breeding biology of Bengal Florican is yet to be understood. Threats posed to Bengal Florican during non-breeding season when refuges in farmland outside PAs is also to be understood. The factors behind the complete absence of Bengal Florican in BNP since a 2012; severe decline of population in CNP and dwindling population in ShNP is ambiguous. The impact of the Koshi river dynamics on Bengal Florican in KTWR is perplexing. These knowledge gap have been challenges for the recovery of Bengal Florican.

5.1.2 Grassland conversion into forest

Grassland succession into forest have been emerging challenge in Bengal Florican conservation. Study have noted Bengal Florican mostly favor *sachharum-imperata* assemblage grassland habitat (Inskipp and Inskipp, 1983) with open short grass (25-50cm) for establishing territories and often appear in tall grass (100-200cm) with scattered bushes (Inskipp and Inskipp, 1983; Narayan and Rosalind, 1990; Baral and Inskipp, 2004; Baral et al., 2003). However, the natural succession phenomena have converted grassland into forest mainly in CNP, ShNP and BNP and to some extent in KTWR. The plant succession changing to tall grass, bushes and trees and increased predator are reported as potential threats to Bengal Florican (Poudyal et al, 2008). In addition,

the nature of changing the river course and flash floods during rainy season inundates the grassland habitat thereby creating negative impact on grasslands in KTWR. Thus, the habitat of Bengal Florican is shrinking every year. The shrinking of habitat has impacted on the quantity and quality of habitat.

5.1.3 Invasive species

Invasive species such as *Chromolaena odorata*, *eupatorium adenophorum*, *lantana camara*, *mikania micrantha* are found in CNP and KTWR which are becoming problematic for management. The exceptionally fast-growing capacity of the invasive weed damages or kills other plants. It also competes for water and nutrients, but perhaps even more importantly, it releases substances that inhibit the growth of other plants. It is



Forest resources collection in Protected Area by Jaya Nath Bhandari



Bengal Florican survey team at Koshi Tappu Wildlife Reserve

understandable that local perceived challenges from all types of invasive plants in the CNP and KTWR.

5.1.4 Unsustainable harvesting of forest products

Despite locals are legally allowed for collection of forest products in PAs in seasonal basis, the pressure of local community so high that they enter reserve illegally to collect grass and other forest products. Local people use *Saccharum spontaneum*, *Typha elephantine* and *phragmites karka* for thatching in KTWR. Uncontrolled grazing and human presence are threats at Grassland at CNP. Disturbance by vehicle and people is a threat at the breeding grasslands of BNP. Uncontrolled and over harvesting of plants from the reserve reduces the quantity and quality of plants that are preferred by Bengal Florican.

5.1.5 Feral Cattle and illegal Livestock Grazing

In KTWR, local people have been grazing their livestock in the islands of Koshi River flood plain for the time immemorial. Villagers bring large numbers of tended cattle and buffalo inside the reserve.

Cattle and buffalos grazing inside reserve cause habitat degradation. The insight of relation of cattle/livestock grazing in the reserve is yet to be understood.

5.1.6 Grassland fire

At KTWR, many people entered the reserve in the early morning and late afternoon to collect cattle dung which corresponds with peak activity for Bengal Florican. Uncontrolled human presence inside KTWR leads to untimely, accidental and repeated fire events during the breeding season. It was observed that local set fire in tall grassland with intention of new sprout where their livestock could be grazed despite prohibited. Due to this intentional fire, the breeding Bengal Florican leaves grassland while roasting egg preventing breeding success. The grassland area undergone fire is likely to changed composition resulting replacement of preferred species by less preferred ones.

5.1.7 Encroachment

The satellite tracking has revealed Bengal Florican inhabit Northern side of KTWR. The part of PA is occupied by encroachers or illegal settlers from several districts occupying the public land. Similarly, the

Koshi River flood victims have settled in the particular area hoping to get compensation or land entitlement in the future. This encroachment in flood plain has therefore been a great challenge for Bengal florican along with other sympatric wildlife.

5.2 Opportunities

5.2.1 Grassland specialist and flagship species

Bengal Florican is grassland specialist and flagship species. As a grassland specialist and flagship species, the conservation effort and priority conservation of Bengal Florican benefit other grassland birds. The grassland management outside PAs for its conservation during non-breeding season also benefit locals with quality grass for livestock. Bengal Florican can thus be the conservation of other grassland birds and also benefit local community. Implementation of conservation activities is opportunity of bringing conservation stakeholders from local community-based organizations, conservation partners to conservation authorities.

5.2.2 Tourism Promotion

Avi-tourism in Nepal is gaining its momentum with contribution to the national revenue. Although cryptic nature, Bengal Florican is charismatic species attracting birdwatchers. Despite limited distribution range with low population threatened to extinction, Bengal florican linking tourism has opportunity to promote conservation and strengthen the community livelihood.

5.2.3 Ex-situ Conservation

Ex-situ conservation of species is risky and expensive, but it can prevent extinction

when in-situ conservation is insufficient. Bengal Florican will be extinct in wild shortly if conservation efforts failed to reverse its population declining trend. Ex-situ conservation is preconceived notion preventing the loss (Mahood et al. 2021). Bengal Florican ex-situ conservation have been established in Cambodia for prevention of extinction. Thus, success of ex-situ conservation in the Cambodia could be possible replication to Bengal Florican conservation in Nepal as well.

5.2.4 Expansion of habitat

Bengal Florican is recorded beyond the PA boundary in ShNP and KTWR from

satellite telemetry study; and counted small population in northern and southern side beyond KTWR during population census carried in KTWR in 2017, 2021 and 2023. This implied the persistence of suitable habitat beyond the PAs. Thus, there is an opportunity of expanding the habitat of Bengal Florican in the northern and southern part of KTWR. The extension would likely to provide secured habitat for Bengal Florican.

5.2.5 Community Involvement

Particularly in ShNP, Bengal Florican was recorded in Punarbas Rural Municipality and parts of Belauri Municipality locating



completely beyond PAs and BZ during non-breeding season. Bengal Florican in the area could be protected through the community-based Bengal Florican conservation initiative. The participatory approach would benefit community development while securing the conservation Bengal Florican.

5.2.6 Use of technology in Research and monitoring

Knowledge on Bengal florican in Nepal is mostly limited in population study

and ample of study in habitat use. For further and better understanding their habitat, ecological, behavioral and genetics aspects, the studies based on application of drone technology, remote sensing, continuation of satellite telemetry, acoustic monitoring and non-invasive genetic analysis would help in conservation and recovery of Bengal Florican. Despite being a habitat specialist, the impact of climate change on its distribution and survival is yet to be studied, and whatever is available is limited. This could be another pertinent avenue for further exploration based on modern tools and techniques.



Untimely grassland management by cutting and burning by Mohan Bikram Shrestha

Bengal Florican Conservation Action Plan (2024-2033)

6.1 Goal

The goal of this action plan is to recover Bengal Florican population with restoration and maintenance of its habitat.

6.2 Objective

The prime objective of this action plan is to maintain a healthy and viable population of Bengal Florican through increasing the area of quality habitat, better understanding of its ecology, reducing threats and exploring ex-situ conservation practices for its recovery.



Female Bengal Florican by Kum Thakur

Specific objectives are as follows:

6.2.1 Restore and manage breeding and non-breeding sites and habitat

Rationale

Population census revealed Bengal Florican population is declining rapidly in Nepal. Bengal Florican have not been recorded in BNP since 2012; Populations in CNP and ShNP is have declined; limiting very small population. Population in KTWR is comparatively more however is facing several threats. The decline in population from the habitat sites are supposed to linked with habitat loss, inappropriate grassland management and shrinking of habitat from the expansion of farmland and human settlement. There is insufficient knowledge on appropriate grassland management practices favorable for Bengal Florican in the PAs. The strict protection measures of PAs have secured the Bengal Florican survival in PAs. While, the protection of Bengal Florican outside PAs is inadequate. In addition, the grassland outside the PAs is currently unsuitable. This has exposed Bengal Florican to additional threats outside PAs.

Outputs

1. Grassland management guideline developed and managed in breeding and non-breeding sites
2. Information on potential grassland habitat suitable for Bengal Florican in non-breeding sites updated
3. Impact of agricultural practice and infrastructure assessed
4. Community involvement and stewardship in Bengal Florican conservation attained

SN	Actions
1	Develop appropriate grassland management guideline within PAs and outside PAs
2	Update PAs management plans and forest management plans to include grassland management guideline
3	Implement grassland management guideline in breeding as well as non-breeding sites
4	Create grassland corridors to connect existing isolated grassland sites
5	Conduct community awareness and develop community stewardship for Bengal Florican conservation
6	Update information on previously known, current and potential grassland habitat
7	Manage habitat in previously known sites for Bengal Florican
8	Identify and map non-breeding sites
9	Monitor the changes in land use and agricultural practices and infrastructure (e.g., roads, power line)
10	Encourage local community to protect non-breeding habitat at northern part of KTWR and eastern part of ShNP and collaborate with Division Forest Office (DFO) for the possibility of establishing community managed grassland in these areas
11	Encourage and support local communities to manage and expand the grassland
12	Identify the impact of grazing pressure and make local communities aware.

6.2.2 Increase science-based knowledge on Bengal Florican

Rationale

Satellite tracking research have shown the seasonal movement of Bengal Florican between breeding and non-breeding sites that remained mystery for long time. However, more information on habitat selection, feeding behavior and food preference is yet to be understood. Furthermore, the impact of grassland succession to woodland, current grassland management practice by cutting and burning, grazing pressure and impact of increasing natural predator is to be assessed. Capacity enhancement through Bengal Florican monitoring training and monitoring of Bengal Florican population need to be continued and carried in breeding and non-breeding season every year to documenting the population trend and effectiveness of the conservation efforts.

Outputs

1. Science-based knowledge on habitat suitability, feeding ecology, grazing impact and relation between Bengal florican and natural predator increased and understood
2. Bengal Florican monitoring protocol and human resource for Bengal Florican conservation produced

SN	Actions
1	Continue satellite tracking research
2	Monitoring and ground truthing of satellite tracked Bengal Florican
3	Habitat comparison study between Bengal Florican inhabit sites
4	Study on Bengal Florican relation with natural predator abundance
5	Study on grassland succession rate and impact on Bengal Florican and other sites
6	Continue and expand the ongoing grassland monitoring research
7	Study on effect of grass height on Bengal Florican distribution
8	Creation of Bengal Florican safe model grassland habitat with varied grass height
9	Develop Bengal Florican population monitoring protocol
10	Train PA staff and local communities on monitoring (Nature guide, hoteliers, Elephant herders)
11	Conduct regular survey of Bengal Florican (Breeding and non-breeding season)
12	Study on feeding behavior and food preference
13	Conduct study on grazing pressure on Bengal Florican
14	Establish and maintain the centralized database management system

6.2.3 Increase Bengal Florican conservation awareness among all key stakeholders

Rationale

Bengal Florican is listed in critically endangered category both globally and nationally and listed in CITES Appendix-I. Moreover, it is one of the nine protected species in NPWC Act, 1973. The inclusion of Bengal Florican as priority species for conservation by national and international policy and regulation implies Bengal Florican is threatened with extinction. Irrespective, there is limited effort and awareness on Bengal florican among stakeholder for its conservation. There is high intensity of human disturbance during breeding season. Despite charismatic species, the potential of Bengal Florican tourism linking with livelihood of local people is unexplored.

Outputs

1. Bengal florican conservation knowledge among stakeholders increased
2. The potential of livelihood enhancement linked with Bengal Florican understood

SN	Actions
1	Conduct capacity enhancement workshops/trainings for the PAs and DFO staff
2	Produce and disseminate Bengal Florican conservation promotional materials
3	Conduct awareness campaigns to control the disturbance during breeding season
4	Sensitize local community regarding Bengal Florican tourism
5	Incorporate Bengal Florican conservation issues in Tourism guide training
6	Promote homestay tourism
7	Establish and support community-based Bengal Florican monitoring program
8	Explore and implement livelihood enhancement programs supporting Bengal Florican

6.2.4 Establish and maintain partnership among national and international organizations

Rationale

The joint and collaborative effort between the national and international organization have benefitted in understanding of seasonal movement of Bengal Florican in past. However, there is inadequate coordination between stakeholders. The collaborative effort is required to be continued further. Partnership at policy level will be vital in framing favorable policies and guidelines while at local level partnership is essential for implementing conservation initiatives. Alike, International partnership between India and Nepal is mandatory to safeguard transboundary movement of Bengal Florican. The transboundary meetings and collaboration will aid in recovery of Bengal Florican in both the nations. Besides, partnership with international organizations and nations carrying bustard conservation initiatives would be fruitful in Bengal Florican recovery.

Outputs

1. Partnership with national and international organization established and maintained

SN	Actions
1	Ensure the conservation needs of Bengal Florican in existing annual PA transboundary meetings
2	Continue cooperation over research work with all relevant organizations
3	Establish national and international Bengal Florican working groups to bring together all key stakeholders

6.2.5 Explore Bengal Florican conservation ex-situ practice and feasibility study in Nepal

Rationale

The population census of Bengal Florican revealed the continued decline of Bengal Florican population. Amalgamated with conservation activities for population recovery, ex-situ management is increasingly used to prevent species extinction. Captive breeding initiative of Bengal Florican has been carried in Cambodia. The captive breeding initiative of Bengal Florican in Cambodia could be observed and the feasibility of replication in Nepal could be studied for the prevention of extinction.

Outputs

1. Bengal Florican conservation ex-situ practice explored and feasibility of replication in Nepal studied

SN	Actions
1	Explore Bengal Florican ex-situ conservation practices, site visit and feasibility study of replication in Nepal



Male bengal Floricans in chase by Mohan Bikram Shrestha

Plan Implementation and Monitoring

7.1 Implementation Agency

DNPWC will take a lead role in the overall implementation of the BFCAP and undertake the activities inside PAs. Moreover, the department will coordinate with the DoFSC for implementation of prescribed activities outside PAs. For the effective implementation of the action plan, the DNPWC will coordinate with other government bodies such as DoFSC and Indian counterparts at the central level.

At a local level, PA managers will coordinate with the DFO, District Administrative office, security agencies,

provincial and local government as per the need.

DNPWC will also maintain close coordination with national and international conservation partners to implement this action plan.

BCN, the Birdlife International partner, is the leading organization for the conservation of birds in Nepal. BCN is pursuing the research and conservation activities of Bengal Florican in close coordination with other partner organizations. Major activities conducted by BCN include satellite tracking studies, grassland management, population survey, awareness raising activities and capacity enhancement.

NTNC have field offices at KTWR, CNP, BNP and ShNP. The organization has been conducting many activities that help the conservation of bird species as well.

The engagement of WWF Nepal in Terai Arc Landscape has produced many positive outcomes and a role in preparing a conducive atmosphere for the bird conservation.

ZSL- Nepal has been working on grassland management and conservation at ShNP. ZSL is supporting research on grassland ecology.

IUCN has been working in Nepal since 1960s to conserve biodiversity by linking it with better livelihoods. IUCN Bustard

Specialist Group will be potential partner for technical guidance.

Royal Society for Protection of Birds, the UK Birdlife Partner organization, supports BCN in threatened bird conservation work.

Research and Academic Institutions: Natural History Museum, Central Department of Zoology, Central Department of Environmental Science, Institute of Forestry Pokhara, Hetauda and Kathmandu Forestry College of Tribhuvan University, Agricultural and Forestry University, Kathmandu University, Mid-Western University can be strategic partner for joint project development and research.

Local organization such as Koshi Bird Society, Bird Education Society, Bardiya Nature Conservation Club, Nature Guide Association of Suklaphanta assist BCN and PAs continuously for monitoring of Bengal Florican.

7.2 Financial Plan

The total estimated cost for the implementation of the action plan is NPR 145,700,000 (One hundred forty-five million and seven hundred thousand rupees). The Government's annual budget of DNPWC, PAs and DFOs will be a major source for implementing the plan. Partner

organizations such as BCN, NTNC, IUCN Nepal, WWF Nepal and ZSL Nepal are expected to make significant contribution for the implementation of this plan. Other local and provincial governments will be encouraged to generate additional fund for the implementation. Further, DNPWC with support from conservation partners will prepare and solicit proposals to other national and international sources for funding support. Detailed breakdown of the budget is presented in Appendix- 2. The summary of the indicative budget is given below.

Table 5: summary of the indicative budget

Objectives	Total (NPR)	Percentage contribution
Objective 1: Restore and manage breeding and non-breeding sites and habitat	56,400,000	39
Objective 2: Increase science-based knowledge on Bengal Florican	51,300,000	35
Objective 3: Increase Bengal Florican conservation awareness among all key stakeholders	23,500,000	16
Objective 4: Establish and maintain partnership among national and international organizations	10,500,000	7
Objective 5: Explore Bengal Florican conservation ex-situ practices and feasibility study in Nepal	4,000,000	3
Total budget	145,700,000	100

7.3 Monitoring and Review of the Plan Implementation

The DNPWC will be responsible for the monitoring and evaluation of this action

plan in close coordination with MoFE. The progress of planned activities and achievements, involvement of partner organizations and their projects will be monitored on an annual basis

A mid-term review will be conducted after the 5th year of implementation and the

plan will be adjusted in accordance with the feedback. A final review of the plan will be conducted in the 10th year to form the basis for a new action and revised conservation plan.

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Hierarchy of Objectives	Objectively verifiable indicator	Means of Verification	Risks/Assumptions
<p>Goal: Recover Bengal Florican population with restoration and maintenance of its habitat.</p> <p>Objective: Maintain a healthy and viable population of Bengal Florican through increasing the area of high-quality habitat, better understanding of its ecology, reducing threats and exploring ex-situ conservation practices for its recovery.</p>	<ul style="list-style-type: none"> Bengal Florican population in identified sites is stable or increasing and recolonizing at previously occupied sites. Habitat management practices area in place and continue. Ex-situ conservation practice feasibility study. 	<ul style="list-style-type: none"> Bengal Florican survey reports Quality grassland assessment report Site visit and report on feasibility of ex-situ conservation 	<ul style="list-style-type: none"> Bird responds to conservation management
<h3>Objective 1: Restore and manage breeding and non-breeding sites and habitat</h3>			
<p>Output 1.1. Grassland management guideline developed and managed in breeding and non-breeding sites</p> <p>Output 1.2. Information on potential grassland habitat suitable for Bengal Florican in non-breeding sites updated</p> <p>Output 1.3. Impact of agricultural practice and infrastructure assessed</p> <p>Output 1.4. Community involvement and stewardship in Bengal Florican conservation attained</p>	<ul style="list-style-type: none"> Grassland management guideline developed and agreed by all key stakeholders. PA management plans are adapted to include needs of Bengal Florican. PA and forest management plans include the non-breeding needs of Bengal Florican. Grassland corridors created to connect existing isolated grassland sites, especially at Koshi flood plain and Khata corridor. Local communities are supportive of Bengal Florican conservation issues and protecting the habitat. Restoration of Bengal Florican favorable grassland habitat in BNP and CNP. Increase in grassland area inside and outside PAs. All non-breeding sites are mapped and trend of land use changes and practices are monitored. Known non-breeding sites are protected properly. Population of birds in buffer zone grassland does not decline. 	<ul style="list-style-type: none"> PAs management annual plans and reports Areas of suitable grassland are indicated by GIS model are stable or increased 	<ul style="list-style-type: none"> Stakeholders supportive toward the work

Actions	
<ul style="list-style-type: none"> Develop appropriate grassland management guideline within PAs and outside PAs Update PAs management plans and forest management plans to include grassland management guideline Implement grassland management guideline in breeding as well as non-breeding sites Create grassland corridors to connect existing isolated grassland sites Conduct community awareness and develop community stewardship for Bengal Florican conservation Update information on previously known, current and potential grassland habitat Manage habitat in previously known sites for Bengal Florican Identify and map non-breeding sites Monitor the changes in land use and agricultural practices and infrastructure (e.g., roads, power line) Encourage local community to protect non-breeding habitat at northern part of KTWR and eastern part of ShNP and collaborate with Division Forest Office (DFO) for the possibility of establishing community managed grassland in these areas Encourage and support local communities to manage and expand the grassland Identify the impact of grazing pressure and make local communities aware 	<ul style="list-style-type: none"> Bengal Florican movement report Grassland comparative study report Report on natural predator and grassland succession impact Habitat monitoring reports Annual Bengal Florican monitoring report
Objective 2: Increase science-based knowledge on Bengal Florican	
<p>Output 2.1. Science-based knowledge on habitat suitability, feeding ecology, grazing impact and relation between Bengal Florican and natural predator increased and understood</p> <p>Output 2.2. Bengal Florican monitoring protocol and human resource for Bengal Florican conservation produced</p>	<ul style="list-style-type: none"> Enriched knowledge on Local migration of Bengal Florican and habit sites. Documentation of site-specific grassland condition and relation on natural predator and grassland succession impact on Bengal Florican. Results of grassland monitoring research feeding into grassland management guideline Bengal Florican population monitoring protocols developed and agreed by key stakeholders PA staff area able to lead habitat and Bengal Florican population monitoring Increase knowledge on food preference of Bengal Florican Grazing pressure study result incorporated into grassland management guideline Centralized database management system in place
	<ul style="list-style-type: none"> Existing tags continue to transmit New satellite tags are deployed and function successfully. Centralized database on research finding is maintained and shared with relevant stakeholders

Actions

- Continue satellite tracking research
- Monitoring and ground truthing of satellite tracked Bengal Florican
- Habitat comparison study between Bengal Florican inhabit sites
- Study on Bengal Florican relation with natural predator abundance
- Study on grassland succession rate and impact on Bengal Florican and other sites
- Continue and expand the ongoing grassland monitoring research
- Study on effect of grass height on Bengal Florican distribution
- Creation of Bengal Florican safe model grassland habitat with varied grass height
- Develop Bengal Florican population monitoring protocol
- Train PA staff and local communities on monitoring (Nature guide, hoteliers, Elephant herders)
- Conduct regular survey of Bengal Florican (Breeding and non-breeding season)
- Study on feeding behavior and food preference
- Conduct study on grazing pressure on Bengal Florican
- Establish and maintain the centralized database management system

Objective 3: Increase Bengal Florican conservation awareness among all key stakeholders

Output 3.1.

Bengal florican conservation knowledge among stakeholders increased

- Trained PAs and DFO staffs are leading conservation initiatives
- Local people are more supportive of Bengal Florican conservation
- Strict areas are established and people movements are regulated particularly at CNP and SHNP during breeding season
- Bengal Florican tourism linked enhancing livelihood of communities.
- Information on Bengal Florican is gathered through citizen science.
- Economy of local people increased and pressure on Bengal Florican habitat reduced

Output 3.2.

The potential of livelihood enhancement linked with Bengal Florican understood

- Conservation awareness reports
- Press released and media coverage report

- Local stakeholders' attitude is positively changed
- Tourism potential does not have adverse impact on Bengal Florican conservation

Actions			
<ul style="list-style-type: none"> Conduct capacity enhancement workshops/trainings for the PAs and DFO staff Produce and disseminate Bengal Florican conservation promotional materials Conduct awareness campaigns to control the disturbance during breeding season Sensitize local community regarding Bengal Florican tourism Incorporate Bengal Florican conservation issues in Tourism guide training Promote homestay tourism Establish and support community-based Bengal Florican monitoring program Explore and implement livelihood enhancement programs supporting Bengal Florican 			
Objective 4: Establish and maintain partnership among national and international organizations			
Output 4.1. Partnership with national and international organization established and maintained	<ul style="list-style-type: none"> Bengal Florican is including as key species during relevant transboundary meetings All relevant organizations informed and aware about the latest issues and challenges Working group established 	<ul style="list-style-type: none"> Government's transboundary meeting reports 	<ul style="list-style-type: none"> Bengal Florican is adopted as a priority species by all partners
Actions			
<ul style="list-style-type: none"> Ensure the conservation needs of Bengal Florican in existing annual PA transboundary meetings Continue cooperation over research work with all relevant organizations Establish national and international Bengal Florican working groups to bring together all key stakeholders 			
Objective 5: Explore Bengal Florican conservation ex-situ practice and feasibility study in Nepal			
Output 5.1. Bengal Florican conservation ex-situ practice explored and feasibility of replication in Nepal studied	<ul style="list-style-type: none"> Bengal Florican ex-situ conservation practiced site visit and feasibility of replication discussed. 	<ul style="list-style-type: none"> Site visit and meeting report 	<ul style="list-style-type: none"> Fund management for visit to ex-situ practiced site
Action			
<ul style="list-style-type: none"> Explore Bengal Florican ex-situ conservation practices, site visit and feasibility study of replication in Nepal 			

Ten-year budget of Bengal Florican Conservation Action Plan

SN	Activities	Year 1	Year-2	Year-3	Year-4	Year-5	Year-6	Year-7	Year-8	Year-9	Year-10	Total
Objective 1: Restore and manage breeding and non-breeding sites and habitat												
1.1	Develop appropriate grassland management guideline for PAs and outside PAs	1,000,000									500,000	1,500,000
1.2	Update PAs management plans and forest management plans to include grassland management guidelines	1,000,000									500,000	1,500,000
1.3	Implement the grassland management guideline in breeding as well as non-breeding sites		1,800,000	1,800,000	1,800,000	1,800,000	2,000,000	2,000,000	2,000,000		2,000,000	17,200,000
1.4	Create grassland corridors to connect existing isolated grassland sites		500,000		500,000	500,000	500,000	500,000	500,000	500,000	500,000	4,500,000
1.5	Conduct community awareness and develop community stewardship for Bengal Florican conservation		500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	4,500,000
1.6	Update information previously known, current and potential grassland habitat	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,000,000

1.7	Manage habitat in previously known sites for Bengal Florican	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	9,000,000
1.8	Identify and map non-breeding sites	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,000,000
1.9	Monitoring the changes in land use and agricultural practices and infrastructure (e.g. roads, power lines)	500,000	500,000			500,000				500,000	500,000	2,000,000
1.10	Encourage local community to protect wintering habitat at northern part of KTRW and eastern part of ShNP and work with DFO for the possibility of establishing community managed grassland in these areas	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	2,700,000
1.11	Encourage and support local communities to manage and expand the grassland	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	4,000,000
1.12	Study the impact of grazing pressure and make local communities aware	1,000,000					1,200,000				1,300,000	3,500,000
Objective 2: Increase science-based knowledge on Bengal Florican												
2.1	Continue satellite tracking research	4,000,000	4,000,000					3,000,000				14,000,000
2.2	Monitoring and ground truthing of satellite tracked Bengal Florican	500,000	500,000	500,000	500,000	600,000	600,000	600,000	600,000	600,000	600,000	5,000,000

2.3	Habitat comparison study between Bengal Florican occupied habitat sites	600,000								700,000				800,000	2,100,000
2.4	Study on relation with natural predator abundance					200,000								300,000	700,000
2.5	Study on grassland succession rate and impact on Bengal Florican												900,000		1,700,000
2.6	Continue and expand the ongoing grassland monitoring research				400,000								400,000		1,600,000
2.7	Study on effect of grass height on Bengal Florican distribution								800,000						1,600,000
2.8	Creation of Bengal Florican favorable model grassland habitat with varied grass height						500,000								2,000,000
2.9	Develop Bengal Florican monitoring protocol														1,300,000
2.10	Train PA staff and local communities on Bengal Florican monitoring (Nature guide, hoteliers, Elephant herders)							500,000							2,200,000
2.11	Conduct regular Bengal Florican Survey (Breeding and non-breeding season)														14,000,000
2.12	Study on feeding behavior and food preference														1,800,000

2.13	Conduct study on grazing pressure on Bengal Florican habitat	500,000						800,000																	1,300,000
2.14	Establish and maintain the centralized database management system	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	2,000,000
Objective 3: Increase Bengal Florican conservation awareness among all key stakeholders																									
3.1	Conduct capacity enhancement workshops/training for the PAs and DFO staffs	300,000						300,000										400,000							1,400,000
3.2	Produce and disseminate Bengal Florican awareness materials	300,000						300,000										300,000							1,200,000
3.3	Conduct awareness campaign to control disturbance during breeding season	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	2,000,000
3.4	Sensitize local community regarding Bengal Florican tourism	400,000						400,000										400,000							1,700,000
3.5	Incorporate Bengal Florican conservation in Tourism guide training							600,000										600,000							2,000,000
3.6	Promote homestay tourism	300,000						500,000										500,000							1,400,000
3.7	Establish and support community-based Bengal Florican monitoring program	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	4,000,000

3.8	Explore and implement livelihood enhancement programs supporting Bengal Florican conservation	800,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	9,800,000
Objective 4: Establish and maintain partnership among national and international organizations														
4.1	Ensure the conservation needs of Bengal Florican area included in existing annual PA transboundary meetings	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	600,000	5,500,000
4.2	Establish national and international Bengal Florican working groups to bring together all key stakeholders	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	5,000,000
Objective 5: Explore Bengal Florican conservation ex-situ practices and feasibility study in Nepal														
5.1	Explore the Bengal Florican breeding ex-situ centers practices in Bengal Florican inhabit countries to understand the breeding success and feasibility study for replication in Nepal	3,000,000	1,000,000											4,000,000
		16,300,000	16,100,000	15,700,000	3,600,000	12,600,000	14,500,000	15,600,000	13,400,000	12,800,000	15,100,000	12,800,000	15,100,000	145,700,000



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