



REPORT

WHITE-BELLIED HERON

Ardea insignis

ANNUAL POPULATION SURVEY 2025



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Contents

01 Summary

02 Introduction / background

03 Methods

04 Data Analysis

05 Results

06 Heron Population at WBHCC

07 Nest Monitoring

08 Wildlife diversity

09 Threats

10 Acknowledgements

11 Annexure



01. Summary

The White-bellied Heron *Ardea insignis* is categorized as Critically Endangered bird species on the IUCN Red List, and the species remains as one of the rarest avian species globally, with a total global population estimated at fewer than 60 individuals. Since 2003, the Royal Society for Protection of Nature (RSPN) has undertaken systematic national surveys to monitor the species' status, distribution, and threats. The 2025 national survey was conducted from 3rd - 7th March.

Field methodologies for the survey included habitat stratification based on historical occupancy, and technology-assisted surveys. The survey assessed 17 out of 18 identified habitat zones, with targeted efforts made to verify historical sites and potentially suitable habitats. This year, during the survey, a total of 29 individuals of WBH were observed, comprising 24 in the wild and five individual birds currently being raised at the White-bellied Heron Conservation Center (WBHCC). The count this year represents an increase from the 2024 total (n = 25). The survey recorded the highest number of individuals from the Punatsangchhu river basin, with 12 individuals. However, several historically occupied sites, Phochhu and Mochhu in Punatsangchhu, and the upstream of Mangdechhu basin, showed a decline or absence of individuals. The survey also recorded four active nests, three in Punatsangchhu river basin and one in Mangdechhu river basin. The field survey also recorded 178 other bird species and 16 mammal species within the surveyed area. Principal threats that may potentially threaten heron and their habitats were also quantified.

The survey result analysis explains only the confirmed individuals that are reported during the survey period, without extrapolation or population estimation. This method ensures data reliability, considering there are annual variations in survey effort, spatial coverage, observer experience, seasonal conditions, and accessibility. The survey report consists of a detailed methodological narrative to account for potential confounding variables affecting interannual comparability.

02. Introduction

Since 2003, annual population surveys of the White-bellied Heron (WBH) *Ardea insignis* have been conducted in Bhutan. This effort is important given the species' critical conservation status, Critically Endangered. The surveys have provided valuable data on population distribution, prevailing threats, and have informed the prioritization of targeted conservation interventions.

The WBH is the second-largest heron globally and is at high risk of extinction. Historically, the species was distributed across Southeast Asia, but its occurrence is now confirmed only in Bhutan, northeast India, and Myanmar. While a few vagrant records exist from southern China. BirdLife International estimates the global population at fewer than 250 individuals; however, the 2015 White-bellied Heron International Workshop held in Bhutan reported just 60 individuals across its range. More recent coordination and knowledge-sharing workshops hosted by Royal Society for Protection of Nature (RSPN) with range countries reaffirm the critically low numbers. In 2024, Bhutan recorded 25 individuals, India 10–13 through focused surveys, and Myanmar confirmed five individual sightings made between 2018 and 2024.

In Bhutan, the species predominantly occupies major Himalayan river systems, Punatshangchhu, Mangdechhu, and Wangchhu. However, long-term population monitoring indicates a shifting distribution, with observation of local extirpations and nesting site abandonment in several historical locations. This trend is particularly evident in the Punatshangchhu basin, where sighting frequencies upstream of the river have declined sharply over the past years.

Across its range, the species faces severe threats, including habitat loss, riverine ecosystem alteration, and anthropogenic disturbances. In Bhutan, habitat fragmentation and river-related activities are the primary pressures. In response, RSPN in partnership with relevant stakeholders, has initiated the implementation of several conservation actions, including riverine habitat restoration, community outreach, and livelihood diversification programs aimed at reducing human-induced pressures on herons and other wildlife in the landscape.

In addition to this conservation, RSPN has established a conservation breeding center located adjacent to a known wild habitat. This facility aims to safeguard genetic diversity, establish a founder population, and release the herons to supplement the wild population. Currently, five individuals are housed at the center, including two pairs of potential breeders.

03. Survey Method

In Bhutan, habitats of the WBH are delineated into 18 zones, primarily comprising major river basins and their tributaries. These zones were identified based on historical and recent species occurrence records, as well as the suitability of areas for potential occupancy. The habitat zones span a wide geographical range, from elevations as low as 150 meters above sea level (asl) to approximately 1800 m asl. Zone size varies, largely depending on the length of the river stretches and the logistical feasibility of surveying them. Of the 18 designated zones, 17 were surveyed during this year's survey effort.

The survey was conducted over five consecutive days, with teams systematically tracking along river stretches to detect the presence of WBHs. Efforts were concentrated in areas with previous occurrence records and in habitats considered suitable based on satellite imagery. Google Earth was employed to pre-identify potential habitats by evaluating features known to be preferred by the species, such as river confluences, historic nesting sites, and areas exhibiting minimal human disturbance. These key sites received increased survey effort.

Data collection was standardized using the Epicollect5 mobile application. A project titled "White-bellied Heron Population Survey" was created and made accessible to all surveyors in advance. Prior to field deployment, all participants received orientation on app functionality and data entry protocols. The application included tailored entry forms to capture observations of WBHs, associated wildlife species, and threats. Each observation entry included detailed metadata such as observer information, geolocation, timestamp, weather conditions, and frequency of sightings. Surveyors also recorded daily start and end points of their survey routes to map effort coverage.

To ensure taxonomic accuracy, unconfirmed wildlife sightings were verified in real time via a Telegram group that facilitated expert consultation. This peer-support mechanism helped validate species identifications and improve data reliability. After the fieldwork, all species records were subjected to a data cleaning process, during which rare or questionable sightings were reviewed in consultation with the respective surveyors.

For threat assessment, several 1-km transects were established within each habitat zone, and the coordinates were pre-shared with the teams. Surveyors used a standardized threat assessment form to evaluate anthropogenic and environmental pressures that could impact WBHs or degrade their riverine habitats. In addition to these predefined transects, threats encountered opportunistically along the survey routes were also documented.

04. Data Analysis

The raw data collected during the survey were categorised into five primary groups for analysis: WBH observations, other wildlife observations, survey start and end points, location updates, and recorded threats. Data processing and visualisation were carried out using Microsoft Excel, R statistical software, and ArcGIS.

The analysis of WBH data focused on quantifying the number of individual herons observed during the survey. No statistical inference was made regarding potential undetected individuals, due to variability in survey effort, observer experience, and spatial coverage across zones. These limitations make inter-annual comparisons complex and potentially confounded. Therefore, the WBH population estimates represent only the individuals sighted during the 2025 survey period.

Observational data were grouped by zone and date to assess the number of unique individuals detected. To minimise the risk of double-counting, particularly in overlapping survey efforts, each sighting was evaluated using metadata including time, date, GPS coordinates, age class, and supplementary notes. Pictorial evidence provided by surveyors was also used to verify sightings. For each zone, the highest number of individuals recorded on any single day within the five-day survey period was taken as the zone's count. The sum of these maximum daily counts across all zones was used as the final national WBH population count. Georeferenced observations were mapped to visualise the distribution range of WBH and the spatial extent of survey coverage.

A similar approach was applied to data on other wildlife species. Entries with incomplete metadata, such as missing GPS coordinates or records of unlikely species based on known distribution and seasonal presence, were excluded from analysis. Species richness, total counts, and distribution were assessed at the zone level. A final checklist of observed bird and mammal species was compiled, including the number of individuals recorded per species.

Threat data were consolidated and classified into major categories such as pollution, natural resource extraction, man made structures, human settlements, and invasive species. Observations were analysed to assess the frequency and spatial distribution of these threats in relation to WBH habitats. The potential impacts on WBH populations and riverine ecosystems were qualitatively interpreted based on the threat prevalence in each zone and proximity to known WBH locations.

05. Result

WBH Population Count

During the 2025 population survey, 17 of the 18 identified WBH habitat zones across Bhutan were surveyed over a five-day period. Zone XIV remained unsurveyed due to the absence of previous WBH records and a lack of baseline habitat inventory, which limited the ability to delineate feasible survey areas. The remaining zones were comprehensively surveyed, including the use of drone technology in Zone X to enhance data collection on habitat threats and other wildlife species, although no WBH was recorded in this zone during the survey period.

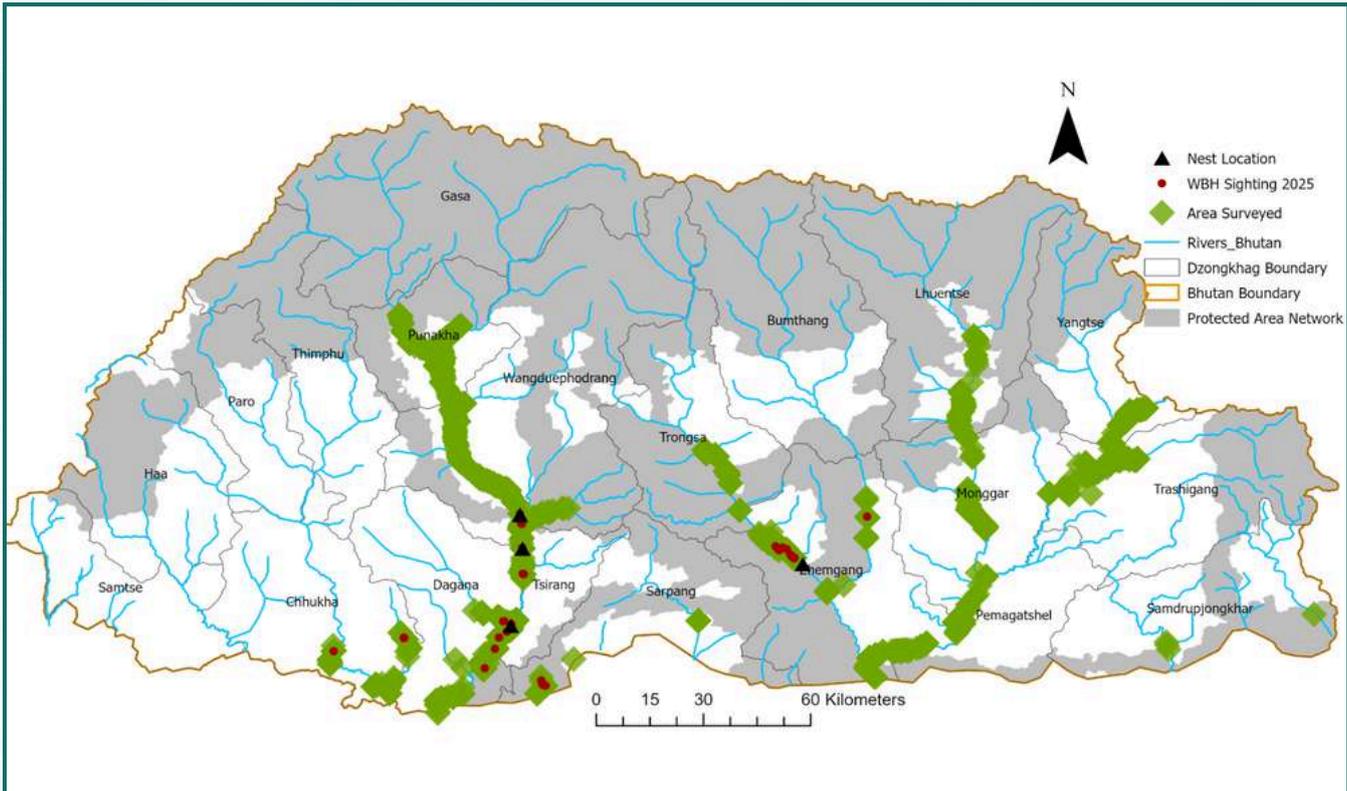
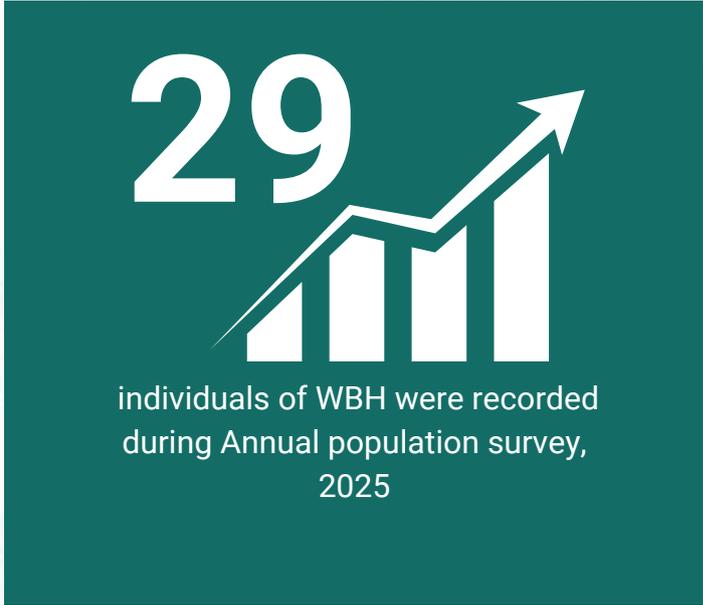


Figure 1: Map of survey coverage and White-bellied Heron sightings during the 2025 national population survey.

Table 1: White-bellied Heron count from different zones observed during the population survey, 2025

	WBH Habitat Zones	Places	Count 2025
In-situ	Zone - II	Adha, Nagzhina, Haraongchhu, Kisonachhu and Taksha area	2
	Zone - III	Burichhu, Sunkosh-Dagachhu, Relangthang, Wakletar, Balwani, Malbasey, Kalikhola and Middle Punatsangchhu area	9
	Zone - IV	Lamozingkha, Rangae and Gumti Lower Punatsangchhu area	1
	Zone - V	Phibsoo Wildlife Sanctuary	4
	Zone - VII	Goling and Tsiadang area	2
	Zone - IX	Chamkharchhu	2
	Zone - XV	Jigmechhu and Wangchhu area	4
Ex-situ	WBH Conservation Center		5
Total Count			29

The 2025 survey recorded 24 individual WBH in the wild. When combined with the five individuals held at the White-bellied Heron Conservation Center (WBHCC), Bhutan's total known WBH population stands at 29 individuals. This shows an increase from the 2024 count, which reported 22 wild individuals and three in WBHCC.

Among the wild population, the highest concentration of WBH was recorded in the Punatshangchhu basin ($n = 12$), followed by Phibsoo Wildlife Sanctuary, Wangchhu, and Mangdechhu (each $n = 4$). Both Punatshangchhu and Wangchhu saw an increase from the previous year's count. Phibsoo Wildlife Sanctuary recorded a 50% increase, from two to four individuals. However, the Mangdechhu basin continued its downward trend, declining from eight individuals in 2023 to four in 2024 and 2025. There was also a shift in distribution, with no sightings recorded in the upstream regions of both Punatshangchhu and Mangdechhu rivers. All individuals in these basins were observed in downstream areas, specifically below Kamechhu in Punatshangchhu basin, and Chamkharchhu and below Tingtibi in Managdechhu basin.

In 2025, WBH sightings were made only from seven zones (II, III, IV, V, VII, IX, XV), a decline from nine zones in 2024. The highest number of individuals ($n = 9$) was observed in zone III, an increase of six individuals compared to the previous year. Zone V saw an increase of two individuals, while zones IX and XV recorded one additional individual each. Sightings in zones II, IV, and VII declined by one individual each relative to the 2024 count. No individuals were recorded in zones I, VI, VIII, X, XI, XII, XIII, XIV, XVI, and XVII.



Figure 2: White-bellied Heron population trend in Bhutan (2003-2025)

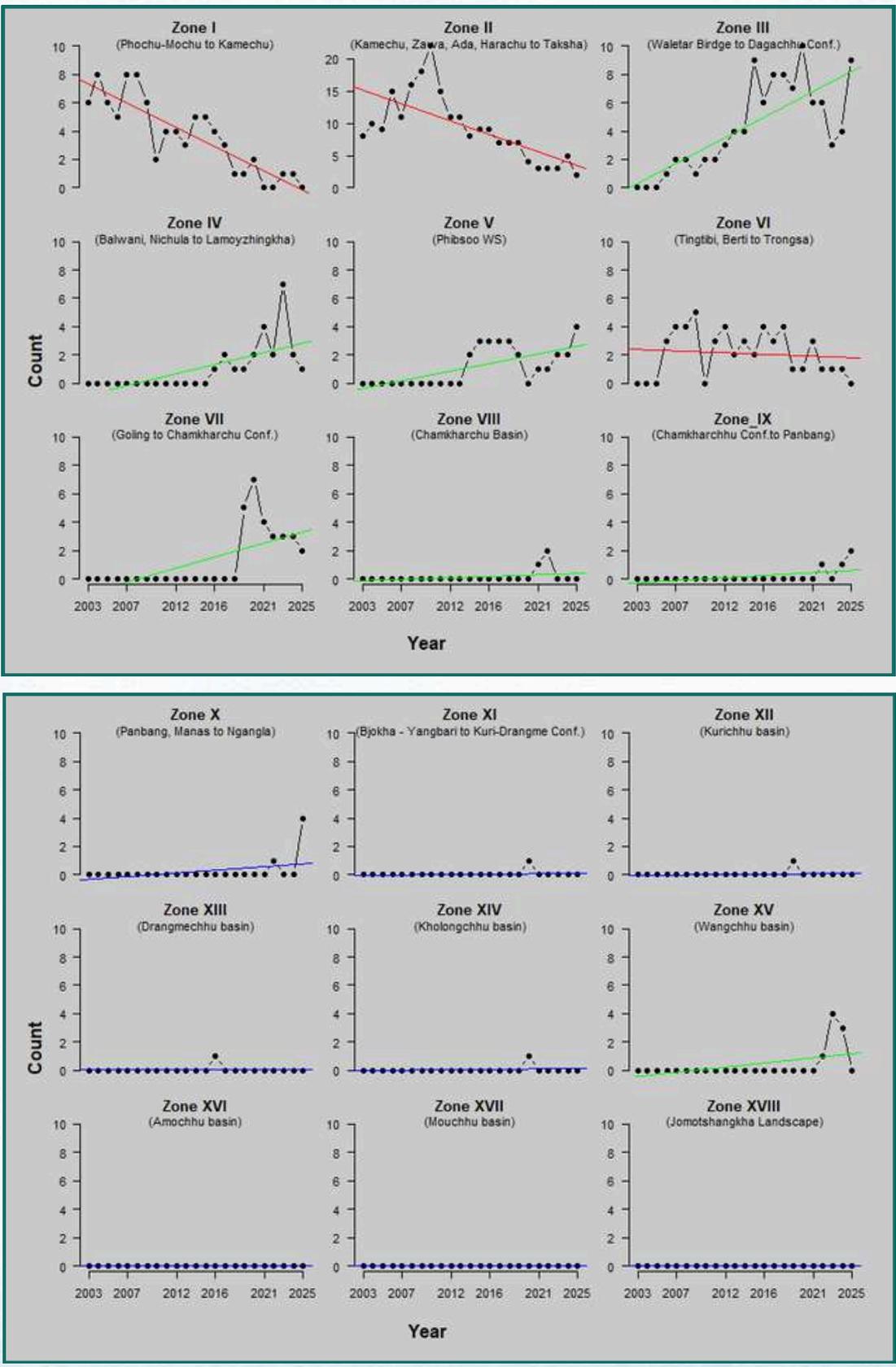


Figure 3: Population trends of White-bellied Heron by zone in Bhutan from 2003 to 2025

06. Heron Population at WBHCC

The WBH population at the WBHCC now includes five individuals. This includes two juveniles added in 2024. One chick was collected from the Kisonachhu nest in Wangdue Phodrang, and another was raised from an egg collected from the Tsaidang nest in Zhemgang.



Heron (Collected as a chick from Relangthang Nest in 2021)



Heron rescued from Nichula in 2022



Heron (Collected as a chick from Relangthang Nest in 2021)



Heron (Collected as a chick from Kisonachhu Nest in 2024)



Heron (Collected the egg from Tsiadang Nest and hatched at WBHCC in 2024)

Figure 4: Image of White-bellied Heron at WBH Conservation Center

07. Nest Monitoring

Nest monitoring is part of the survey. A total of three nests were located during the survey period, with an additional nest discovered shortly after the survey period, bringing the total to four nests, similar to the number of nests recorded in 2024.

In the Punatshangchhu basin, three nests were observed; Kisonachhu Nest that is located near the confluence of Kisonachhu and Punatshangchhu rivers, Wangdue Phodrang; Relangthang Nest, which is located on a slope opposite Relangthang village, Tsirang District; and Dagachhu Nest, which is located near the Dagachhu and Punatshangchhu confluence, Dagana District.

During the survey period, the Kisonachhu and Dagachhu nests were found to be well constructed and had adequate nesting materials. The Relangthang nest appeared under construction, with the WBH pair still gathering materials.

In the Mangdechhu basin, a fourth nest was observed post-survey along the river stretch between the confluences of Bulichhu and Subrang rivers with Mangdechhu, below Tsaidang village in Zhemgang. As of April 13, 2025, when the nest was discovered, the nest has two chicks estimated to be approximately a month old. The nest had shifted nearly three kilometers from a previous nesting site that had been used repeatedly over many years.

04

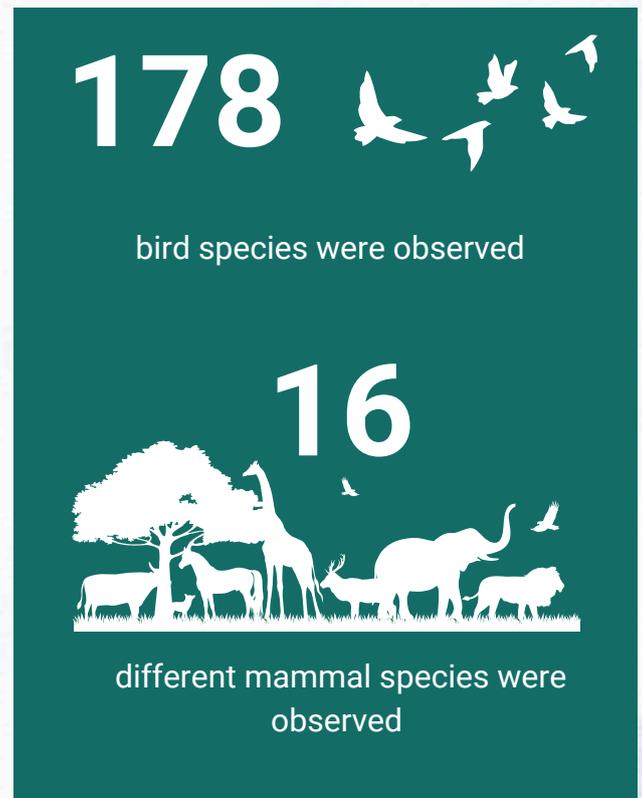


nests of WBH were found

08. Wildlife diversity

A total of 178 bird species and 16 mammal species were reported to be observed during the survey period. Among the bird species observed, the highest number of individuals recorded was Great Cormorant *Phalacrocorax carbo*, with 507 individuals, followed by White-capped Water Redstart *Chaimarrornis leucocephalus* with 203 and Brown Dipper *Cinclus pallasii* with 187 individuals. The globally threatened bird species recorded during the survey include, Great Hornbill *Buceros bicornis*, Great Slaty Woodpecker *Mulleripicus pulverulentus*, Pallas's Fish Eagle *Haliaeetus leucoryphus*, and Rufous-necked Hornbill *Aceros nipalensis*. The mammal species recorded include globally threatened species such as Himalayan Serow *Capricornis sumatraensis thar*, Sambar Deer *Rusa unicolor*, Smooth Coated Otter *Lutrogale perspicillata*, Capped Langur *Trachypitecus pileatus*.

Similarly those species that share similar feeding guilds, particularly riverine piscivores, include Crested Kingfisher *Megaceryle lugubris*, Common Kingfisher *Alcedo atthis*, Great Cormorant *Phalacrocorax carbo*, Little Cormorant *Microcarbo niger*, Tawny Fish Owl *Ketupa flavipes*, Striated Heron *Butorides striata*, Indian Pond Heron *Ardeola grayii*, Little Egret *Egretta garzetta* and Pallas's Fish Eagle *Haliaeetus leucoryphus* of the bird species. The mammal species include Smooth-coated Otter *Lutrogale perspicillata* and Eurasian Otter *Lutra lutra*.



These animal sightings within the WBH landscape provide important insights into the richness of biodiversity supported by the riverine ecosystem. The presence of globally threatened and indicator species indicates the ecological integrity and conservation value of the landscape. Regular monitoring and protection of this habitat are crucial for maintaining its biodiversity and supporting broader conservation goals.

09. Threats

The threat analysis identified the following major categories of threats that may or have the potential to disturb the WBH and its habitat. The analysis indicates 'Habitat Loss and Fragmentation' as the most significant disturbance to the WBH, with 293 instances recorded for human settlements, agriculture, and land use changes along the surveyed area. This is followed by threats from the occurrence of 'Infrastructure & Transportation' with 188 instances such as roads, bridges, and power lines that fragment the habitats.

'Pollution' with a frequency record of 113 emerges as another factor of critical concern. The pollution is largely driven by plastic and other non-biodegradable wastes recorded. The sand dredging, dams, and river drying were recorded under 'River & Wetland Modification' with 94 instances.

For 'Tourism & Recreation Disturbance,' 77 instances were recorded that include documenting recreational activities like rafting, fly-fishing, camping, and sports fields. 'Overexploitation of Resources,' like fishing and fuelwood collection, was recorded of 88 instances, and 'Human-Wildlife Conflict & Encroachment' of 60 instances were recorded and it includes the presence of cattle, feral dogs, and human presence. Lastly, 'Climate and Natural Events' of 18 instances were recorded, and the data collection includes landslides and forest fire occurrences in the area.

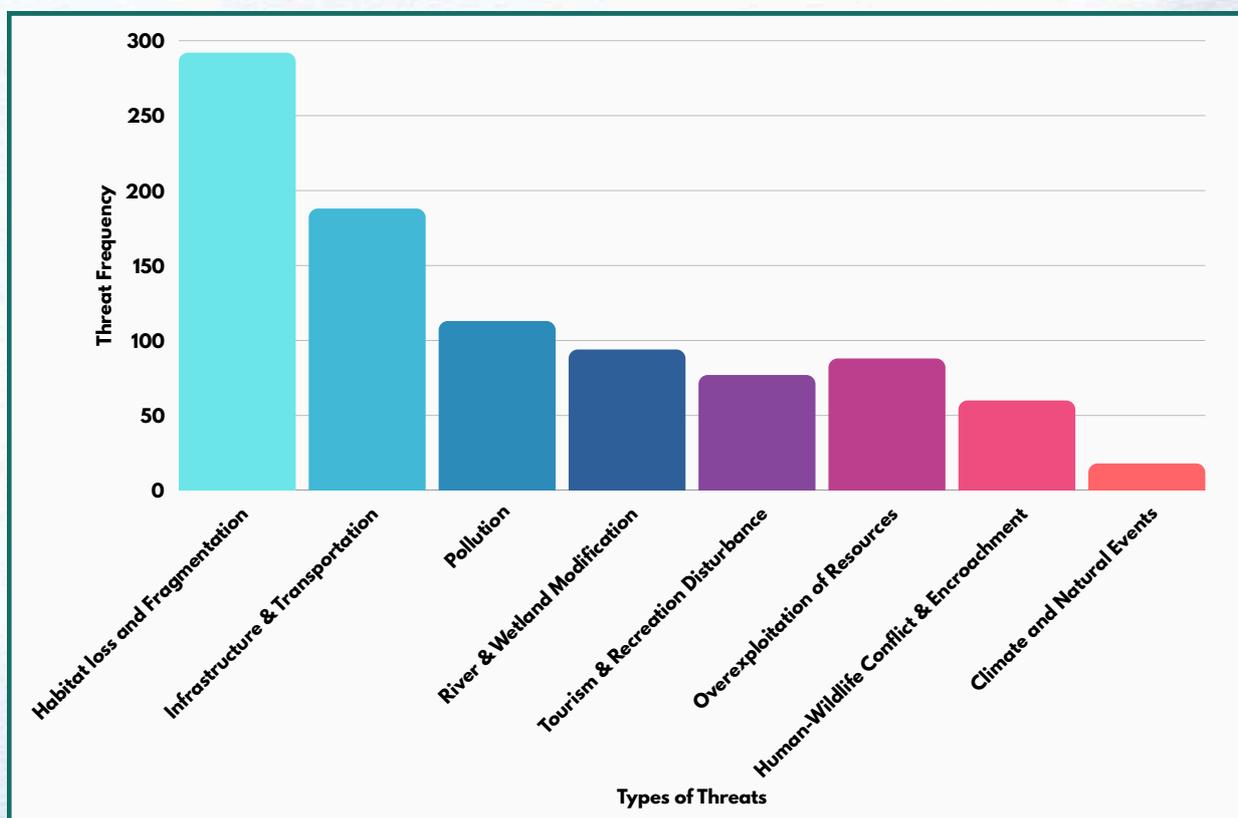


Figure 5: Major threat categories observed along the survey sites during the survey



10. Acknowledgements

RSPN would like to extend our sincere gratitude to all our donors, partners and philanthropists for their unwavering support in conducting this survey and their guidance in our conservation efforts to save the White-bellied Heron.

We appreciate the support and hard work of all surveyors from the Department of Forest and Park Services, Local Conservation Support Group members and volunteers in making this annual survey a success.

11. Annexures

Table 2: Checklist of birds sighted during the White-bellied Heron population survey

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
1	Alpine Swift	<i>Tachymarptis melba</i>	Least Concern	1
2	Ashy Bulbul	<i>Hemixos flavala</i>	Least Concern	34
3	Ashy Drongo	<i>Dicrurus leucophaeus</i>	Least Concern	1
4	Asian Barred Owlet	<i>Glaucidium cuculoides</i>	Least Concern	14
5	Asian Brown Flycatcher	<i>Muscicapa latirostris</i>	Least Concern	1
6	Asian Fairy Bluebird	<i>Irena puella</i>	Least Concern	2
7	Bar-winged Flycatcher-shrike	<i>Hemipus picatus</i>	Least Concern	9
8	Bay Woodpecker	<i>Blythipicus pyrrhotis</i>	Least Concern	2
9	Black Bulbul	<i>Hypsipetes leucocephalus</i>	Least Concern	68
10	Black Drongo	<i>Dicrurus macrocercus</i>	Least Concern	13
11	Black Eagle	<i>Ictinaetus malaiensis</i>	Least Concern	1
12	Black Redstart	<i>Phoenicurus ochruros</i>	Least Concern	1
13	Black Stork	<i>Ciconia nigra</i>	Least Concern	29
14	Black-backed Forktail	<i>Enicurus immaculatus</i>	Least Concern	7

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
15	Black-chinned Yuhina	<i>Yuhina nigrimenta</i>	Least Concern	1
16	Black-crested Bulbul	<i>Yuhina flavicollis</i>	Least Concern	33
17	Brown-headed Gull	<i>Pycnonotus flaviventris</i>	Least Concern	1
18	Black-hooded Oriole	<i>Chroicocephalus ridibundus</i>	Least Concern	6
19	Black-tailed Crake	<i>Oriolus xanthornus</i>	Least Concern	8
20	Black-throated Sunbird	<i>Amaurornis bicolor</i>	Least Concern	2
21	Blue Rock Thrush	<i>Aethopyga saturata</i>	Least Concern	10
22	Blue Whistling Thrush	<i>Monticola solitarius</i>	Least Concern	149
23	Blue-bearded Bee-eater	<i>Myophonus caeruleus</i>	Least Concern	2
24	Blue-capped Rock Thrush	<i>Nyctornis athertoni</i>	Least Concern	5
25	Blue-throated Barbet	<i>Psilopogon cyanotis</i>	Least Concern	27
26	Blue-winged Laughingthrush	<i>Megalaima asiatica</i>	Least Concern	25
27	Bronzed Drongo	<i>Trochalopteron squamatum</i>	Least Concern	10
28	Brown Dipper	<i>Dicrurus aeneus</i>	Least Concern	187
29	Brown Shrike	<i>Cinclus pallasii</i>	Least Concern	2
30	Cattle Egret	<i>Lanius cristatus</i>	Least Concern	16
31	Chestnut-bellied Nuthatch	<i>Bubulcus ibis</i>	Least Concern	4

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
32	Chestnut-bellied Rock Thrush	<i>Sitta cinnamoventris</i>	Least Concern	6
33	Chestnut-headed Bee-eater	<i>Monticola rufiventris</i>	Least Concern	2
34	Chestnut-headed Tesia	<i>Merops leschenaulti</i>	Least Concern	4
35	Chestnut-winged Cuckoo	<i>Cettia castaneocoronata</i>	Least Concern	1
36	Citrine Wagtail	<i>Clamator coromandus</i>	Least Concern	1
37	Collared Falconet	<i>Motacilla citreola</i>	Least Concern	1
38	Collared Owlet	<i>Microhierax caerulescens</i>	Least Concern	2
39	Common Buzzard	<i>Glaucidium brodiei</i>	Least Concern	3
40	Common Green Magpie	<i>Buteo buteo</i>	Least Concern	6
41	Common Hill Myna	<i>Cissa chinensis</i>	Least Concern	15
42	Eurasian Hoopoe	<i>Gracula religiosa</i>	Least Concern	1
43	Common Kestrel	<i>Upupa epops</i>	Least Concern	91
44	Common Kingfisher	<i>Falco tinnunculus</i>	Least Concern	34
45	Common Pigeon	<i>Alcedo atthis</i>	Least Concern	4
46	Common Sandpiper	<i>Columba livia</i>	Least Concern	56
47	Siberian Stonechat	<i>Saxicola rubicola</i>	Winter visitor	15
48	Common Tailorbird	<i>Orthotomus sutorius</i>	Least Concern	20

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
49	Common Teal	<i>Anas crecca</i>	Least Concern	6
50	Crested Kingfisher	<i>Megaceryle lugubris</i>	Least Concern	179
51	Crested Serpent Eagle	<i>Spilornis cheela</i>	Least Concern	33
52	Crimson Sunbird	<i>Aethopyga siparaja</i>	Least Concern	16
53	Emerald Dove	<i>Chalcophaps indica</i>	Least Concern	1
54	Eurasian Wigeon	<i>Mareca penelopela</i>	Least Concern	9
55	Fire-breasted Flowerpecker	<i>Dicaeum ignipectus</i>	Least Concern	9
56	Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>	Least Concern	2
57	Fork-tailed Swift	<i>Apus pacificus</i>	Least Concern	1
58	Gadwall	<i>Mareca strepera</i>	Least Concern	24
59	Golden Babbler	<i>Stachyridopsis chrysaea</i>	Least Concern	3
60	Golden-fronted Leafbird	<i>Chloropsis aurifrons</i>	Least Concern	27
61	Goosander/Merganser	<i>Mergus merganser</i>	Least Concern	95
62	Great Barbet	<i>Megalaima virens</i>	Least Concern	34
63	Great Cormorant	<i>Phalacrocorax carbo</i>	Least Concern	507
64	Great Hornbill	<i>Buceros bicornis</i>	Vulnerable	80
65	Great Myna	<i>Acridotheres grandis</i>	Least Concern	1

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
66	Great Slaty Woodpecker	<i>Mulleripicus pulverulentus</i>	Vulnerable	5
67	Greater Goldenback	<i>Chrysocolaptes guttacristatus</i>	Least Concern	6
68	Greater Necklaced Laughingthrush	<i>Pterorhinus pectoralis</i>	Least Concern	8
69	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	Least Concern	16
70	Greater Yellownape	<i>Chrysophlegma flavinucha</i>	Least Concern	3
71	Green Imperial Pigeon	<i>Ducula aenea</i>	Least Concern	17
72	Green Sandpiper	<i>Tringa ochropus</i>	Least Concern	4
73	Green-backed Tit	<i>Parus monticolus</i>	Least Concern	19
74	Green-billed Malkoha	<i>Phaenicophaeus tristis</i>	Least Concern	11
75	Green-tailed Sunbird	<i>Aethopyga nipalensis</i>	Least Concern	5
76	Grey Peacock Pheasant	<i>Polyplectron bicalcaratum</i>	Least Concern	17
77	Grey Treepie	<i>Dendrocitta formosae</i>	Least Concern	19
78	Grey Wagtail	<i>Motacilla cinerea</i>	Least Concern	11
79	Grey-backed Shrike	<i>Lanius tephronotus</i>	Least Concern	19
80	Grey-bellied Tesia	<i>Tesia cyaniventer</i>	Least Concern	2
81	Grey-headed Canary Flycatcher	<i>Culicicapa ceylonensis</i>	Least Concern	8

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
82	Grey-headed Woodpecker	<i>Picus canus</i>	Least Concern	6
83	Grey-hooded Warbler	<i>Phylloscopus xanthoschistos</i>	Least Concern	2
84	Grey-throated Babbler	<i>Stachyris nigriceps</i>	Least Concern	1
85	Hill Partridge	<i>Arborophila torqueola</i>	Least Concern	4
86	Himalayan Bulbul	<i>Pycnonotus leucogenys</i>	Least Concern	85
87	Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>	Least Concern	39
88	Ibisbill	<i>Ibidorhyncha struthersii</i>	Least Concern	16
89	Indian Peafowl	<i>Pavo cristatus</i>	Least Concern	90
90	Indian Pond Heron	<i>Ardeola grayii</i>	Least Concern	3
91	Indian Robin	<i>Saxicoloides fulicatus</i>	Least Concern	3
92	Indian Roller	<i>Coracias benghalensis</i>	Least Concern	11
93	Jungle Myna	<i>Acridotheres fuscus</i>	Least Concern	1
94	Kalij Pheasant	<i>Lophura leucomelanos</i>	Least Concern	16
95	Large Cuckooshrike	<i>Coracina macei</i>	Least Concern	2
96	Large Woodshrike	<i>Tephrodornis gularis</i>	Least Concern	5
97	Large-billed Crow	<i>Corvus macrorhynchos</i>	Least Concern	22
98	Lesser Racket-tailed Drongo	<i>Dicrurus remifer</i>	Least Concern	2

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
99	Lesser Yellownape	<i>Picus chlorolophus</i>	Least Concern	1
100	Lineated Barbet	<i>Megalaima lineata</i>	Least Concern	8
101	Little Cormorant	<i>Microcarbo niger</i>	Least Concern	57
102	Little Egret	<i>Egretta garzetta</i>	Least Concern	2
103	Little Forktail	<i>Enicurus scouleri</i>	Least Concern	4
104	Little-ringed Plover	<i>Charadrius dubius</i>	Least Concern	3
105	Long-tailed Minivet	<i>Pericrocotus ethologus</i>	Least Concern	5
106	Long-tailed Sibia	<i>Heterophasia picaoides</i>	Least Concern	1
107	Mallard	<i>Anas platyrhynchos</i>	Least Concern	20
108	Maroon Oriole	<i>Oriolus traillii</i>	Least Concern	1
109	Mountain Bulbul	<i>Ixos mccllellandii</i>	Least Concern	4
110	Mountain Imperial Pigeon	<i>Ducula badia</i>	Least Concern	2
111	Mountain Scops Owl	<i>Otus spilocephalus</i>	Least Concern	1
112	Northern Pintail	<i>Anas acuta</i>	Least Concern	2
113	Olive-backed Pipit	<i>Anthus hodgsoni</i>	Least Concern	1
114	Orange-bellied Leafbird	<i>Chloropsis hardwickii</i>	Least Concern	4

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
115	Orange-breasted Green Pigeon	<i>Treron bicinctus</i>	Least Concern	6
116	Oriental Honey-buzzard	<i>Pernis ptilorhynchus</i>	Least Concern	1
117	Oriental Magpie Robin	<i>Copsychus saularis</i>	Least Concern	30
118	Oriental Pied Hornbill	<i>Anthracoceros albirostris</i>	Least Concern	16
119	Oriental White-eye	<i>Zosterops palpebrosus</i>	Least Concern	18
120	Osprey	<i>Pandion haliaetus</i>	Least Concern	15
121	Paddyfield Pipit	<i>Anthus rufulus</i>	Least Concern	3
122	Pallas's Fish Eagle	<i>Haliaeetus leucoryphus</i>	Endangered	6
123	Pin-striped Tit Babbler	<i>Macronus gularis</i>	Least Concern	13
124	Pin-tailed Green Pigeon	<i>Treron apicauda</i>	Least Concern	1
125	Plumbeous Water-redstart	<i>Rhyacornis fuliginosa</i>	Least Concern	178
126	Puff-throated Babbler	<i>Pellorneum ruficeps</i>	Least Concern	2
127	Crimson Sunbird	<i>Aethopyga siparaja</i>	Least Concern	1
128	Red Collared Dove	<i>Streptopelia tranquebarica</i>	Least Concern	3
129	Red Junglefowl	<i>Anthus hodgsoni</i>	Least Concern	12
130	Red-crested Pochard	<i>Netta rufina</i>	Least Concern	9

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
131	Red-headed Trogon	<i>Harpactes erythrocephalus</i>	Least Concern	1
132	Red-tailed Minla	<i>Minla ignotincta</i>	Least Concern	1
133	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Least Concern	76
134	Red-wattled Lapwing	<i>Vanellus indicus</i>	Least Concern	10
135	River Lapwing	<i>Vanellus duvaucelii</i>	Near Threatened	166
136	Rosy Pipit	<i>Anthus roseatus</i>	Least Concern	1
137	Ruddy Shelduck	<i>Tadorna ferruginea</i>	Least Concern	91
138	Rufescent Prinia	<i>Prinia rufescens</i>	Least Concern	2
139	Rufous Sibia	<i>Heterophasia capistrata</i>	Least Concern	25
140	Rufous Treepie	<i>Dendrocitta vagabunda</i>	Least Concern	5
141	Rufous-necked Hornbill	<i>Aceros nipalensis</i>	Vulnerable	7
142	Rufous-necked Laughingthrush	<i>Garrulax ruficollis</i>	Least Concern	4
143	Rufous-vented Tit	<i>Periparus rubidiventris</i>	Least Concern	1
144	Oriental Turtal Dove	<i>Streptopelia orientalis</i>	Least Concern	21
145	Russet Sparrow	<i>Passer rutilans</i>	Least Concern	7
146	Rusty-cheeked Scimitar Babbler	<i>Pomatorhinus erythrogeus</i>	Least Concern	5

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
147	Rusty-flanked Treecreeper	<i>Certhia nipalensis</i>	Least Concern	1
148	Scarlet Minivet	<i>Pericrocotus speciosus</i>	Least Concern	18
149	Silver-eared Mesia	<i>Leiothrix argentauris</i>	Least Concern	1
150	Slaty-backed Forktail	<i>Enicurus schistaceus</i>	Least Concern	30
151	Hair-crested Drongo	<i>Dicrurus hottentottus</i>	Least Concern	4
152	Spotted Dove	<i>Spilopelia chinensis</i>	Least Concern	2
153	Spotted Forktail	<i>Enicurus maculatus</i>	Least Concern	9
154	Streaked Spiderhunter	<i>Arachnothera magna</i>	Least Concern	20
155	Striated Bulbul	<i>Pycnonotus striatus</i>	Least Concern	3
156	Striated Heron	<i>Butorides striata</i>	Vulnerable	24
157	Striated Prinia / Himalayan Prinia	<i>Striated Prinia</i>	Least Concern	3
158	Striated Yuhina	<i>Staphida castaniceps</i>	Least Concern	2
159	Sultan Tit	<i>Melanochlora sultanea</i>	Least Concern	6
160	Tawny Fish Owl	<i>Ketupa flavipes</i>	Least Concern	17
161	Thick-billed Warbler	<i>Iduna aedon</i>	Least Concern	2
162	Tree Pipit	<i>Anthus trivialis</i>	Least Concern	2

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
163	Verditer Flycatcher	<i>Eumyias thalassinus</i>	Least Concern	7
164	Wallcreeper	<i>Tichodroma muraria</i>	Least Concern	7
165	Whiskered Yuhina	<i>Yuhina flavicollis</i>	Least Concern	11
166	White Wagtail	<i>Motacilla alba</i>	Least Concern	49
167	White-bellied Redstart	<i>Hodgsonius phoenicuroides</i>	Least Concern	2
168	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	Least Concern	28
169	White-capped Water Redstart	<i>Chaimarrornis leucocephalus</i>	Least Concern	203
170	White-crested Laughingthrush	<i>Garrulax leucolophus</i>	Least Concern	9
171	White-rumped Munia	<i>Lonchura striata</i>	Least Concern	1
172	White-throated Bulbul	<i>Alophoixus flaveolus</i>	Least Concern	6
173	White-throated Fantail	<i>Rhipidura albicollis</i>	Least Concern	14
174	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Least Concern	29
175	Wreathed Hornbill	<i>Rhyticeros undulatus</i>	Vulnerable	12
176	Yellow Wagtail/Western Yellow wagtail	<i>Motacilla flava</i>	Least Concern	3
177	Yellow-bellied Fantail	<i>Chelidorhynch hypoxantha</i>	Least Concern	2
178	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	Least Concern	2

Table 3: Checklist of mammals sighted during the White-bellied Heron population survey

SI NO	Common Name	Scientific Name	Conservation Status	Total count (n)
1	Assamese Macaque	<i>Macaca assamensis</i>	Near Threatened	42
2	Capped Langur	<i>Trachypithecus pileatus</i>	Vulnerable	2
3	Grey Langur	<i>Semnopithecus</i>	Least Concern	16
4	Rhesus Macaque	<i>Semnopithecus</i>	Least Concern	2
5	Smooth-coated	<i>Lutrogale perspicillata</i>	Vulnerable	18
6	Eurasian Otter	<i>Lutra lutra</i>	Near Threatened	5
7	Barking Deer	<i>Muntiacus</i>	Least Concern	38
8	Himalayan Goral	<i>Naemorhedus goral</i>	Near Threatened	2
9	Himalayan Serow	<i>Capricornis sumatraensis thar</i>	Vulnerable	1
10	Sambar deer	<i>Rusa unicolor</i>	Vulnerable	8
11	Wild Boar	<i>Sus scrofa</i>	Least Concern	1
12	Himalayan striped Squirrel	<i>Tamiops maclellandii</i>	Least Concern	2
13	Orange-bellied Himalayan Squirrel	<i>Dremomys lokriah</i>	Least Concern	1
14	Malayan Giant Squirrel	<i>Ratufa bicolor</i>	Near Threatened	1
15	Yellow-throated Marten	<i>Martes flavigula</i>	Least Concern	5
16	Leopard Cat	<i>Prionailurus bengalensis</i>	Least Concern	2

Table 4: List of surveyors

SI NO	Survey Area	Surveyor	Agency
1	Mochhu - Pochhu	Kinga	JDNP
2	Khuruthang -PHPA II Dam	Karpola	Divisional Forest Office, Wangdue Phodrang
3		Dorji Dunji	LCSG
4		Jigme Tshering	RSPN
5	Harachhu	Tshering Dorji	JSWNP
6	Kisonachhu - WBHCC	Indra P Acharja	Researcher
7		Thinley Phuntsho	RSPN
8	Sunkosh - Toisang	Kharaka Singh	LCSG
9		Sonam Tshering	RSPN
10		Karna Bdr Tamang	LCSG
11	Balwani, Kalikhola	Garjaman Rai	LCSG
12		Nar Bdr Rai	LCSG
13		Dorji Wangchuk	Tsirang Division
14	Dagachh (Upstream - downstream)	Galey Tshering	Daga Division
15		Harka Dhan Mongar	Daga Dividion

SI NO	Survey Area	Surveyor	Agency
16	Rangatar - Baragumtey - Sunkosh proposed Damsite	Sangay Tshering	Daga Division
17		Sonam Jamtsho	Daga Division
18		Banjit Subba	LCSG
19	Proposed Damsite to Lhamoizingkha	Pema Dorji	Phibsoo WS
20	Phibsoo Wildlife Sanctuary Area	Bal Krishna Koirala	PWS
21		Pema Tobgay	PWS
22		Khageshore Guragai	PWS
23		Namgyel Dorji	PWS
24		Nima Wangdi	PWS
25		Passang Dorji Tamang	PWS
26		Laxman Tamang	PWS
27		Pema Dorji	PWS
28	Mangdechhu Dam/Power house to Langthel	Pema Namgyal	JSWNP
29	Wangdigang - Berti- Tingtibi	Sangay Choda	Zhemgang Division
30	Shingkar - Chamkharchhu & Mangdechhu Confluence	Kinzang Dojri	Zhemgang Division
31		Samdrup Gyeltshen	LCSG

SI NO	Survey Area	Surveyor	Agency
32	Goling to Tsaidang	Phurba	LCSG
33	Kamichhu - Digchhu	Dawa Zangmo	LCSG
34	Manas - Nganglam	Pema Loday	RMNP
35		Chundu Dorji	RMNP
36	Nganglam - Kurigongri confluence	Pema Tshering	Pemagatshel Division
37		Dorji Wangchuk	Pemagatshel Division
38		Tempa	LCSG
39	Kurigongri confluence - Lhuntshe	Tendel Wangdi	Mongar Division
40		Lhadharla	Mongar Division
41		Sonam Loday	LCSG
42	Sherchhu - Chazam	karma Jamtsho	Trashigang
43	Chazam - Kholongchhu & Gongri confluence	Galley Wangchuk	Trashigang
44	Bumdeling - Doksum	Tshering Chopel	BWS

SI NO	Survey Area	Surveyor	Agency
45	Lower Wangchhu (Powerhouse Tala - Raidak)	Dorji	Gedu Division
46		Norbu Gyeltshen	Gedu Division
47		Pratap Gurung	LCSG
48		Chitra Kumar Gurung	LCSG
49		Sonam Wangdi	Tour Guide
50	Jigmechhu - Getena	Suk Bahdur	LCSG
51	Jomotshangkha and Merak Amachhu	Lungten Norbu	JWS
52		Kunzang Tashi	JWS
53		Tashi	JWS
54		Pema Tobgay	JWS
55		Dhan Bdr Subba	LCSG



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