



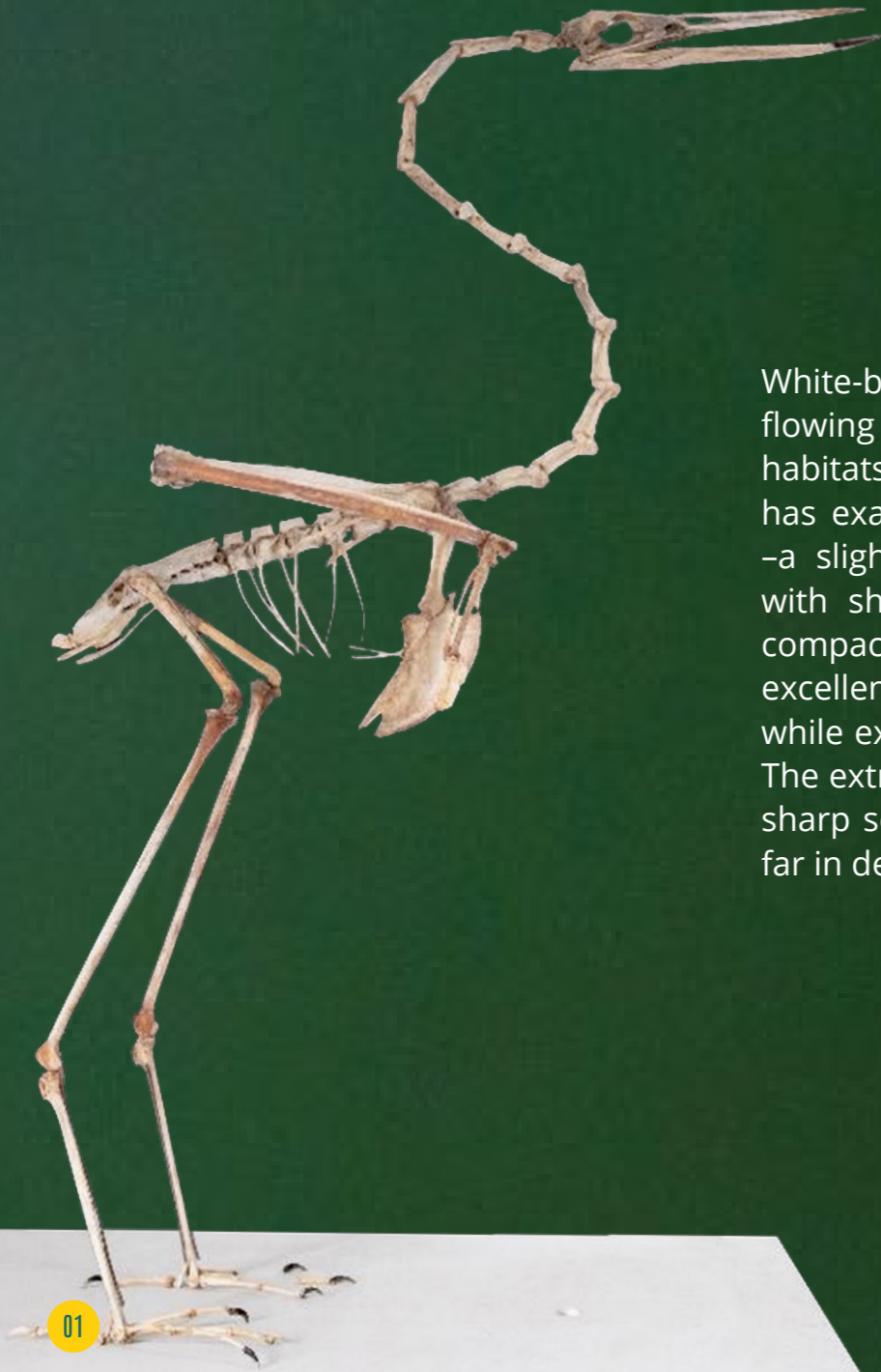
# THE WHITE-BELLIED HERON CONSERVATION CENTER

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The center for conservation breeding, research and education

Royal Society for Protection of Nature | December 2022





White-bellied Heron is endemic to the fast-flowing Himalayan freshwater riverine habitats. Compared to its sister species, it has exaggerated morphological adaptations –a slightly longer neck and compact body with shorter legs and extensive toes. The compact body with shorter legs gives them excellent stability to stand on rapid waters while extended toes help grip slippery rocks. The extra elongated, flexible neck with razor-sharp serrated bill allows them to catch fish far in deep waters.

## THE CONSERVATION BREEDING

A new phase in the conservation and recovery of white-bellied heron (WBH), *Ardea insignis*, has begun in Bhutan with the establishment of the first pair of ex-situ breeding birds. In April 2021, researchers at the Royal Society for Protection of Nature (RSPN) collected a pair of pre-fledged juveniles from a wild nest and transferred them to the newly constructed Conservation Center in south-central Bhutan, where the birds will be raised and bred. The Center aims: to secure an ex-situ gene pool; to rear, raise, and breed herons; and to supplement the wild population by releasing them into safe habitats, where research indicates that herons should thrive. It will also serve as a center for research, a global information hub, and a place for coordinating conservation work in the region.

The Center was constructed through major support from the Royal government of Bhutan and Punatsangchhu Hydroelectric Project Authority II & I.

Additional funds were provided by International Crane Foundation (ICF), Keidanren Nature Conservation Fund (KNCF), Synchronicity Earth, Suntory Bird Conservation Fund, Tokyo Zoological Park Society and individuals donors and philanthropists for construction of rescue and rehabilitation unit, fishponds, aviaries, education facilities and other public amenities.





## GOAL

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



03

## 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.



## THE FOUNDING POPULATION

The last remaining wild population is the only source of birds for conservation breeding. Bhutan's three active breeding pairs are the only source and hope for the breeding and reintroduction initiative. The first batch of chicks from one of the wild nests are being raised in the Center since 2021. The collection of selective birds from the wild will continue until the population's genetic diversity is expressed in several breeding pairs, as it is the only source of founders for the species. In the future, this tiny captive group will function as a breeding reserve and hopefully will be a safeguard from extinction and a source of birds for the reintroduction of herons into safe areas.



04

## WHY IS WHITE-BELLIED HERON IMPORTANT?

White-bellied Herons are the indicator of the health of the Himalayan freshwater ecosystem. Their elusive and highly habitat specific habit in feeding, nesting, and food selection makes them great environmental sensors.

Their presence in our ecosystem indicates the health of the rivers, the environment, the fish population, water quality, health of freshwater biodiversity, disturbances, pollution, and above all the intactness of our nature. They are predators, they are prey, and they are players in food chains. They are our natural wealth, our pride, and our heritage. The tiny population size, restricted distribution range, and small gene pool, despite the conservation efforts indicates, our environment is deteriorating, certain food chains are breaking apart, some species already have gone extinct, and it is now driving immediate species like White-bellied Heron to extinction.



The spiritual enrichment, recreation, education, and aesthetic value it holds apart from its ecological significance, warrant its protection and conservation. In a healthy ecosystem, diverse and balanced number of species exist to maintain the balance of an ecosystem. All the species depend on each other directly or indirectly. So to make a more efficient, production and sustainable ecosystem, it is important to maintain high species diversity.

Each species that is lost triggers the loss of other species within its ecosystem. Humans depend on healthy ecosystems to purify our environment. Without healthy forests, grasslands, rivers, oceans and other ecosystems, we will not have clean air, water, or land. By protecting them and their habitats, we protect our ecosystems, rivers, waters, landscapes, biodiversity, food, and livelihoods.

## RAISING WHITE-BELLIED HERON IN CAPTIVITY

### Raising White-bellied Heron in the Center:

Upon hatching, baby herons are pale gray down, covering their head, back, and sides. Down are particularly full on the crown, but the throat and wing are bare and pinkish-gray. The tiny chick's eyes were open and bluish with yellowish eye-ring.

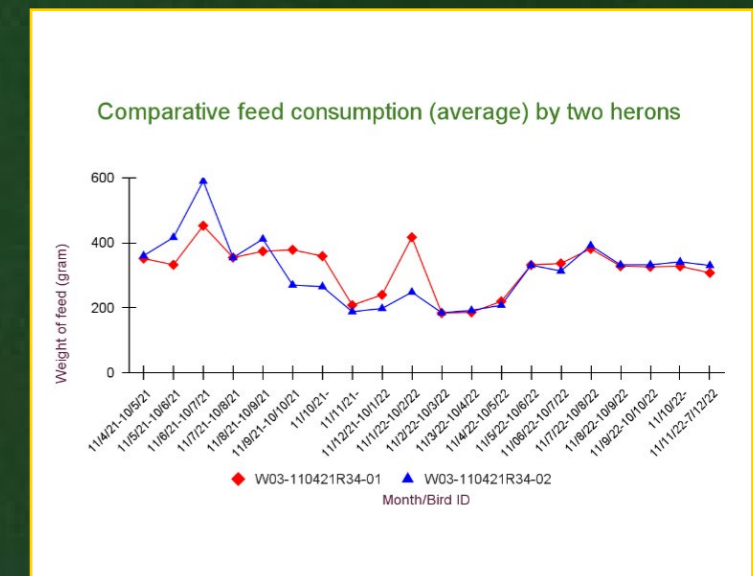
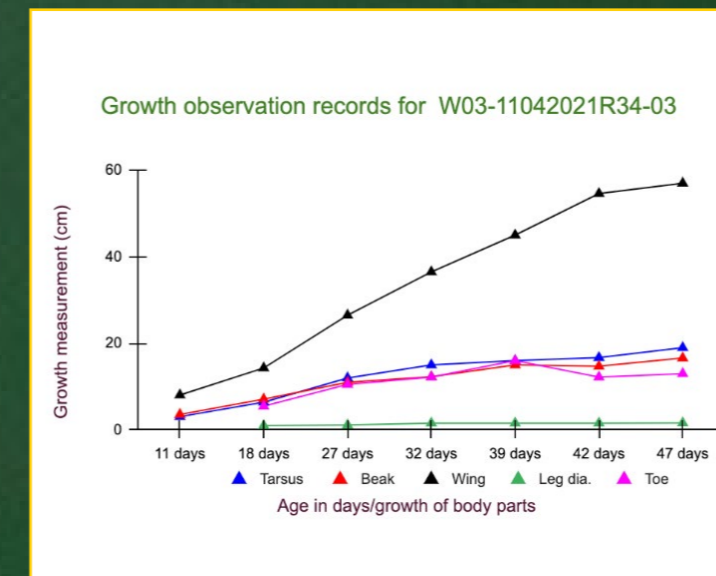
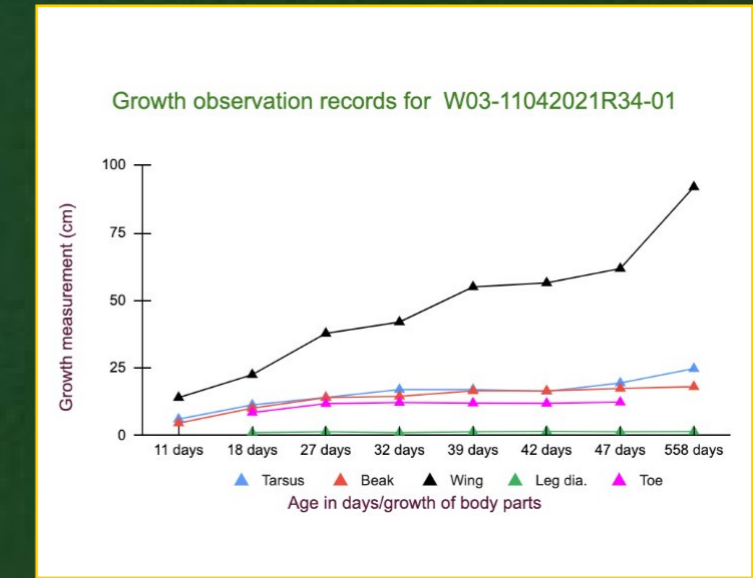
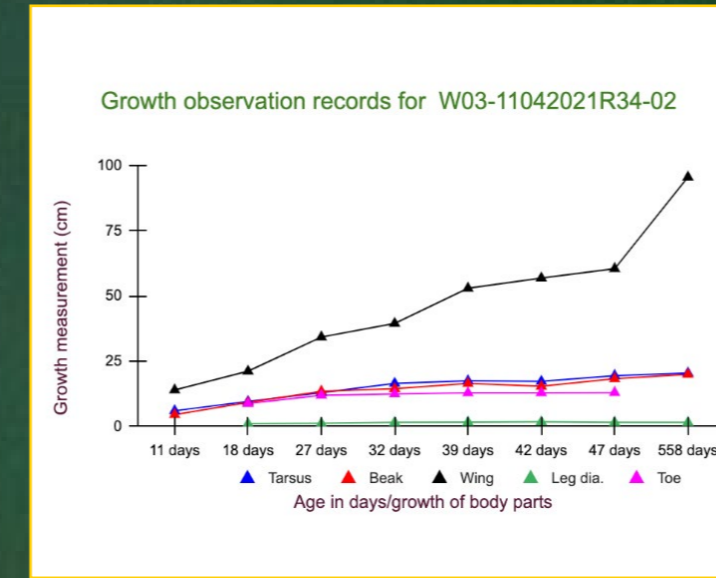
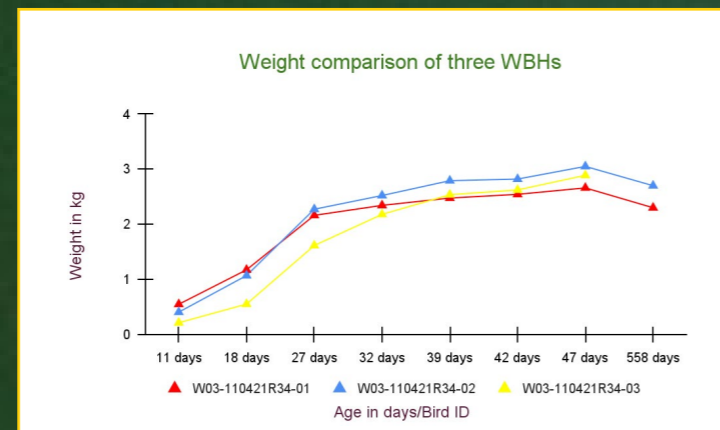
Ten days old chicks, which were less than 200 grams when collected from the wild nest, grew to 3200 grams in 47 days. For 6 weeks, chicks were raised in a controlled environment inside the laboratory. They were fed up to four times a day, equivalent to 10% of their body. After 6 weeks, they were fed 200 - 300 grams of fish once a day. It was astonishing to see them grow up to 100 grams each day.

After six weeks, we moved chicks from the laboratory to an open aviary with an artificial nest, natural trees, a water pond, and space to walk. Chicks are fully grown and are of similar size to their parents. Chicks are much darker and have streaked necks, browner-tinged vents, and smaller plumes with the shorter and grayish bill; feet appear more scaly but darker and fleshy. They become very active, vigorously flap their wings, hop around, and even take short flights. Often spend more time standing and walking around.

In the wild, chicks fledge after 72 - 75 days. Similarly, in the conservation Center, chicks fledged - moved out of the nest to the ground and walked around the

pond - after 72 days. Fledging happened in the same sequences of hatching - the oldest flew out the first and the youngest four days later. They learned to play, fish from the pond, fly, and perch on the tree to roost. We are in the second year of working with the herons. We still feed them 200 - 300 grams of fish every morning, and they also fish from the pond. They are adults now. They look mature and huge. We hope they will start breeding by 3 or 4 years and help the reintroduction program.

With the experiences and knowledge gained over the past year, the team at the center is now capable of safely handling and providing care to the birds. Today, with the global population declining and a grim chance of natural recovery, the conservation breeding program remains the last hope for the survival of the species.



## THE RESCUED HERON

In the history of WBH conservation, we have successfully rescued an injured WBH. A WBH juvenile was found injured in a private fish pond in Nichula under Dagana district. The incident was reported by our WBH conservation counterpart (Nichula Range office) and immediately our WBH Conservation Center (WBHCC) facilitated the rescue operation for the first time. Today, the juvenile is recovering steadily at WBHCC.

### Rescue journey

On September 1, 2022, an injured WBH juvenile was reported in a private fish pond at Nichula, Dagana district by our WBH conservation counterpart, staff from the Nichula Range office, Phibsoo Wildlife Sanctuary, located about 200 kilometers downstream

of the center along the Punatsangchhu river basin. Immediately a rescue operation was planned by a team from the RSPN head office and WBHCC. Meanwhile, a few staff back at the center prepared the quarantine aviary with all the necessary structures like a dark room, nest and perching logs to receive the injured heron.

### Nichula, Dagana

"There were several birds and animals feeding on my fish pond and that's when I started covering the pond with net. Early morning of September 1, 2022, I went to feed fish and saw a large bird entangled in my pond. I immediately informed the forestry officials of PWS based in Nichula", says Duk Bdr. Katwal, fish pond owner.



The forestry officials reached the incident site. "After reaching the site, we found the entangled bird was WBH and that's when we called RSPN to help rescue and rehabilitate WBH. While we were waiting for RSPN team, we untangled the bird and kept it in a temporary enclosure. Also we covered the enclosure with green net and provided water and fishes to the injured juvenile as advised by RSPN team", says Pema Dorji, Sr Forester.

The RSPN team arrived at the rescue site at 08:24 pm. The team conducted a quick onsite checkup, provided first aid medication, restrained the heron



Injured heron in temporary enclosure at Nichula

by covering with a piece of cloth, transferred it to the transportation box, and brought it to the center.

At 2:00 am in the morning, the heron was brought to the Center and left to rest for an hour. The vet and keepers carried out a detailed physical examination and found bruises and muscle damage on its right wing as a result of being entangled in the net. Although it was not in a state to fly and survive in the wild, it was not very critical. It was medicated and kept in the darkroom under observation with enough food and water and left to recover.

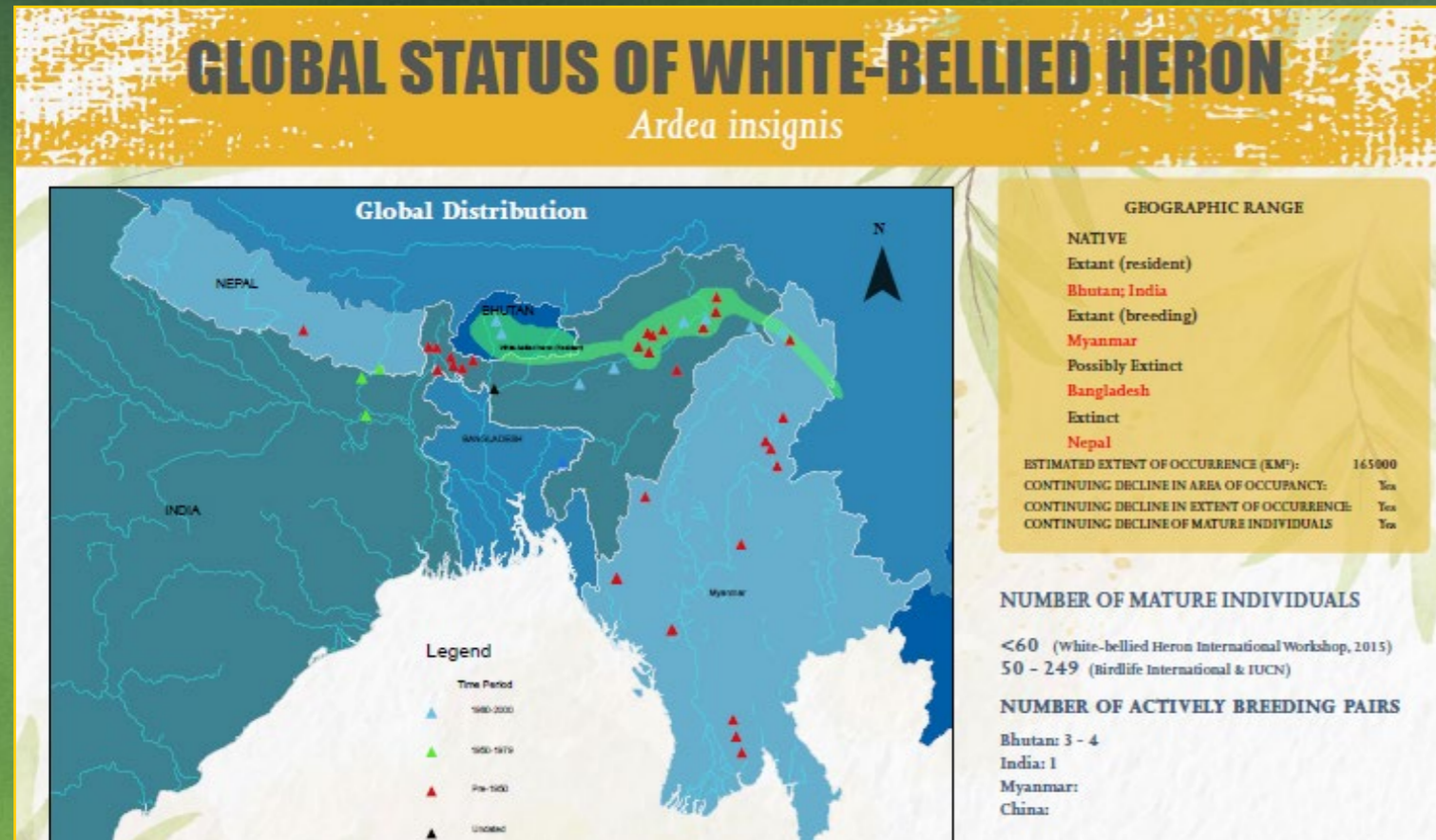
Slowly the bird regained energy and started moving around. After one week, most of the wounds healed, it was feeding well and displayed normal behavior. Today, the bird has fully recovered. It is a male bird that currently shares an aviary with a female.

RSPN acknowledges Mr Duk Katwal and Nichula Range Office for your thoughtful actions. By saving this individual heron, you have saved 4.3% of WBH population in Bhutan.



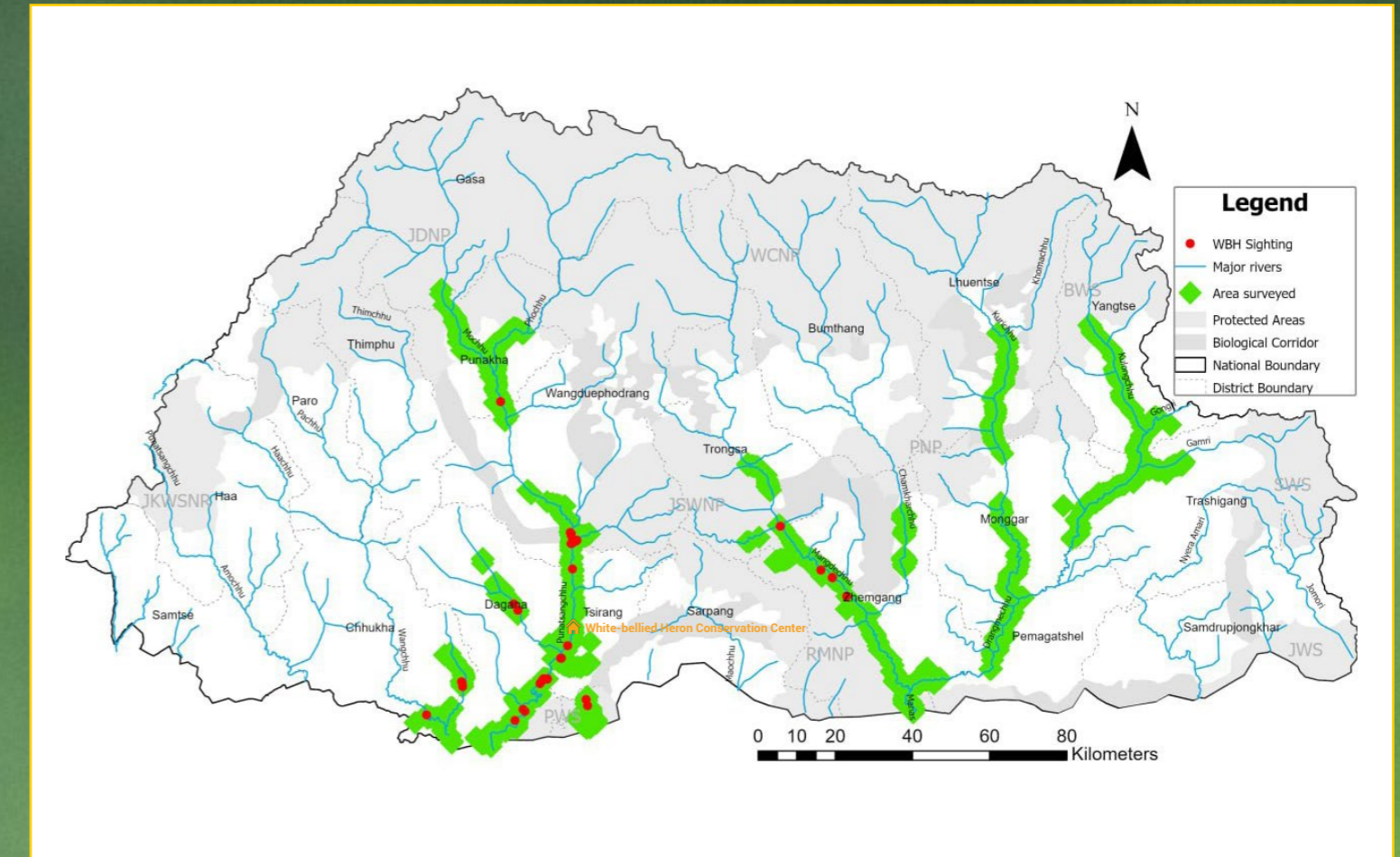
## WHITE-BELLIED HERON - THE CURRENT STATUS

The WBH is critically endangered and one of the rarest heron species in the world. Today, fewer than 60 individuals survive over the extent of 165,000 km<sup>2</sup> of Himalayan freshwater ecosystems, spanning the countries of Bhutan, India, Bangladesh, Myanmar, and China. It has been declared regionally extinct in Nepal and is possibly also extinct in Bangladesh. Bhutan is home to 45% of the global population, including between three and five active breeding pairs, which are vital for the survival and recovery of the species.



## DISTRIBUTION IN BHUTAN

In Bhutan, the major population of White-bellied Heron are in Punatsangchhu and Mangdechhu basins. All the active nests are also in these basins. However, we have birds dispersing in Mangdechhu, Kurigongri and Wangchu basins.





## CONSERVATION

The RSPN, an environmental conservation charity in Bhutan, has been leading in the protection of species in the past two decades. In 2003, recognizing the bird's plight, the RSPN began mapping and monitoring the WBH population and habitats. The first nest in Bhutan was discovered in 2003, after more than seven decades since the previous discovery anywhere in the world, in Myanmar in 1929. Owing to its small population, little was known about this heron's ecology and biology.

Over the past two decades, the RSPN, in collaboration with the Department of Forests and Park Services, Local Conservation Support Groups and local communities, has monitored population trends, distribution and habitat use, nesting, and active breeding pairs, while also mapping major threats to the birds and their habitats. The annual population and nest surveys for the last nineteen consecutive years have recorded an average of 24 birds and three active breeding pairs, from which two chicks per nest have fledged, barely sustaining the extremely low population.

In Bhutan, we have also observed that the number of successful nesting pairs has declined from up to six active nests in 2012 to just three for the last four years. The number of nest failures is also increasing.

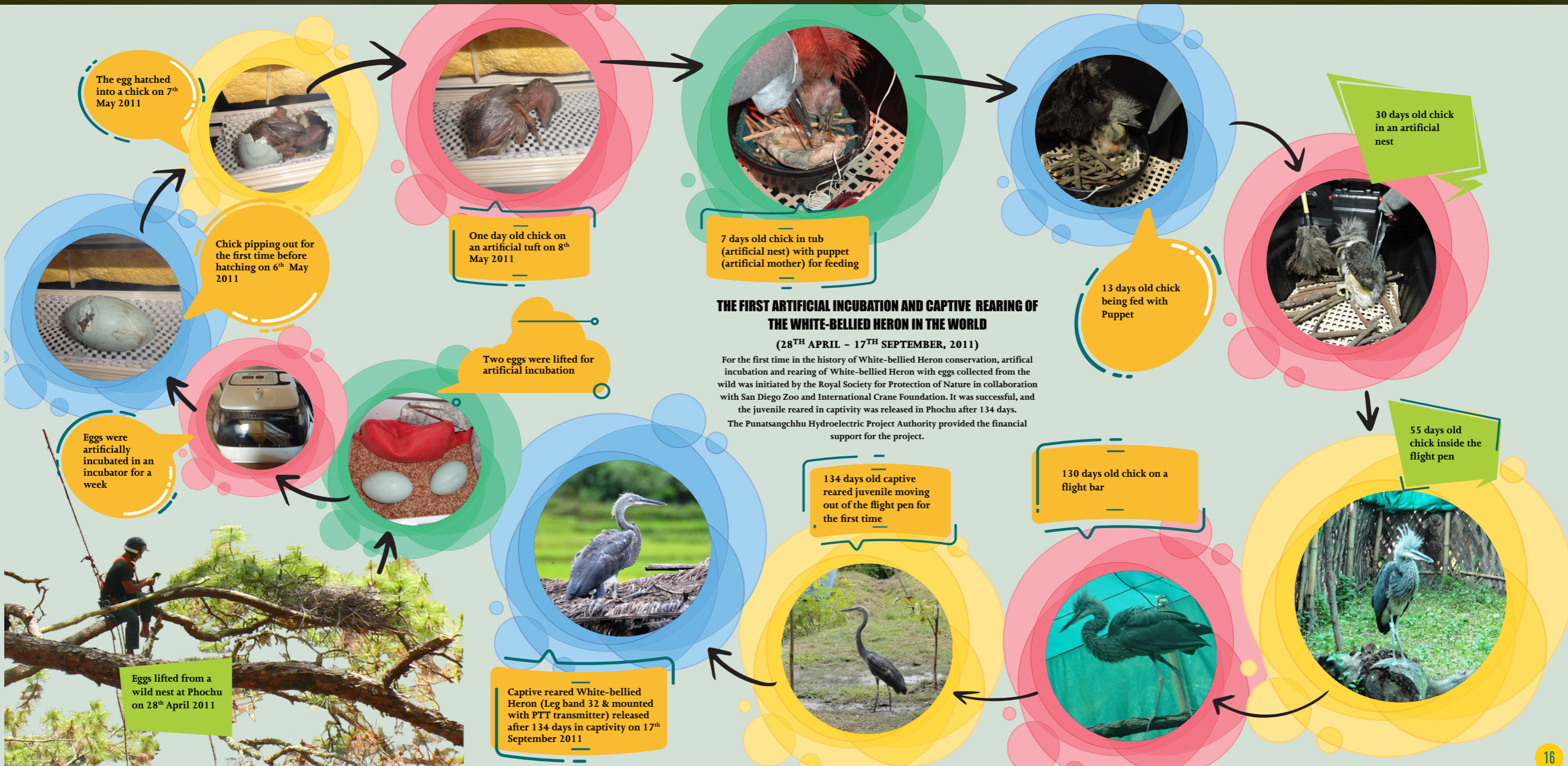
In 2020, in one of the nests in Mangdechhu, we observed sexual conflict, parental infanticide, and nest failure, suggesting stressed breeding pairs, competition, and potential gender imbalance, or even inbreeding. Although we are still in the process of understanding the bird's breeding biology and ecology, there is great concern that the population could decline to a state where it might not be possible to revive or to sustain a viable gene pool. Restricted distribution, small and fragmented population size, and poor recruitment are potential indicators of this species' failure and impending extinction.



Three major challenges threaten the birds:

1. Habitats are being lost to infrastructure development, agriculture expansion, hydropower dams, extractive industries, and climate change.
2. Most of the few remaining habitats are increasingly under pressure owing to incautious eco-tourism and recreation, diminishing food resources, pollution, fragmentation, forest fires, and both man-made and natural calamities.
3. The small population itself is a liability, with grave costs of increased mortality and declining breeding success.

The demand for natural resources, infrastructure, energy, transportation, and services has increased with the human population in Bhutan. Moreover, Bhutan has opted for hydropower as the primary energy source and revenue; increasingly, new dams are being built along the fast-flowing rivers. In the process, riverine habitats are being destroyed, fish populations are declining, and threatened wildlife species like the WBH are displaced.



**THE FIRST ARTIFICIAL INCUBATION AND CAPTIVE REARING OF THE WHITE-BELLIED HERON IN THE WORLD**

(28<sup>TH</sup> APRIL - 17<sup>TH</sup> SEPTEMBER, 2011)

For the first time in the history of White-bellied Heron conservation, artificial incubation and rearing of White-bellied Heron with eggs collected from the wild was initiated by the Royal Society for Protection of Nature in collaboration with San Diego Zoo and International Crane Foundation. It was successful, and the juvenile reared in captivity was released in Phochu after 134 days. The Punatsangchhu Hydroelectric Project Authority provided the financial support for the project.

**Breeding season:** January–June (Nest building – Fledging)

**Breeding Plumage:** Plumage turns light grey with whitish neck and crest.

**Nest structure:** Simple platform nest, 90–120 cm in diameter, made from dried twigs and small branches without foliage. Nests are often reused.

**Parental Care:** Monogamous and provide biparental care. Herons are altricial birds.

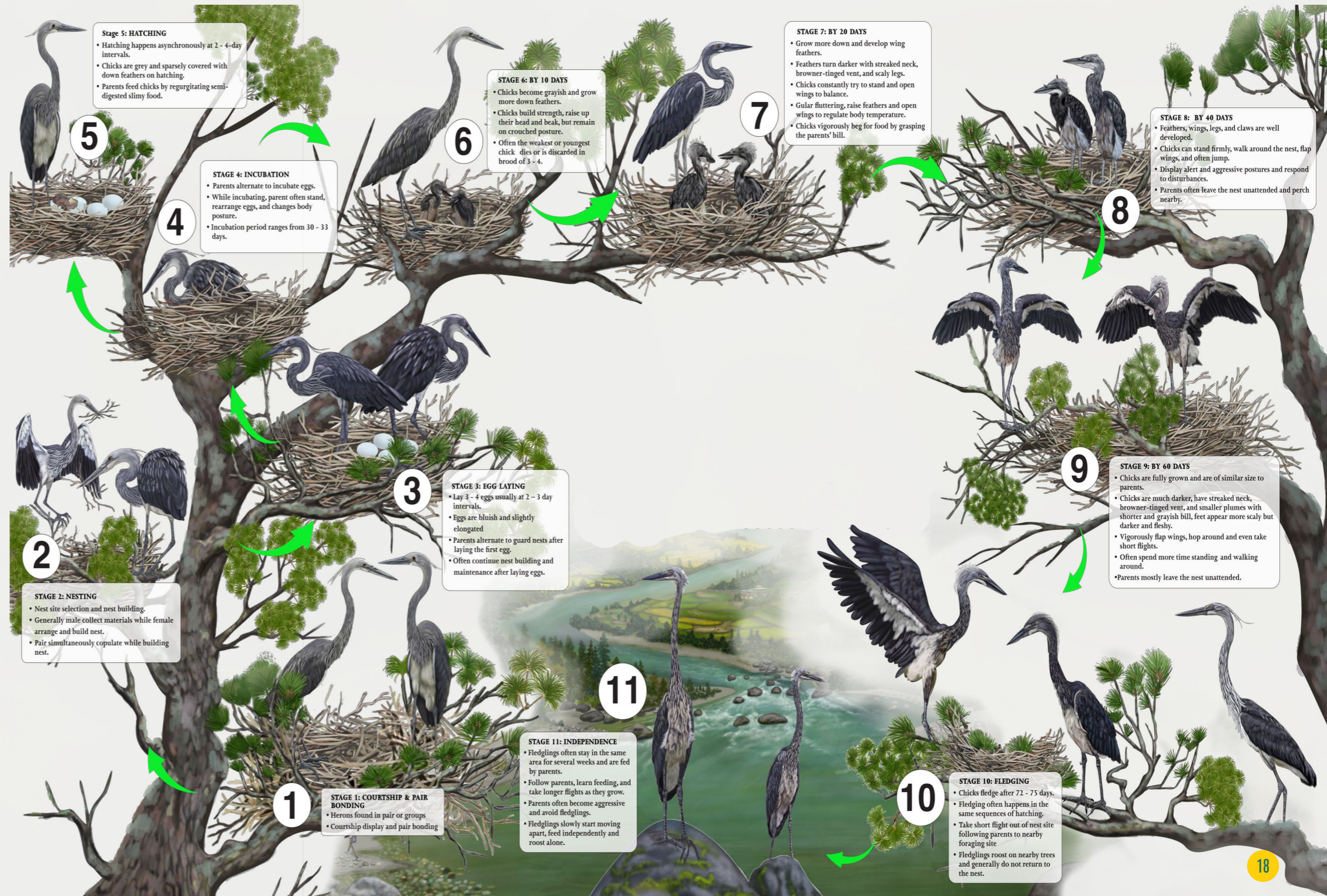
**Clutch size:** Three to four eggs.

**Incubation period:** 30–33 days.

**Brood size:** 1– 4 broods

**Nestling period:** Nestlings fledge after 70–75 days of hatching.

**Post-fledging:** Juveniles stay with parents for 2–3 months of fledging before becoming independent.





## White-bellied Heron Information and Education Hub

One-point information hub for White-bellied Heron conservation, breeding and research!

Visit us to learn more!

## WHAT IS NEEDED TO SAVE WHITE-BELLIED HERONS?

- Preserve and protect the last remaining critical habitats (Feeding, breeding, and flight routes)
- Recreate, restore, and reconnect degraded habitats.
- Maintain a healthy fish population in the rivers – food base for herons.
- Protect the wild breeding population and nest sites
- Address imminent threats and constraints.
- Reduce disturbances – give them a secure space – they need a home like we do!
- Support local communities - create an environment for harmonious co-existence.

## WHAT CONSERVATION BREEDING CAN OR CANN'T DO?

- Ex-situ population management (conservation breeding) is NOT going to restore the population!
- It will only temporarily rescue and halt immediate extinction.
- It is an insurance population for reintroduction.
- If wild habitats are not significantly restored, no individual released will survive.

## HOW CAN YOU HELP?

- Avoid visiting wildlife habitats – when not necessary.
- Avoid rafting, fishing, camping, and picnicking in critical wildlife habitats.
- Do not feed, harm, or disturb wildlife - be mindful of your activities when you are in wildlife habitats.
- Stay away from wildlife – always keep safe distance of at least 200 meters when you see them.
- Pay attention to signs marking important areas – adhere to wildlife dos and don'ts.
- Refrain from illegal and unsustainable collection of natural resources.
- If you see any illegal or suspicious activities in wildlife habitats, inform relevant officials.
- Plant a tree, pick up trash and avoid harmful chemicals.
- Become a citizen scientist – Keep yourself connected to nature.
- If you can, donate to help conservation.
- Do your part and ask others to do their's.



# NEW FACILITIES

An aerial photograph showing two large, rectangular aviaries constructed with black mesh fencing. The aviaries are situated in a hilly, forested area with a mix of green and brown vegetation. One aviary is in the foreground, and another is further up the slope. The surrounding landscape is densely wooded with various types of trees and shrubs.

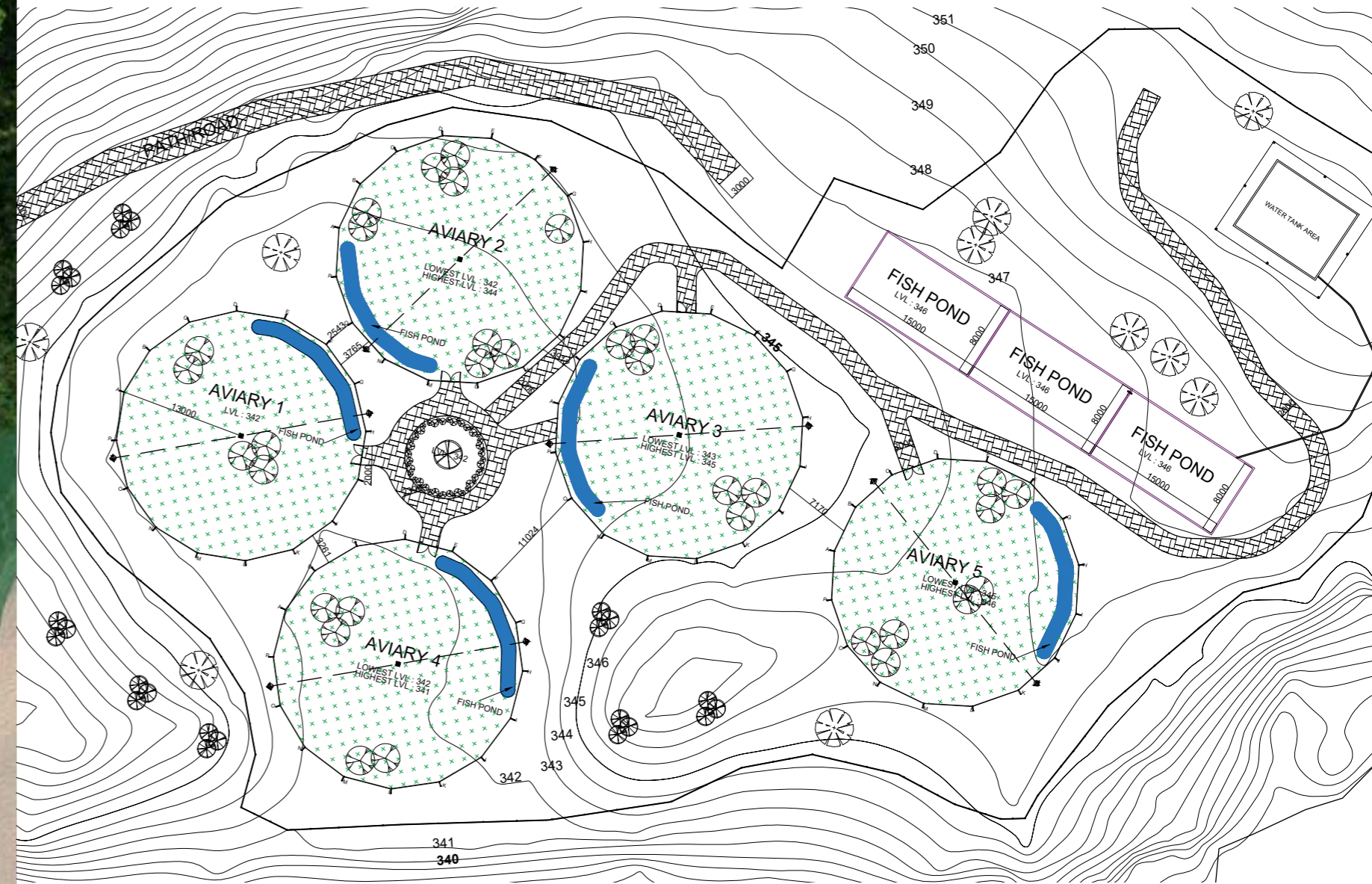
Two new aviaries constructed with support from Suntory Bird Conservation Grant, Synchronicity Earth, Tokyo Zoological Park Society and Jonathan & Hoa.

# FACILITY EXPANSION PLAN

To preserve inbreeding, preserve genetic diversity, and expedite the recovery program, we need to raise more birds, breed and reintroduce them in the shortest time possible. Over the next three years, we plan to build five new aviaries and fishponds for at least twenty birds.



# AVIARY EXPANSION SITE PLAN



# PLEASE SUPPORT US!

**DONATE NOW**

SCAN HERE TO DONATE



For international donations through Bhutan Foundation



For national donations. Scan & Pay using all Banking apps

**Or you can contact us:**

Email: [rspn@rspnbhutan.org](mailto: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. Unfortunately, because of the recent global recession, we lost 13% of the endowment and have no returns to meet operational costs for 2023. Please donate to help us meet our operational expenses for 2023.

To expedite the recovery program, we need to raise more birds, breed and reintroduce them. We can raise around eight birds with four aviaries, but our target is to have at least 20 birds in the next three years. We urgently need at least five more aviaries to keep enough birds as breeding stock from all wild nests. Each aviary costs US\$ 42,000, and we are seeking donations to build more facilities.

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



## WHITE-BELLIED HERON CONSERVATION CENTER OPERATIONAL EXPENSES 2022


Code	Activity head	Budget (Nu)	Expenditure (Nu)	Balance (Nu)
<b>1</b>	<b>Operations</b>			
1.1	Pay and Allowances	4,132,705.00	4,132,705.00	-
1.2	Office Maintenance	215,000.00	210,000.00	5,000.00
1.3	Office utilities	240,000.00	152,789.00	87,211.00
<b>2</b>	<b>WBH Conservation &amp; Breeding</b>			
2.1	Fishpond and avairy maintenance and supplies	1,240,000.00	1,297,948.80	- 57,948.80
2.2	Campus beautification	120,000.00	152,649.50	- 32,649.50
2.3	Lab & Medical supplies	600,000.00	600,000.00	-
2.4	Travel & Transportation	250,000.00	249,950.00	50.00
2.5	Professional Services	700,000.00	699,976.00	24.00
<b>3</b>	<b>Facilities Establishment</b>			
3.1	Installation of internet-telephone (fiber optic)	300,000.00	299,930.00	70.00
3.2	Installation of Hydraulic Pump	600,000.00	599,980.00	20.00
3.3	Guest House	500,000.00	499,970.00	30.00
3.4	Installation of Acs in information vcenter and Vet lab	650,000.00	650,000.00	-
3.5	Fishpond construction	1,200,000.00	1,201,000.00	- 1,000.00
	<b>Total</b>	<b>10,747,705.00</b>	<b>10,746,898.30</b>	<b>806.70</b>

Prepared by

  
(Namita Kafley)

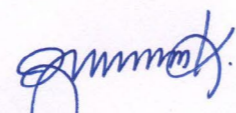
**Sr. Finance Officer**  
Royal Society for Protection of Nature

Verified by

  
(Tshering Dorji)

**Chief**  
Administration & Finance Division  
Royal Society for Protection of Nature

Approved by

  
(Executive Director, Ph.D)

**Executive Director**  
Royal Society for Protection of Nature

## RSPN STAFF PROFILE

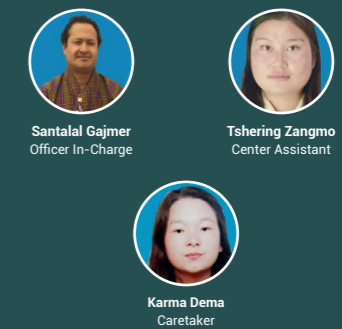
### Head Office



### White-bellied Heron Conservation Center



### Black-necked Crane Education Center



## ACKNOWLEDGEMENTS

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



*White-bellied Heron chicks*





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