

THE ANNUAL REPORT WHITE-BELLIED HERON CONSERVATION CENTER

The center for conservation breeding, research and education Royal Society for Protection of Nature | December 2023

CONTENT







TASHICHHODZONG

10 March 2023

Dear Dr. Kinley,

I am writing to express my warmest congratulations for the Royal Society for Protection of Nature's outstanding work in not only protecting and preserving our nature but also promoting awareness. It is an honor to recognize your dedication and hard work. I was especially impressed by the White Bellied Heron Centre which I had the pleasure of visiting recently. It is heartwarming to see the commitment to protect, raise and breed these critically endangered species.

Please accept my sincerest congratulations on RSPN's achievements and know that your efforts are deeply appreciated by all.

Tsevring Pem Wangshuck

roojing rom wangenaek

Her Majesty the Queen Mother of Bhutan

President of The Bhutan Youth Development Fund

Her Majesty, Queen Mother Tsheyring Pem Wangchuck visited WBHCC on 19th February, 2023.

INTRODUCTION

It is with great pleasure the Royal Society for Protection of Nature (RSPN) presents this annual report detailing some of the activities that were undertaken at the White-bellied Heron Conservation Center (WBHCC).

WBHCC is now in the fourth year of its operation taking significant steps in ex-situ management for the conservation of critically endangered White-bellied Heron (WBH). With the hope of reviving the low population count of WBH, robust efforts with innovative conservation processes are constantly made. This culminates in strengthening the center. With each passing year, there is growth in center gaining more experience in managing the breeding of WBH. The report covers both the success and failure stories we have undertaken for the year 2023. We are ensuring that failure stories have lessons for us in tackling the similar problems we might face, and success stories are cherished forever.

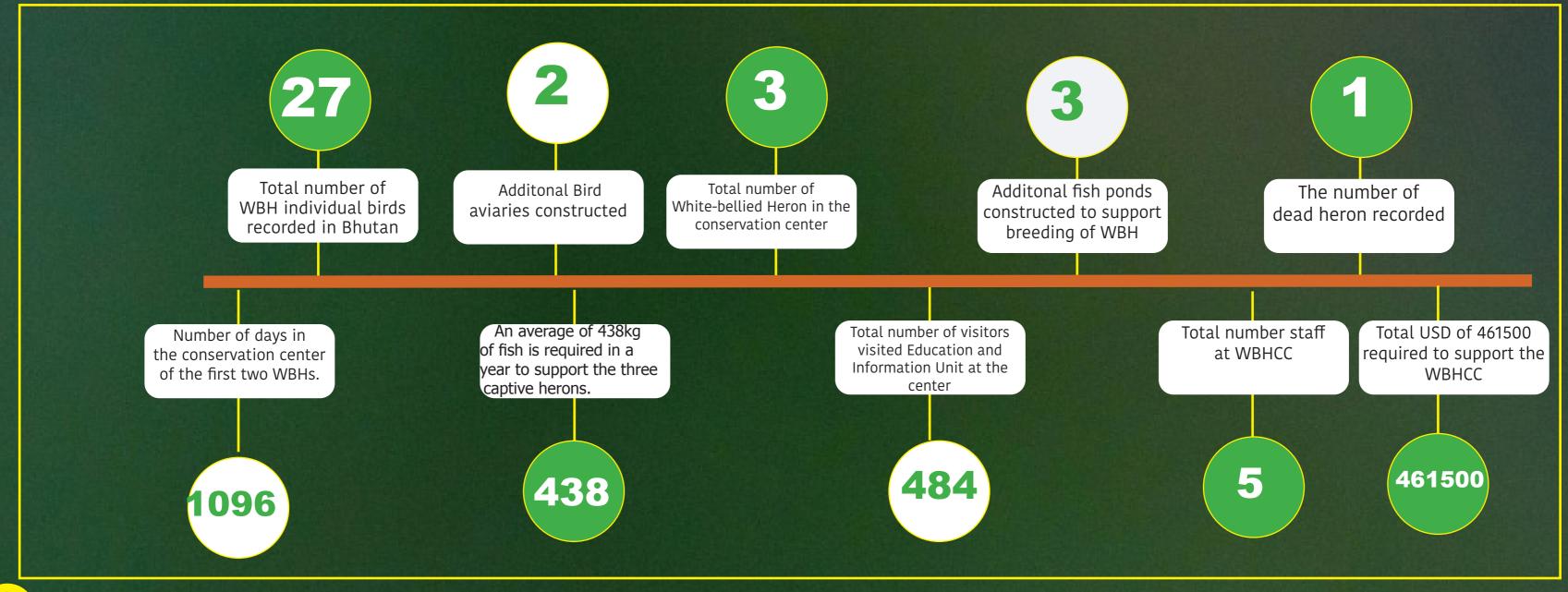
At this moment where many species are critically threatened with extinction, there is no time to sit back and pause the conservation works for the species. The conservation effort for WBH demands consented partnership and support from every individual and organization. If RSPN is cherishing the success stories of conserving WBH, we are counting everyone in our success stories.

Let us Save the White-bellied Heron.
Only our conservation actions can save them.



WBHCC staff with Dr. George Archibald

YEAR 2023 HIGHLIGHTS

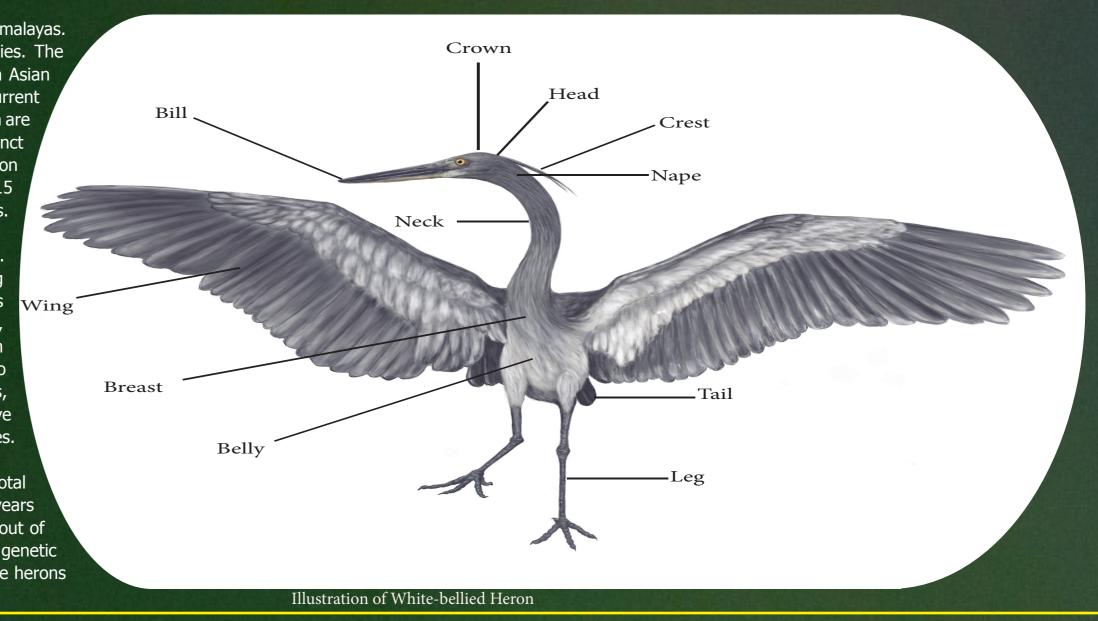


2.1 WHITE-BELLIED HERON

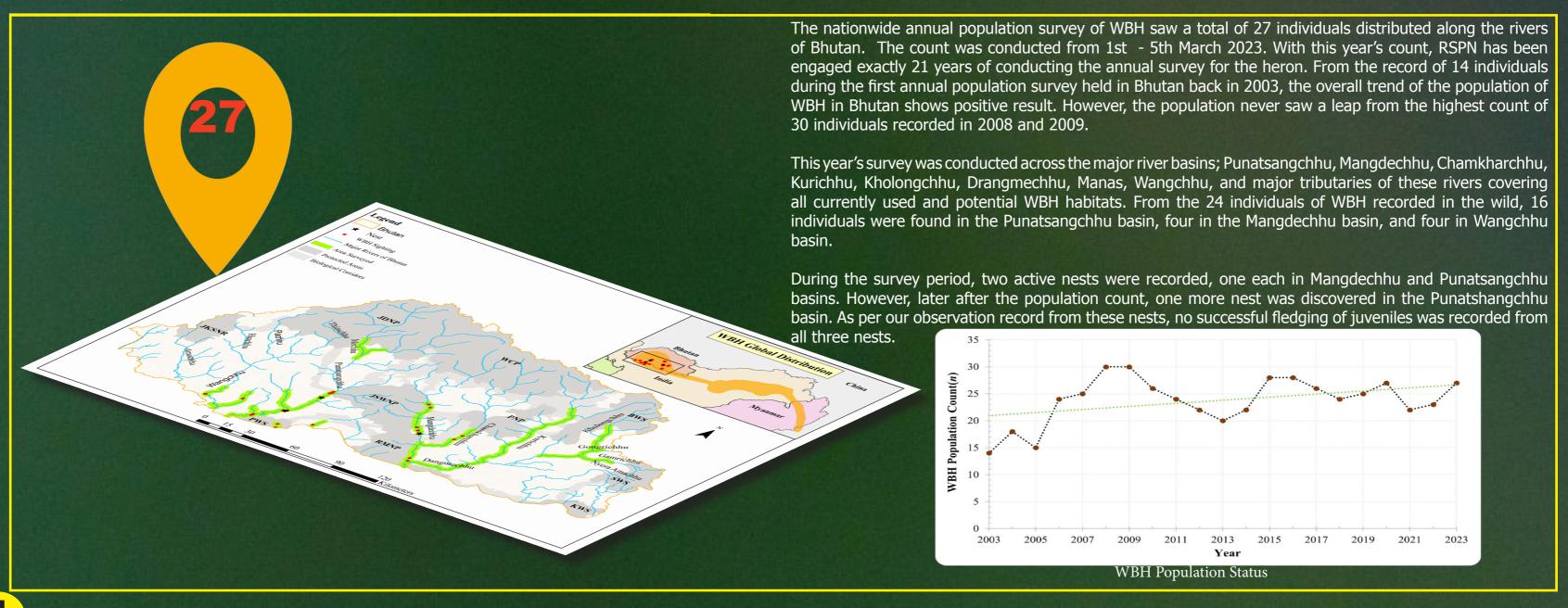
The WBH bird is associated with the fresh rivers of the eastern Himalayas. However, not every river that flows in the region harbours the species. The sparse population once known to be distributed in many of the South Asian countries is now restricted to a smaller distribution range. With the current rate of growing threats to biodiversity and if no measures of conservation are initiated, there is a high probability of WBH entering into the list of extinct species. The consolidation of WBH population from the three distribution range countries during WBH conference held in Bhutan in the year 2015 reported the last remaining population of only fewer than 60 individuals.

Since 2003, RSPN played a critical role in reviving the WBH population. From understanding the basic ecology of herons to implementing diverse community conservation projects, the WBH status in Bhutan has been maintained at a steady state. Without the conservation initiative, WBH would have been extremely pressurized through the exploitation of habitats. For some Bhutanese communities, the bird has been also associated to a bad omen. Dispelling this thought in the communities, and uniting the whole communities including the global attention to save the species, RSPN has made a significant effort in conserving the species.

The captive breeding program established in Bhutan will now play a pivotal role in strengthening the conservation of WBH on a global scale. A few years down the line, there is greater hope in having some individuals flying out of the center into the wild. The focus is prioritised on maintaining strong genetic diversity and producing a viable population. Today, the center has three herons as a founder population beautifully growing into healthy adults.



2.2 STATUS; WHITE-BELLIED HERON



2.3 THE CONSERVATION BREEDING CENTER

The WBHCC is first conservation breeding center for the WBH initiated by RSPN with the support of Royal Government of Bhutan, and other national and international partners. It is also one of the important wildlife ex-situ management program RSPN has embarked on for the country indicating the importance of innovative means in balancing the socioeconomic growth and biodiversity conservation. The center will also provide momentary rescue and mitigation efforts for the WBH from the disturbed river systems mainly due to ongoing hydropower constructions in the country. As a larger goal of the center, it will strive for excellence in conducting the WBH ex-situ breeding program, maintaining gene pool, research and education hub in the region, and center of conservation that the world would take as an exemplary reference.

The center is now in its fourth year since its establishment with strong foundation in placed for breeding, research works, and information hub.

⑥ GOAL

» Secure an exsitu gene pool and re-establish an ecologically viable wild populations.

PURPOSE

- » Secure and preserve an ex-situ gene pool for all times,
- » Rear, raise and breed herons in captivity,
- » Supplement the wild population by releasing birds into safer wild habitats,
- Co-ordinate research, monitoring and conservation of wild population and habitats,
- Serve as a global information hub and co-ordinate conservation work in the region.

WHAT DO WE DO AT THE CENTER?

- » Preservation of gene pool,
- » Ex-situ population management,
- » Conservation breeding,
- » Research and knowledge development,
- » Rescue and rehabilitation,
- » Education and information dissemination.



Aerial view of WBHCC

2.4 RAISING WHITE-BELLIED HERONS IN THE CENTER

Today, the center has three herons that are currently being raised. Two of these herons were lifted as a chick in the year 2021. By the 11th April 2024, these two herons will be 1096 days in the center from their first day of getting them into the center in the year 2021. They are growing well from tiny little to now adult birds. Our only hope is they breed by the year 2024.

The two herons have developed almost all the features of adulthood with the dark bill, whitish belly and vent, and grey colour feather. The elongated nape plumes are visible and now the legs and feet are dull gray. The red colour banded heron is female and the blue banded heron is male. It is difficult to distinguish male and female herons as they are of monomorphic species. The sex identification was made for these herons through genetic analysis.

The two sibling herons are currently kept together in the same aviary. The aviary they are kept in is large and circular with fish ponds inside. The feeding for the herons is done daily in the morning hours. The feeding frequency is drastically reduced from feeding them four times a day when they were young to now feeding only once a day. The quantification of feeding is done based on their body ratio, that is 10% of their body weight.

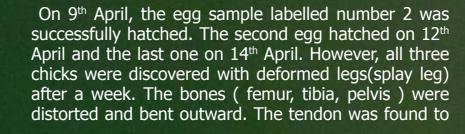
In terms of their behavioural changes; after more than two months old, they started to fledge from the artificial nest that was constructed inside the aviary. They were seen as playful, often getting into the fish pond, flying consistently within the aviary and starting to use the tree tops for roosting. For the last half of the year 2023, they were observed displaying courtship behaviours, making loud calls, collecting twigs and especially the female heron was seen arranging the twigs in the artificial nest.

The other heron from the three, yellow colour banded one is a rescued heron that was brought to center after having been found trapped in the fishery pond in one of the fishery ponds in the community village. The sex determination was made and found to be male. By the physical features and growth pattern, the heron seems to be a year younger than the other two herons. Currently, he is kept alone in a separate aviary.

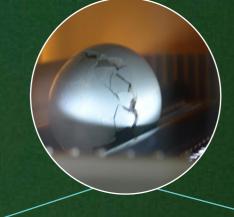


2.5 LIFTING OF HERON EGG FROM WILD

In the year 2023, RSPN targetted to raise at least two heron chicks at the center. During the breeding season, a comprehensive nest survey was carried out and found three active nests of heron in Bhutan. Considering the importance of maintaining the genetic diversity at the center, RSPN carried out the collection of heron eggs from two of the nests.







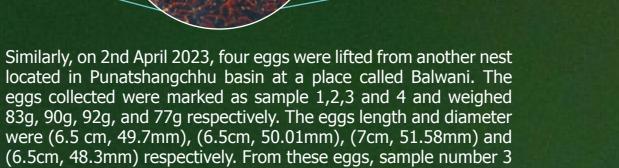


were (6.5 cm, 49.7mm), (6.5cm, 50.01mm), (7cm, 51.58mm) and

(6.5cm, 48.3mm) respectively. From these eggs, sample number 3

was found sterile.









The only nest observed at Mangdechhu basin was found with three eggs in the mid of March month. Two of the three eggs were later hatched. However, after a week, both the chicks were found missing from the nest. RSPN team collected an unhatched egg from the nest on 28th March 2023. It was found sterile after examination at the WBHCC.

slip out of its normal position resulting in a twisted leg. With the help of bird veterinarians from within and outside of the country, the medication was carried out. However, after few weeks, all of them could not survive. Therefore, in 2023, the center could not raise any additional herons.

2.6 DEVELOPMENT OF ADDITIONAL INFRASTRUCTURES AT THE CENTER

In 2023, with the funding support from international organizations and individual philanthropists, a total of two new additional aviaries and three large fishponds were constructed at the WBHCC. These facilities developed at the Campus II of the center are for supporting more breeding pairs of herons at the center. The fish stocked in these ponds will help to meet the challenges of fish required for feeding the herons. An average of 400 grams of fish are provided to each heron daily. In a year there is a requirement of more than 400 kilograms of fish to support the three herons.

A chain-linked fencing covering a distance of 400 meters was also carried out for campus II. This fencing will help secure the campus from trespassers and other wildlife. However, we are still challenged with the poultry and piggery farms established right next to our campus II on private land. The disease outbreak on this farm will severely impede our conservation works. The only possible solution is to buy the private land and help them relocate.

During the upcoming years, a few additional bird aviaries that include a large training aviary will be constructed. Similarly, there is a need to develop water flow connectivity within the smaller fish ponds inside the aviaries and construction of footpaths that connect Campus I and II. With these facilities getting completed, we are in the full swing for the operationalization of center.



Aviary construction



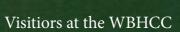
2.7 ENGAGEMENT OF PUBLIC THROUGH INFORMATION AND EDUCATION UNIT

The Information and Education unit established at the WBHCC presents diverse information related to WBH and general biodiversity information of Bhutan. The center has become a hub for many of the school and college-attending students who visit to learn more about the conservation program of WBH. The visitor also includes domestic and international tourists. In the year 2023, a total of 484 people visited the center. This included 215 students, 65 international guests, and the remaining were local people.

RSPN was immensely grateful and fortunate to receive the visit of Her Majesty Queen Mother Tsheyring Pem Wangchuck on 19th February 2023. Her Majesty expressed her appreciation for the outstanding efforts and dedication RSPN is making in conserving the WBH.









2.8 BONDING OF HERONS

In the year 2022, the rescued heron which was identified as a male heron was tried for pairing with the female heron by keeping inside the same aviary. But after a year of keeping together in the same aviary, no cordial relationship was observed between the two herons. Both the herons remained isolated and the male heron in particular remained very much alert and escaped from the approaching female heron. Pair bonding in birds is crucial for successful breeding at the center and the overall reproductive success of the species.

The rescued male heron seems to be still in a state of shock from the incident it suffered earlier. However, it has no issue with feeding. It equally feeds a similar amount to the other two herons.

Since the female heron has started to show breeding behaviour by making regular call, collecting twigs and arraging of nest, under the guidance of experts and due approval from RSPN management, the female heron was moved to another aviary on December 5, 2023 where her sibling male heron is kept.

The two siblings were observed displaying aggressive behaviour and territorial in the beginning, however, they started to remain calm now. We are hopeful they will breed this breeding season. We have successive plans to avoid the inbreeding in their genetic lines later.



White-bellied Heron at WBHCC

2.9 HERON CASUALITY

On 9th January 2023, a carcass of WBH was found by police officials from Burichhu area in Punatshangchhu. The carcass brought to the WBHCC was later carried out the post-mortem. Upon examination, a minor bruise was found on the beak and on the right thigh. The body and its ear were filled with sand, but other parts of the carcass were found normal without any lesions. The oral swab, cloacal swab, stomach samples and intestinal swab were analyzed in collaboration with the National Center for Animal Health for Bacteriology.

Upon thorough internal examination, all the organs seem normal without any lesion except the liver which we suspect a necrotic lesion. Liver disorders can be caused by bacterial, fungal, viral, protozoan, and parasitic infections. Other causes of liver disease include tumors, metabolic disorders, circulatory disturbances, nutritional deficiencies or excesses, and a variety of toxicities such as heavy metal toxicity, mycotoxins (toxins from mold), plant toxins, and other toxic chemicals.

Oral swab, cloacal swab, intestine swab, test tube and stored at the refrigerator. were cut 3mm thick and stored at to send at the National Center for of diseases and lab test. The flesh was removed to develop hall.

According to the laboratory of bacteria Escherichia coli intestine, and was negative to coli is a gram negative, non-a common inhabitant in the bacteria survive for a long present in all bird environments, dust. Although wild birds have only they can be infected or colonized by

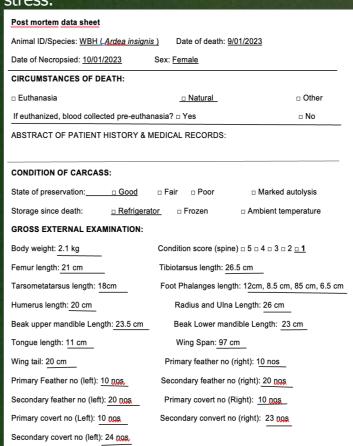
fecal and blood sample were collected in the

The liver, heart and stomach samples the 10 % formalin in the specimen jar Animal health for further screening carcass was deskinned and all the into a model for the exhibition

findings, there was a presence in cloacal, stomach, throat and Salmonella bacteria. Escherichia spore forming bacillus and it is intestinal tract of birds. These period outside their host and are particularly the litter, and in aviary rare contact with antimicrobial agents, resistant bacteria through contaminated

water or food.

Escherichia coli do not invade normal bird tissues, but are present in the environment and exploit weaknesses in bird defenses caused by other infectious agents (viruses, bacteria, parasites and mycotoxins) and environmental stress.



Measurement and weight of Internal organs Esophagus: Length - 46 cm Trachea: Length - 70 cm Heart: Length - 9 cm Diameter - 17.7 mm Weight - 35 g Liver: Right lobe Length - 6.5 cm & Left lobe length - 5.5 cm Diameter - 23.3 mm Weight - 6g Left Lungs length: 7.5 cm Diameter - 28 mm Weight - 9 g Right kidney: Length - 6 cm Weight - 6 g Left kidney: Length - 6.5 cm Diameter - 28 mm Weight - 8 g Stomach: Length - 8.5 m Diameter - 28 mm Weight - 44 g Intestine: Length - 215 cm Weight - 27 g

Tongue: Lenath- 11 cm

2.10 WATERBIRD FEACAL ANALYSIS

Wild waterbirds are known as reservoirs of enteric bacterial pathogens such as Campylobacter spp. and Salmonella spp. Studying wild water brids fecal parasite could be useful to overview potential parasite carried by the host. Parasitic infection can result in an increase in mortality and a decrease in the birth rate of birds, thus regulating their population structure. Migratory waterbirds should suffer more from parasites than other birds, due to their immunological suppression during migration and the high risk of infection in group living. Waterbirds in migration may encounter novel pathogens and, due to migratory pressures on the inhibition of their immunity, would be faced with a relapse of the disease that would otherwise have been limited to specific areas. To assess the parasitic presences in the waterbirds that are sharing similar habitats to WBH, fecal samples were collected and test was carried out.

Parasites are the most commonly microscopic organisms that live on or in other living organisms benefiting themselves but not the host organism. Internal parasites, which occur inside various organs of the body, such as the stomach or intestines include worms (e.g., tapeworms and roundworms), protozoa (e.g., coccidiosis, Giardia) and trichomonads. Samples were collected from Sunkoshchhu, Changcheychhu and Burichhu during the Annual Population Survey of WBH. A total of 14 fecal samples were collected from 2nd March till 4th March, 2023.

The examination was carried out repeatedly on 7th, 8th and 9th March, 2023 as multiple fecal tests are often necessary to diagnose parasites and a single negative fecal test may often be insufficient as the parasite may not reproduce at the time of the test.

Fecal sample examination was done by the Sedimentation method which is a qualitative method. The laboratory procedure includes:

- 1) Placing fecal in a test tube and then adding water in test tube
- 2)Mix(stir) thoroughly
- 3) Filtered the fecal suspension through tea strainer

- 4) Pour the filtered material into a test tube
- 5) Allowed sediment for 5 to 30 minutes
- 6) Transfer the sediment to glass slide
- 7) Examined under microscope

The findings from the test indicated negative from all the samples. However, since the collection site and number of samples were less, there is possibility of limitation in the findings. Similar study is aimed with more sample numbers and from different sites to have a information on the parasites that may prove valuable for conservation and management purposes of waterbirds including heron.



Feacal collection



Sample analysis

2.11 INSIGHTFUL BEHAVIOURS OF HERON WE OBSERVED



On September 7, 2023, it was during the afternoon that male heron was seen feeding on the grasshopper. It repeatedly dropped, pecked and rinsed the grasshopper, and finally swallowed the dead grasshopper. It is for the first time the heron was seen feeding on the grasshopper other than fish.

Prior to this incident, it was also observed chasing some butterflies and other insects inside the aviary but never observed killing and feeding on those insects.

After feeding the grasshopper we observed for 45 minutes where the heron continuously drank water for three times and displays it's usual behaviour.



In the first week of October, we observed unusal behaviour of all the three captive herons not feeding properly on the fish. From the three to four individuals of fish served, they took only one to two individuals. After a week they started to feed normal. They were treated with Kolumbiferm medicine for intestinal microflora and stregthening immune sytems.

Juvenile herons are more active in taking flight during during morning and evening hours. The frequency of taking flight was more right after fledging from the nest.



WBH Landscape

2.12 RESOURCE GAPS

Considering the urgent actions required in saving the WBH, there are numerous initiatives RSPN is taking both in the wild and at the center. However, we are challenged with some of the resources that are important for the success of WBH conservation program. We are genuinely looking for mobilizing the resources as indicated in the following Table.

A total budget of close to USD 500,000 is required for supporting the conservation program of WBH

for now.

Facilities	Dimension	Target	Existing	Housing	Timeline Targeted to Achieve				/e	Total	Remarks	Amount Required
Facilities	Dimension	rarget	Existing	capacity	2021	2022	2023	2024	2025	iotai	Remarks	(USD)
Outdoor brooding chicks	15m dia (circular)	1	1	4	1	-	-	-	-	1	Achieved	
Aviary for ! Non-breeding birds	15m dia (circular)	1	1	4	1	1	-	-	-	1	Achieved	
Aviary for breeding pairs	15m x 10m x 6m (LxBxH)	5	4	Pair in each aviary		2	2	1		5	Need to secure fund for the costruction of remaining 1 aviary	42000
Incubation and rearing Lab	6 chambers	1	1		1	-	-	-	-	1	Achieved	
Quarantine & Veterinary center	-	1				1	-	-	-	1	Achieved	
Large training cages (pre-release)	Large	1	-		-	-	-	1		1	Need to secure fund for the designing and costruction of 1 large training aviary	250000
Fish ponds	70 m X 20m X 3m around the aviary	10	9		1	1	1			1	Need to secure funding for constructional of additional one large fish pond.	10000
Office		1	1	7 staff		1				1	Achieved.	
Information and exhibition Centre with public toilet		1	1			1				1	Achieved.	
Staff quarter		2	2	5 staff	1	1				2	Achieved	
Guest House		1	1	3 people		1				1	Achieved	
Vehicle		1	1			1					Achieved	

	17.50			100000	AND SHAPPING AND DESCRIPTION					2000	100000000000000000000000000000000000000	Amount
Facilities	Dimension	Target	Existing	Housing	Timeline Targeted to Achieve					Total	Remarks	Required
				capacity	2021	2022	2023	2024	2025			(USD)
Paving road		1						1			Need to secure funding.	20000
Footpath connecting campus I and II		1							1		Need to secure funding	10000
Internal water connection in campus II		1							1		Need to secure funding	10000
Entry gate for campus II		1							1		Need to secure funding	2000
Campus landscaping									1		Need to secure funding	5000
Development of isolation rearing facilities								1				1000
Private Land acquiring									1		Need to secure funding	80000
Capacity Building of Staff												20000
Egg/Chick lifting support												8000
Lab equipments												3500
TOTAL												461500

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OR

you can contact us:

Email: rspn@rspnbhutan.org Telephone: +975 2 322056/326130 The annual operational budget of the White-bellied Heron Conservation Center is approximately \$250,000. The major portion of operational cost is funded by income from the Heron Endowment Fund supported by Mava and Hans Wilsdorf Foundations. Because of the recent global recession, we lost 13% of the endowment and have no returns to meet operational costs for 2023. Fortunately, Hans Wilsdorf Foundations agreed to support us for the year 2023 and 2024.

To expedite the recovery program, we need to raise more birds, breed and reintroduce them. We can raise more birds with additional amenities for keeping enough birds as breeding stock from all wild nests. Support our breeding program.

White-bellied Heron is on the brink of extinction;
Please help us save them!

2.13 WHITE-BELLIED HERON CONSERVATION CENTER OPERATIONAL EXPENSES 2023



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Inspiring personal responsibility and actively involving the people of Bhutan in Conservation of the Kingdom's Environment

	WBH Mava Foundation Financia	I Report for t	he year 2023	
Code	Activity head	Budget (Nu)	Expenditure (Nu)	Balance (Nu
1	Pay and Allowances	-		
	Pay and Allowances	6,141,486.15	6,141,486.15	-
2	Office supplies & Maintenance			
2.1	Office stationery, parts & accessories	82,010.00	82,010.00	-
2.2	Office cleaning, maintenance, supplies and repairs	451,055.00	451,037.00	18.00
2.3	Uniform, labcoats and accessories for staff	82,010.00	81,984.00	26.00
2.4	Guest Entertainment	61,507.50	61.508.00	0.50
3	Utilities	02,507150	01,500.00	0.50
3.1	Internet	16,402.00	16,400.00	2.00
3.2	Telephone	5,467.61	5,400.00	67.61
3.3	Electricity	10,934.39	10,929.00	5.39
4	Vehicle maintenance			
4.1	Fuel deposit	123,015.00	123,000.00	15.00
4.2	Maintenance and spare parts	153.768.75	153.770.00	1.25
5	Travel			
5.1	DSA for staff	574,070.00	574,050.00	20.00
5.2	Transportation	328,040.00	328,074.00	34.00
6	Meeting and workshop			
6.1	Training and capacity building of breeders, Vet and staff	820,100.00	820,095.00	5.00
7	Breeding and Rearing cost			
7.1	Medicines, Vits, suppliments, medical supplies, lab and equipment, hygiene and sanitation for WBH CC	615,075.00	615,056.61	18.39
7.2	WBH Information Development, publications & Display and maintenance	164.020.00	164.026.00	6.00
8	Fishpond management			
8.1	Procurement of fish and fingerlings	164,020.00	164,036.00	16.00
8.2	Procurement of feed and fisheries supplies			

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२०। मियायहूर्य. प्रतायविषः श्रीरः श्रीयः क्रूयायाः श्री Royal Society for Protection of Nature

Under the Royal Patronage of Her Majesty Gyaltsuen Jetsun Pema Wangchuck Inspiring personal responsibility and actively involving the people of Bhutan in Conservation of the Kingdom's Environment

	328,040.00	327,950.00	90.00
8.3 Fishpond maintenance	164,020.00	164,015.00	5.00
Total	10 385 041 40	10,284,826.76	214.64

Prepared by



Verified by

2 mmm (Executive Director, Ph.D)

Approved by



Kinley Tenzin, PhD







Head Office













Tshewang Lhendup

Officer In-Charge

Thinley Phuntsho



Vhite-bellied Heron Conservation Center

Sonam Tshering

Sr. Project Assistant







Black-necked Crane Education Center









ACKNOWLEDGEMENT

The Royal Society for Protection of Nature would like to thank all donors, partners and advisors for supporting the White-bellied Heron conservation work.

































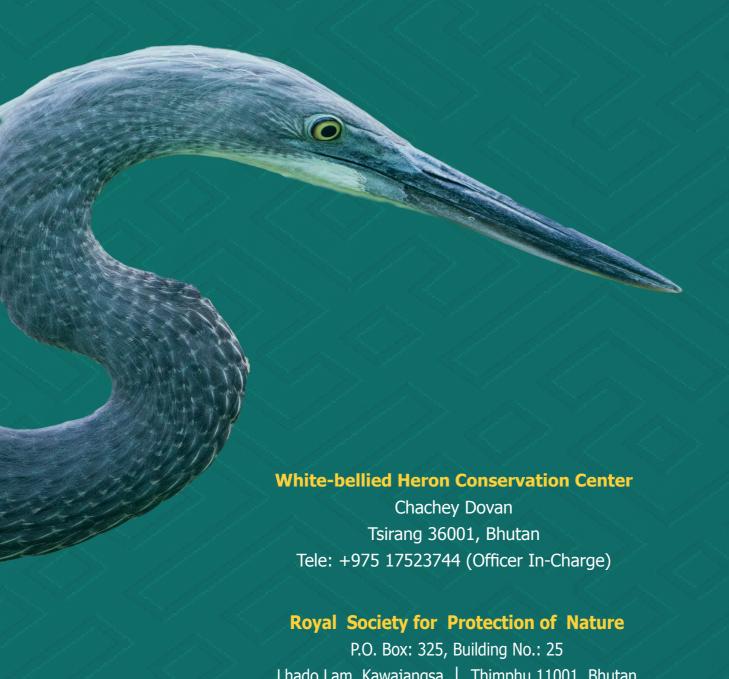






JONATHAN CHARLES EAMES (OBE) AND DINH THI HOA, RISING PHOENIX





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