



# REPORT

## WHITE-BELLIED HERON

*Ardea insignis* Hume, 1878

ANNUAL POPULATION SURVEY

2021



## Summary

The 19<sup>th</sup> White-bellied Heron (WBH) annual population survey conducted from 27 February – 03 March 2021 counted 22 herons in the country. The survey confirmed 19 adults and three sub-adult individuals, which is five less than the previous year. The decrease in population was mainly observed in upper Punatsangchhu basin; Phochu, Mochhu, Adha and Harachhu which were oldest and previously the most abundantly used habitats in Bhutan. The survey covered all currently known and expected habitats along Punatsangchhu, Mangdechhu, Chamkharchhu, Drangmechhu, Kurichhu, Kholongchhu and major tributaries. For the survey, habitats across the country were divided into 53 priority zones and surveyors were deployed to look for the WBH from 7:00 AM to 5:00 PM for five consecutive days within their designated zone. A total of 82 surveyors from the RSPN, Department of Forests and Park Services (DoFPS) and Local Conservation Support Groups (LCSG) were engaged in the survey. For every White-bellied Heron sighted during the survey, observer, date, time, GPS location, count, age, and activity were recorded. In addition, all bird species sighted during the survey were also enumerated for record and to study the diversity and population trend of associated species within the area. A total of 117 bird species; 59 waterbirds and 58 other species were recorded during the survey. The survey was conducted using Epicollect5 digital data collection platform. All the data were recorded using the Epicollect5 mobile App and uploaded to the central WBH database and analyzed. Three live nests were also located during the survey of which two had three eggs each and one pair was found building a nest. The first WBH population survey was conducted in 2003, and it has been an annual event since then. Today, the conservation of WBH is not only a flagship program but it is at the forefront of RSPN's core mandate.

## Introduction

The White-bellied Heron (*Ardea insignis* Hume 1878) is a large heron species of the family Ardeidae, order Pelecaniformes, found in freshwater ecosystems of the Himalayas. It is categorized as critically endangered under the IUCN Red List of threatened species and protected under the Schedule I of Forests and Nature Conservation Act 1995 of Bhutan. It was listed as threatened in 1988, uplisted to endangered in 1994, and to critically endangered since 2007. The distribution of WBH to undisturbed freshwater river systems and its piscivorous feeding behaviour can be easily associated with the health of the ecosystem and pristinely environment. They are the indicators of our freshwater river systems. Their presence in our rivers indicates the health of the rivers, the fish population, water quality, the health of associated freshwater biodiversity, level of disturbances, pollution, and above all, intactness of our nature.

They are predator, they are prey and they are player in a food chain. They are our natural wealth, our pride, and our heritage. By protecting them and their habitats, we protect our rivers, waters, landscapes, biodiversity, food, and the livelihoods of the local communities.

The extremely low and shrinking population of the WBH globally is attributed to human exploitation, disturbances, and loss of riverine habitat. And Bhutan is no exception. The bird is threatened by three major challenges across the region; 1) Habitats are being lost to infrastructure development, agriculture expansion, hydropower projects, extractive industries, and climate change; 2) most of the few remaining habitats are increasingly under pressure due to incautious eco-tourism and recreation, diminishing food resources, pollution, fragmentation, forest fires, and both man-made and natural calamities; 3) the small population is under crises with increased mortality and declining breeding success. Therefore, it is easily foreseeable that such human-made and natural disturbances would lead to the extinction of this highly vulnerable bird if timely conservation interventions are not taken.

Concerning the risk, RSPN, in collaboration with relevant agencies and stakeholders, has been working on recovery of population size through research and surveys of population, nests, feeding habitat, distribution, movement, habitat needs, and associated threats. Since the inception of WBH conservation projects at RSPN, the annual population survey has been an annual event and it helps us understand the trend, priority habitats and it is a basis for needful further conservation interventions.

## Methods

A preliminary survey was conducted starting November 2020 to identify priority habitats and familiarize surveyors to conduct the annual survey. WBH habitats were divided into 53 priority zones based on the past occurrence records, habitat suitability and findings of the past inventories. Depending on the length of the zone and accessibility, surveyor or a team was appointed to look for the WBH during the five-day survey.

From 27 February – 02 March 2021, surveyors were deployed in pre-designated zones to monitor WBH, ideally from 7:00 am to 5:00 pm. A data collection template was developed on Epicollect5 platform and shared with surveyors. All data were collected using Epicollect5 Mobile App, which even works offline. Each surveyor was asked to report Date; Time and GPS location, when they “Start Survey” in the morning, “End Survey” in the evening and “Report my Location” every two hours to indicate their position and area covered during the day. Whenever the WBH was sighted, surveyors immediately recorded the observation with Date, Time, GPS location, Count, Age, Activity and Remarks with photograph of bird or at least the site. In addition, all bird species sighted during the survey were also enumerated for record and to study the diversity and population trend of associated species within the area. All data were collected offline and uploaded to the central database whenever accessible to internet. In addition, surveyors telephonically communicated with each other whenever WBH was sighted to ensure effective monitoring and avoid double counting. All observation and recordings started with effect from 7:00 am 27 February and closed at 5:00 pm, 03 March 2021.



Map 1: White-bellied Heron priority habitat zones, Survey area

## Data Analysis

A total of 2617 entries were uploaded to the central database on completion of the survey. Of the total, only 52% (1362 entries) of the entries were “species observed”, of which only 3.3% (86 entries) were WBH. The remaining 48% of the entries were “start survey”, “end survey” and “location” reported by the surveyors. The data were downloaded, reviewed, and analyzed in MS Excel Spreadsheet and mapped using ArcMap 10.8.

First, the entries were segregated into “Species observed” and others. Further, WBH sighting entries were separated from other species recorded during the survey. Only confirmed WBH sighting entries were used to calculate the population size and other entries (start survey, end survey, report my location and other species) were used to map the surveyed area. All entries were extrapolated on ArcMap to visualize the surveyed area (Map 2).

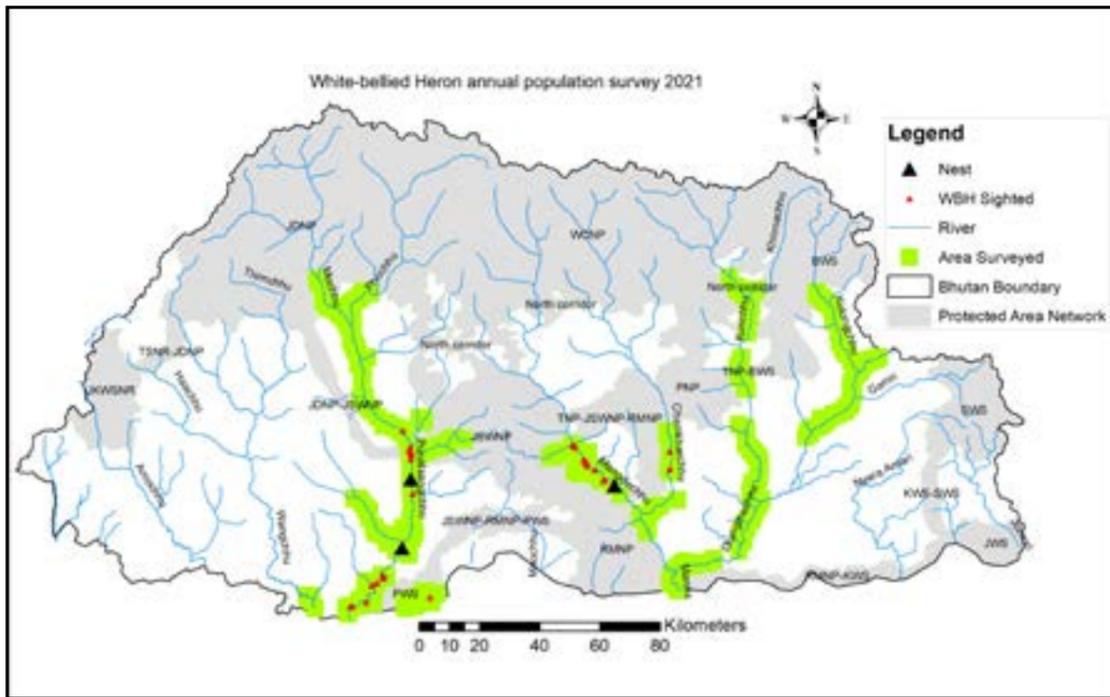
86 WBH sighting entries were further analyzed to remove double counting of same individual and repeated entries by different observer. Duplications were determined based on details collected such as observer, date, time, location, count, age, activity, and remarks. After potential double count entries were removed, observations were segregated by location and date (survey days) to determine repeated observation of same individual by same observer or different observers. The highest number of individuals sighted on any of the five days was taken as the population of each locale. The total WBH population for 2021 was taken as a sum of populations of all locale (complete data can be accessed at RSPN server, \\server\USERS\Indra P/Population\_2021).

## Results

The annual population survey effectively covered all currently occupied and potential habitats across the country, dominantly Punatsangchhu, Mangdechhu, Chamkharchhu, Drangmechhu, Kurichhu, Kholongchhu and major tributaries. The whole stretch of potential WBH habitat was divided into 53 priority zones, spanning to more than 800 kilometers.



Species Observed refers to White-bellied Heron and all other bird species observed during the survey.



Map 2: White-bellied Heron annual population survey 2021

During the five-day survey, 280 kilometers stretch of Punatsangchhu, 160 kilometers of Mangdechhu, 45 kilometers of Chamkharchhu, 200 kilometers of Drangmechhu, 95 kilometers of Kurichhu and 65 kilometers of Kholongchhu and their tributaries were surveyed by 82 surveyors. A total of 22 individual WBHs were sighted in 10 of 53 priority zones (Map 2).

Location	Count
Taksha-Kamechu	3
Wakletar-Burichhu	4
Balwani	2
Rangaetar	1
Lamoyzhingka	3
Phibsoo WS	1
Berti	3
Goling-Tsidang	4
Chamkharchhu	1

Based on the records, 19 were confirmed as adults, and three subadults. However, as it is challenging to differentiate adults and sub-adults morphologically, only a few trained surveyors could successfully recognize them. All others were reported as adults. Of the 10 sites, where herons were recorded this year, 6 falls under Punatsangchhu basin, and four under Mangdechhu basin. For the first time, an individual has been recorded from Chamkharchhu basin. Although its presence in Chamkharchhu was known before, only this year, it has been observed during the annual survey.

Similarly, 64% (14 individuals) of the birds were found in the Punatsangchhu basin, and 46% (8 birds) in Mangdechhu basin. Overall, there is decrease in population by five individuals from the previous year. The change in population was mainly observed in the upper Punatsangchhu basin; Phochu, Mochhu, Adha and

Harachhu which were oldest and previously the most abundantly used habitats in Bhutan.

Unfortunately, for the first time in 19 years, no heron was sighted in Phochhu and Mochhu which once host highest and oldest known population in the country. No birds were also sighted in Kurigongri basin and lower Mangdechhu basin.

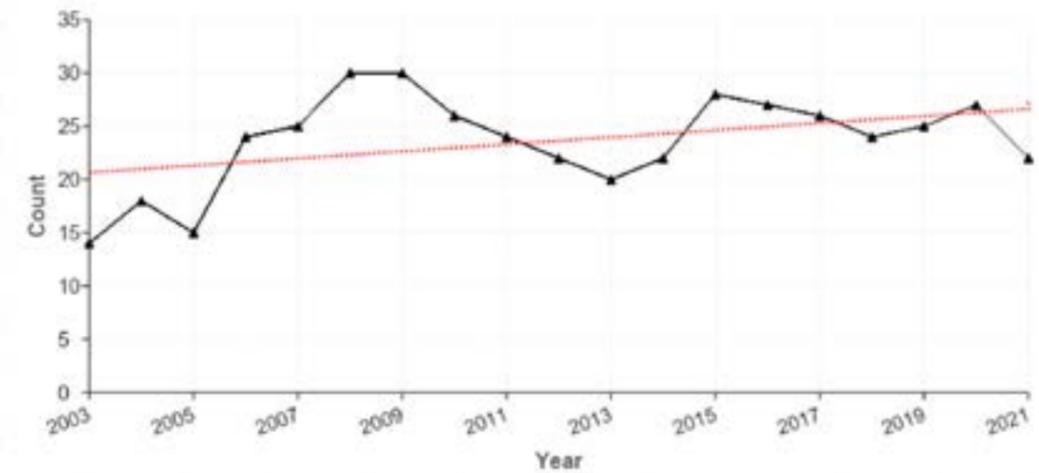


Figure 1: White-bellied Heron population trend in Bhutan, 2003-2021.

There is a noticeable change in local population demographics in key foraging habitats over the years. The population in older habitats; Phochu, Mochhu, Punakha, Zawa, Kamechhu, Adha, and Nangzhina has drastically declined over the surveyed years. Phochhu and Mochhu areas had eight birds during 2007 and 2008, but none were observed this survey.

Similarly, no birds were seen after 2013 in Zawa and the Harachhu area, the oldest nesting site, where 6-8 birds were found before 2008. Overall, population trends are decreasing in Adha, Nangzhina, and proximate areas, which were historically preferred feeding and nesting habitats until 2010. The population in Berti was highest in 2009. While no birds were seen during the 2010 census, the population in lower basin of Mangdechhu is improving today, particularly in Goling and Tsidang.

In contrast to these declining areas, in recent years, more individuals have been sighted in lower regions of Punatsangchhu and Mangdechhu basins, which are also newly discovered sites. Mithuntar, Dagachhu catchment, Balwani, in lower basin of Punatsangchhu and Tsidang in lower basin Mangdechhu are the most promising sites with both population trends and nesting sites in sharp increase, today.

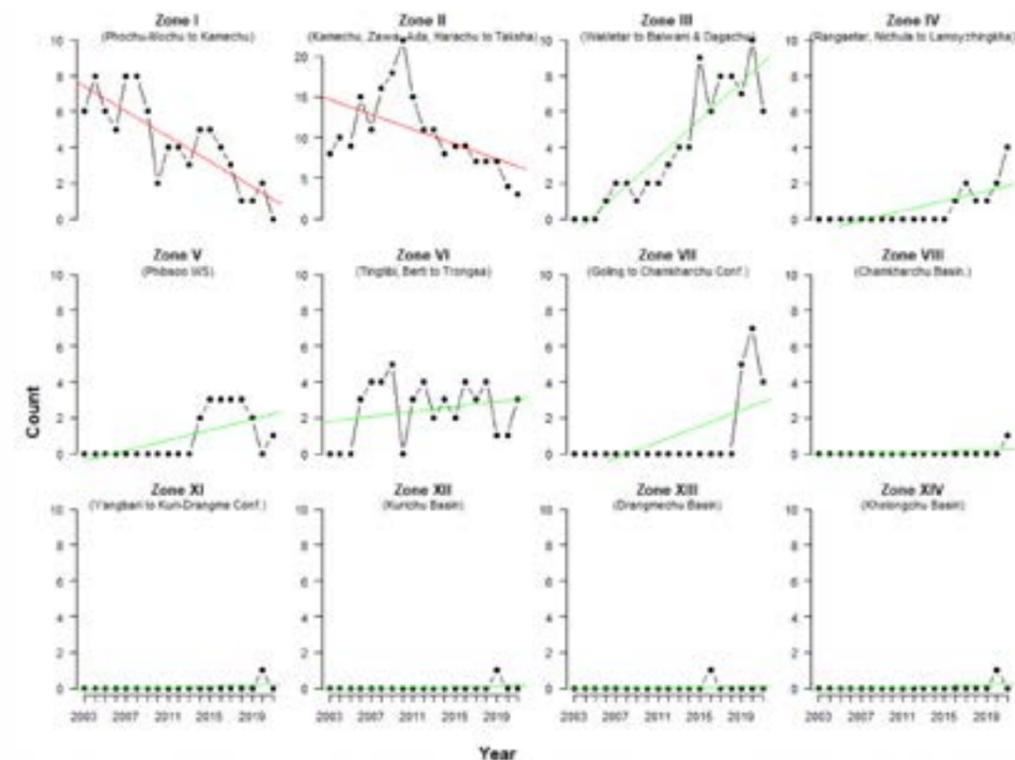


Figure 2: White-bellied Heron population trend in priority zones in Bhutan, 2003 - 2021

## Discussion

The population helps us get the most accurate and updated data on population size of WBH in Bhutan. Population size reflects the combined outcome of three demographic processes: reproduction, survival, and movement. A precise population estimates helps us understand the trend, priority habitats and it is a basis for needful further conservation interventions.



## List of birds sighted during the survey

Common Name	Scientific Name	Common Name	Scientific Name
<b>Whistling-ducks, geese, and ducks (Anatidae)</b>			
Ruddy Shelduck	<i>Tadorna ferruginea</i>	Pallas's Fish Eagle	<i>haliaeetus leucoryphus</i>
Common Teal	<i>Anas crecca</i>	Black Eagle	<i>Ictinaetus malaiensis</i>
Common Shelduck	<i>Tadorna tadorna</i>	Crested Goshawk	<i>Accipiter trivirgatus</i>
Green-winged Teal	<i>Anas carolinensis</i>	Crested Serpent Eagle	<i>Spilornis cheela</i>
Eurasian Wigeon	<i>Anas penelope</i>	Himalayan Buzzard	<i>Buteo burmanicus</i>
Red-crested Pochard	<i>Netta rufina</i>	Himalayan Griffon	<i>Gyps himalayensis</i>
Northern Pintail	<i>Anas acuta</i>	Mountain Hawk Eagle	<i>Nisaetus nipalensis</i>
Northern Shoveler	<i>Anas clypeata</i>	Osprey	<i>Pandion haliaetus</i>
Mallard	<i>Anas platyrhynchos</i>	<b>Rails, crakes, gallinules, and coots (Rallidae)</b>	
Ferruginous Duck	<i>Aythya nyroca</i>	Slaty-breasted Rail	<i>Gallirallus straitus</i>
Eastern Spot-billed Duck	<i>Anas zonorhyncha</i>	<b>Plovers and lapwings (Charadriidae)</b>	
Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	River Lapwing	<i>Vanellus duvaucelii</i>
Gadwall (Common)	<i>Anas strepera</i>	Little-ringed Plover	<i>Charadrius dubius</i>
Bar-headed Goose	<i>Anser indicus</i>	Red-wattled Lapwing	<i>Vanellus indicus</i>
Common Pochard	<i>Arthya ferina</i>	Temminck's Stint	<i>Calidris temminckii</i>
<b>Grebes (Podicipedidae)</b>			
Common Merganser	<i>Mergus merganser</i>	<b>Snipes, curlews, sandpiper, and stints (Scolopacidae)</b>	
<b>Storks (Ciconiidae)</b>			
Black Stork	<i>Ciconia nigra</i>	Common Sandpiper	<i>Actitis hypoleucos</i>
<b>Waders (Ibidorhynchidae)</b>			
Ibisbill	<i>Ibidorhyncha struthersii</i>	Green Sandpiper	<i>Tringa glareola</i>
<b>Herons and bitterns (Ardeidae)</b>			
Little Egret	<i>Egretta garzetta</i>	Common Greenshank	<i>Tringa nebularia</i>
Indian Pond Heron	<i>Ardeola grayii</i>	<b>Crows, Magpies, and jays (Corvidae)</b>	
Cattle Egret	<i>Bubulcus ibis</i>	<b>Gulls, terns, and skimmer (Laridae)</b>	
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Common Tern	<i>Sterna hirundo</i>
Great Egret	<i>Casmerodius albus</i>	River Tern	<i>Sterna aurantia</i>
<b>Cormorants (Phalacrocoracidae)</b>			
Great Cormorant	<i>Phalacrocorax carbo</i>	Pallas's Gull	<i>Ichthyaetus ichthyaetus</i>
Little Cormorant	<i>Phalacrocorax niger</i>	Black-headed Gull	<i>Chroicocephalus ridibundus</i>
Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	<b>Kingfishers (Alcedinidae)</b>	
<b>Ospreys, hawks, eagles, harriers, vultures, and allies (Accipitridae)</b>			
		Crested Kingfisher	<i>Megaceryle lugubris</i>
		Blyth's Kingfisher	<i>Alcedo hercules</i>
		Pied Kingfisher	<i>Ceryle rudis</i>
		Common Kingfisher	<i>Alcedo hercules</i>
		Ruddy Kingfisher	<i>Halcyon coromanda</i>
		<b>Dippers (Cinclidae)</b>	

Common Name	Scientific Name
Brown Dipper	<i>Cinclus pallasii</i>
White-throated Dipper	<i>Cinclus cinclus</i>
<b>Chats and old-world flycatchers (Muscicapidae)</b>	
Black-backed Forktail	<i>Enicurus immaculatus</i>
Little Forktail	<i>Enicurus scouleri</i>
White-capped Redstart	<i>Chaimarrornis leucucephalus</i>
Plumbeous Redstart	<i>Rhyacornis fuliginosa</i>
Slaty-backed Forktail	<i>Enicurus schistaceus</i>
White-crowned Forktail	<i>Enicurus leschenaulti</i>
Black Redstart (Eastern)	<i>Phoenicurus coeruleocephala</i>
Spotted Forktail	<i>Enicurus maculatus</i>
<b>Pipits and wagtails (Motacillidae)</b>	
White Wagtail	<i>Motacilla alba</i>
Water Pipit	<i>Anthus spinoletta</i>
Grey Wagtail	<i>Motacilla cinerea</i>
<b>Asian Barbets (Ramphastidae)</b>	
Blue throated Barbet	<i>Megalaima vasiatic</i>
Blue-eared Barbet	<i>Megalaima australis</i>
Great Barbet	<i>Megalaima virens</i>
Lineated Barbet	<i>Megalaima lineata</i>
<b>Babblers (Tialidae)</b>	
Abbott's Babbler	<i>Malacocincla abbotti</i>
Pin-striped Tit-babbler	<i>Macronus gularis</i>
Puff-throated babbler	<i>Pellorneum ruficeps</i>
<b>Bulbuls (Pycnonotidae)</b>	
Ashy Bulbul	<i>Hemixos flava</i>
Black Bulbul	<i>Hypsipetes leucocephalus</i>
Black-crested Bulbul	<i>Pycnonotus v(melanicterus) flaviventris</i>
Red-vented Bulbul	<i>Pycnonotus cafer</i>
Striated Bulbul	<i>Pycnonotus striatus</i>
White-throated Bulbul	<i>Alophoixus Flaveolus</i>
Little Bunting	<i>Emberiza pusilla</i>
<b>Chats and old worlds Flycatchers (Muscicapidae)</b>	
Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>
Oriental Magpie Robin	<i>Copsychus saularis</i>
Verditer Flycatcher	<i>Eumyias thalassinus</i>
Small Niltava	<i>Niltava macgrigoriae</i>
White-rumped Shama	<i>Copsychus malabaricus</i>
<b>Cockshrikes, Minivets and Allies (Campephagidae)</b>	
Short-billed Minivet	<i>Pericrocotus brevirostris</i>
<b>Cranes (Gruidae)</b>	
<b>Black-necked Crane</b>	<i>Grus nigricollis</i>

Common Name	Scientific Name
<b>Partridges, Pheasant and Allies (Phasianidae)</b>	
Indian Peafowl	<i>Pavo cristatus</i>
Red Junglefowl	<i>Gallus gallus</i>
<b>Pigeons and Dove (Columbidae)</b>	
Oriental Turtle Dove	<i>Streptopelia orientalis</i>
<b>Pipits and Wagtails (Motacillidae)</b>	
Olive-backed Pipit	<i>Anthus hodgsoni</i>
<b>Pittas (Pittidae)</b>	
Blue-naped Pitta	<i>Hydrornis nipalensis</i>
<b>Rollers (Coraciidae)</b>	
Indian Roller	<i>Coracias benghalensis</i>
<b>Shrikes (Laniidae)</b>	
Gray-backed Shrike	<i>Lanius tephronotus</i>
<b>Starlings and Mynas (Sturnidae)</b>	
Common Hill Myna	<i>Gracula religiosa</i>
<b>Sun birds and Spiderhunter (Nectariniidae)</b>	
Black-throated Sunbird	<i>Aethopyga saturata</i>
<b>Thrushes, Cochoas and shortwings (Turidae)</b>	
Blue Rock Thrush	<i>Monticola solitarius</i>
Blue Whistling thrush	<i>Myophonus caeruleus</i>
<b>Typical owls (Strigidae)</b>	
Tawny Fish Owl	<i>Ketupa flavipes</i>
<b>Woodshrikes and Allies (Tephrodornithidae)</b>	
Large Woodshrike	<i>Tephrodornis gularis</i>
<b>Wryneck, Piculets and Woodpeckers (Picidae)</b>	
Greater Yellownape	<i>Chrysophlegma flavinucha</i>

Common Name	Scientific Name
Common Green Magpie	<i>Cissa chinensis</i>
<b>Cuckoos, Malkohas and Coucals (Cuculidae)</b>	
Lesser Coucal	<i>Centropus bengalensis</i>
<b>Drongos (Dicruridae)</b>	
Black Drongo	<i>Dicrurus macrocercus</i>
Greater Racket -tailed Drongo	<i>Dicrurus paradiseus</i>
<b>Fairy Bluebirds (Irenidae)</b>	
Asian Fairy-bluebird	<i>Irena puella</i>
<b>Falcons (Falconidae)</b>	
Eurasian Kestrel	<i>Falco tinnunculus</i>
<b>Fantails (Rhipiduridae)</b>	
White-throated Fantail	<i>Rhipidura albicollis</i>
<b>Hornbills (Bucerotidae)</b>	
Great Hornbill	<i>Buceros bicornis</i>
Oriental Pied Hornbill	<i>Anthraceros albirostris</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Wreathed Hornbill	<i>Rhyticeros undulatus</i>
<b>Leafbirds (Chloropseidae)</b>	
Orange-bellied Leafbird	<i>Chloropsis hardwickii</i>
<b>Monarchs (Monarchidae)</b>	
Black Napped Monarch	<i>Hypothymis azurea</i>
<b>Nightjars (Caprimulgidae)</b>	
Savana Nightjar	<i>Caprimulgus affinis</i>
<b>Nuthatches and Wallcreeper (Sittidae)</b>	
Chestnut-bellied Nuthatch	<i>Sitta cinnamoventris</i>
<b>Warblers (Cettiidae)</b>	
Gray-bellied Tesia	<i>Tesia cyaniventer</i>
<b>(Leiothrichidae)</b>	
Rufous Sibia	<i>Heterophasia capistrata</i>

## Acknowledgement

Royal Society for Protection of Nature's (RSPN) ([www.rspnbhutan.org](http://www.rspnbhutan.org)) would like to thank Bhutan Trust Fund for Environmental Conservation (BTSEC) for supporting this population survey through "Up-scaling White-bellied Heron recovery plan" project. We remain grateful to Jonathan Charles Eames OBE and Dinh Thi Hoa for additional financial support. Thanks to Synchronicity Earth, MAVA Foundation, International Crane Foundation, Alice C Tylor Perpetual Trust, Global Wildlife Conservation, Punatsangchhu Hydroelectric Project Authority I & II, Department of Forests and Park Services, and to all our donors, partners and supporters for unwavering support and guidance in our conservation efforts. We appreciate the support and hard work of all surveyors, local conservation support groups and volunteers in making this annual survey a success.

## List of surveyors

Name	Address	Area Surveyed
Damber Bdr. Chettri	Gonphu Range, RMNP	Tsaidang-Chamkharchu confluence
Tashi Phuntsho	Gonphu Range, RMNP	Tingtibi-Goling
Thinley Tshering	Tingtibi Range, Zhemgang Division	Tingtibi-Wangdigang zam
Sanjit Kumar Rai	Nabji Range Office, JSWNP	Nabji-Mangdechhu-Zilichhu confluence
Tashi Tenzin	Nabji Range Office, JSWNP	Nabji-Mangdechhu-Zilichhu confluence
Indra Kumar Darjee	Digala, Range, Zhemgang Division	Redibi-Langdorbi-Chamkharchhu
Ugyen Dorji	Panbang Range, Zhemgang Division	Panbang-Lhadugang-Yumdagang-
Sherab Dorji	Panbang Range, Zhemgang Division	Panbang-Lhadugang-Yumdagang-
Chundo Dorji	RMNP	Panbang-Manas
Tshering Tobgay	RMNP	Panbang-Manas
Kamal Tharu (Boatman)	RMNP	Panbang-Manas
Shankar Choudary (Boatman)	RMNP	Panbang-Manas
Phuntshok	Tingtibi range, JSWNP	Tingtibi-Berti-Wangdigang
Namgay Tenzin	Upper Chamkharchu	Upper Chamkharchhu
Pema Choten	Upper Chamkharchu	Upper Chamkharchhu
Tshering Norbu (Guide)	Pantang eco-lodge	Pantang-Panbang
Phurba (Security)	Goling	Goling-Tshaidang
Dorji Nima	Zeelangbi	Zeelanbi-chamkharchhu
Phuntsho Wangdi	Trashigang Division	Chazam-Sherichhu
Sangay Loday	Trashigang Division	Chazam-Sherichhu
Pem Tshering	Pemagatsel Division	Kuri-Gongri confluence-Telung base
Cheki Wangdi	Pemagatsel Division	Kuri-Gongri confluence-Telung base
Deo Man Rai	Lingmithang FMU	Lingmithang-Kuri-gongri confluence
Lhadarla	Gyalpozhing Range, Mongar Division	Gyalpozhing-Kuri-gongri
Cheten Dorji	Drametse, Mongar Division	Rolong-Sherichu-Confluence
Bal Krishna Koirala	Doksum Range, Trashigang Division	Doksum-Chazam-Sherichhu
Dorji Thinley	Doksum Range, Trashigang Division	Doksum-Buyang-Sherichhu
Tandin Wangchuk	Doksum Range, Trashigang Division	Doksum-Buyang-Sherichhu
Dorji Dechen	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Ugyen Dorji	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Sonam Tobgay	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Jigme Pelden	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Karma	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola

Name	Address	Area Surveyed
Namgyel Dorji	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Phuntsho Tobgay	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Raj kumar Gurung	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Dr. Sherub	UWICER	Phibsoo Khola-Longa khola-Dangey Khola
Tendel Wangdi	Rongmachu FMU, Mongar Division	Riwan-Autsho
Gyeltshen	Tangachhu beat office, Mongar Division	Riwan-Autsho
Sangay Drukpa	Bumdeling WS	Buyang-Kateng
Ugyen Wangmo	Bumdeling WS	Buyang-Kateng
Sigay Dorji/ Phurba	RBP, Changchey	Sunkosh bridge-Burichhu
Ektar Subba	Rangakhola	Rangakhola-Gumaniey
Penjor	Harachu	Harachu-Migtana
Karma Kelzang Oewazin	Gesarling, Dagana Division	Dagachhu Powerhouse-Dagachhu Confluence
Durga Prasad Gurung	Lhamoizingkha Range, Dagana	Samachhu-Homa-Karmaling
Tshering Wangdi	Lhamoizingkha Range, Dagana	Karmaling-Lhamoizingkha-Jigmechhu
Gempa	Mendrelgang Range, Tsirang Division	Rateykhola-Dagachhu Confluence
Birkha Bdr.Mongar	Sergithang, Tsirang Division	Wakleytar-Burichhu
Pem Dorji Tamang	Dagana Division	Dagachhu 2 confluence-Below Powerhouse
Ram Bdr. Gurung	Dagana Division	Dagachhu 2 confluence-Below Powerhouse
Rinchen Dorji	Taksha Range, JSWNP	Migtana-Dayou
Tshering Dorji	Taksha Range, JSWNP	Taksha-Kisonachhu-Wakleytar
Ngawang Tenzin	Taksha Range, JSWNP	Taksha-Samthang
Dorji Rabten	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Sherab Dorji	Phibsoo WS	Phibsoo Khola-Longa khola-Dangey Khola
Laxman Tamang	Nichula Range, PWS	Nichula-Homa Dovan-Gumtey
Karma Chedup	Nichula Range, PWS	Nichula-Homa Dovan-Gumtey
Pema Dorji	Nichula Range, PWS	Nichula-Homa Dovan-Gumtey
Rinchen	Nichula Range, PWS	Nichula-Homa Dovan-Gumtey
Wangchuk Dorji	Athang range, JSWNP	Athang lake-Nebachhu-Machhu
Kharka Singh Chhettri	Sunkosh Village	Sunkosh brige-Ratey Khola
Sukman Layo Mongar	Rateykhola	Rateykhola-Chunikhang base
Karna Bdr. Tamang	Toisang	Chunikhang base-Dagachhu Confluence
Nar Bdr. Rai	Balwani	Balwani-Kalikhola confluence
Garjaman Rai	Balwani	Dagachhu confluence-Kalikhola confluence
Sam Bdr. Tamang	Karmaling	Karmaling-Samachhu
Kinley Penjor	Phochu	Samdingkha-Tshosabu
Dorji	Berti	Bertichhu
Sonam Penjor	Samdingkha, Lobesa Division	Confluence-Samdingkha
Norbu	Samdingkha, Lobesa Division	Samdingkha-Tshosabu
Kezang Phuntsho	Punakha Range, Lobesa Division	Confluence-Zomlingthang-Sonagatsel
Karpola	Punakha Range, Lobesa Division	Confluence-Dangchu confluence
Gem Tshering	Punakha Range, Lobesa Division	Sonagatsel-Shatem
Chimi Dorji	Punakha Range, Lobesa Division	Sonagatsel-Shatem
Tshewang Lhendup	RSPN	Wakletar - Balwani
Sonam Tshering	RSPN	Kamichhu-Taksha
Indra Acharja	RSPN	Tingtibi-Pantang
Tenzin Nima	RSPN	Tingtibi-Pantang

