



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

ANNUAL PROGRESS
REPORT

APRIL 2024
to
MARCH 2025

NMCG-WII GANGA BIODIVERSITY
CONSERVATION INITIATIVE: PHASE - II

PLANNING AND MANAGEMENT
FOR AQUATIC SPECIES CONSERVATION
AND MAINTENANCE OF ECOSYSTEM
SERVICES IN THE GANGA RIVER
BASIN FOR A CLEAN GANGA





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Annual Progress Report

April 2024 to March 2025

Project Investigators

Ruchi Badola and Syed Ainul Hussain

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Wildlife Institute of India, Dehradun

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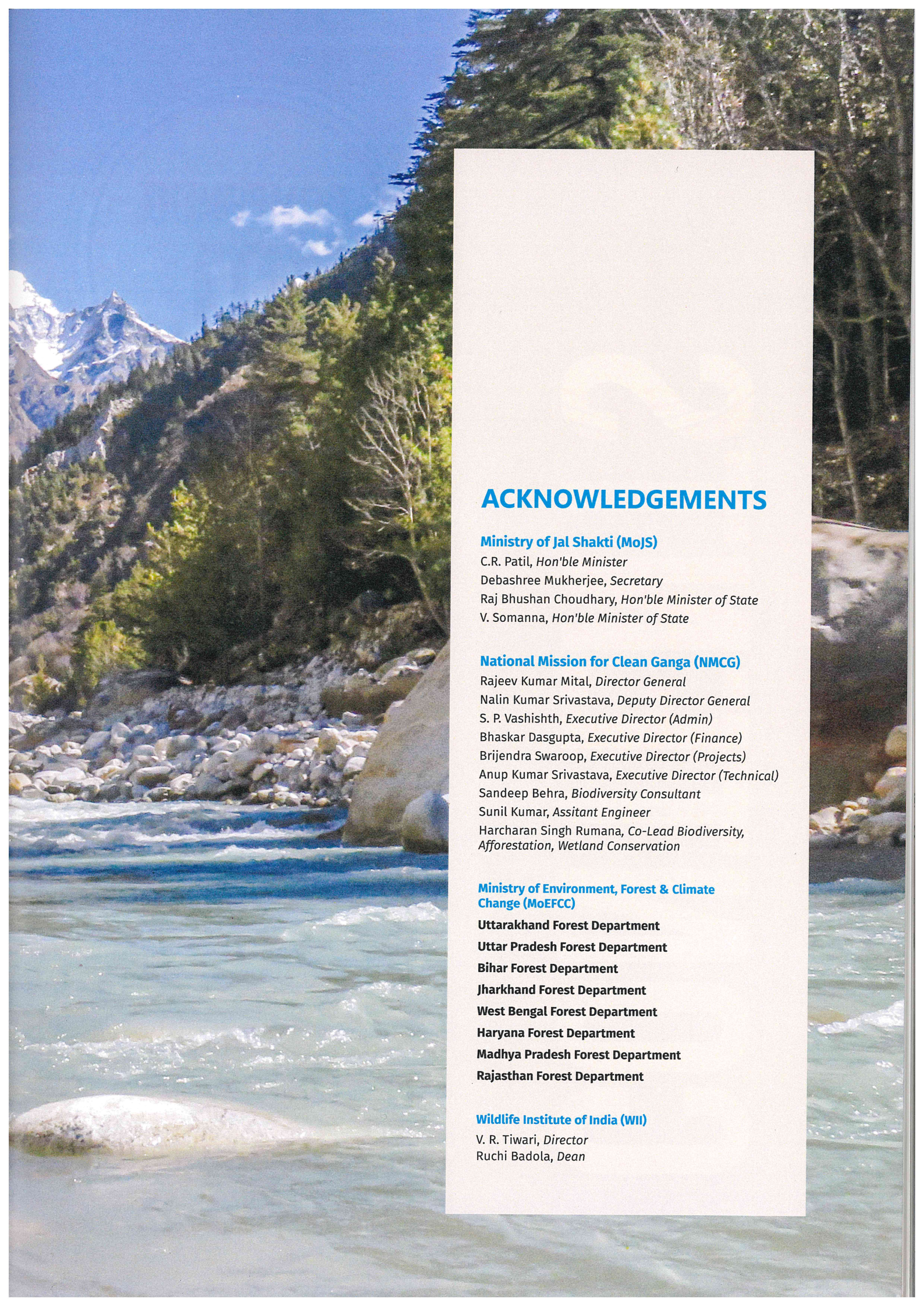
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COMPONENT
01



**SCIENCE-BASED AQUATIC SPECIES CONSERVATION AND
MAINTENANCE OF ECOSYSTEM SERVICES IN THE GANGA
RIVER BASIN**

1. ECOLOGICAL ASSESSMENT

1.1 Monitoring of Nesting Bird Colonies

a) Ghaghra River (Uttar Pradesh & Bihar)

Nesting events of resident breeding birds was evaluated in the Ghaghra River in April and May 2024. A boat-based visual survey was conducted between Girijapuri barrage in Uttar Pradesh and Revelganj at the Ganga confluence in Bihar, covering a distance of 615 km. A total of 90 river islands were surveyed. A total of 542 nests belonging to nine bird species such as black-winged stilt (*Himantopus himantopus*), greater painted-snipe (*Rostratula benghalensis*), Indian skimmer (*Rynchops albicollis*), Indian thick-knee (*Burhinus indicus*), little ringed plover (*Charadrius dubius*), little tern (*Sternula albifrons*), red-wattled lapwing (*Vanellus indicus*), river lapwing (*Vanellus duvaucelii*), and small pratincole (*Glareola lactea*), were recorded. Of the total nests observed, 36 nests of Indian skimmers with 123 unhatched eggs were documented on 15 islands in the Ghaghra River. Disturbance factors such as the presence of free-ranging dogs, raptors, crows, cattle, riverbed agriculture, mining, and other human-induced activities were also recorded.



Mixed clutch and evidence of brood parasitism of little tern on black-winged stilt clutch (Yamuna River)

b) Lower Yamuna River (Uttar Pradesh)

A resident breeding bird survey was conducted in the Lower Yamuna River, from Pachnada to Prayagraj, Uttar Pradesh, covering a length of 420 km, in May 2024 wherein nesting events from eight species, namely black-winged stilt, greater painted-snipe, Indian skimmer, little tern, red-wattled lapwing, river lapwing, small pratincole,

and white-browed wagtail (*Motacilla maderaspatensis*), were recorded. A total of 852 nesting events, 2,093 unhatched eggs, 60 hatchlings and 252 fledglings were recorded. Among the species, maximum nesting events were recorded for little tern (n=548) followed by black-winged stilt (159) and small pratincole (99). The presence of Indian skimmer reconfirmed from the previously identified island at Mau in Chitrakoot district, where two nests, eight unhatched eggs and nine fledglings were



Water parameter collection, Ghaghra River

recorded, with mean clutch size of four. The mixed clutches of two species were encountered on four occasions, likely indicating incidents of brood parasitism. These mixed clutches contained unhatched eggs and hatchlings of the little tern found in the nests of black-winged stilts. An unusual collection of unhatched eggs, trampling of fledglings by livestock, sand mining, mortality of adults and fledglings of small pratincole and green sandpiper (*Tringa ochropus*) owing to high concentration of toxic chemicals in water were some recorded threats to nesting waterbirds in the Yamuna River.

Bakhira Wildlife Sanctuary (Uttar Pradesh)

The nesting bird survey at Bakhira Wildlife Sanctuary was conducted in May and June 2024, primarily via boat-based visual method. A total of 35 bird species were recorded during the survey, including great egret (*Ardea alba*), intermediate egret (*Ardea intermedia*), little egret (*Egretta garzetta*), cattle egret (*Bubulcus ibis*), and Indian pond heron (*Ardeola grayii*). We found two fledglings of grey-headed swamphen (*Porphyrio poliocephalus*), one fledgling each of red-wattled lapwing, and pheasant-tailed jacana (*Hydrophasianus chirurgus*), as well as one juvenile and nine sub-adults of sarus crane (*Grus antigone*) and painted stork (*Mycteria leucocephala*), respectively. There was a noticeable high dependency of villagers on the wetland for collecting lotus flowers (*Nelumbo nucifera*) to sell in the market. Other anthropogenic pressures included cattle grazing and bathing, extraction of *Urochloa muricata*, burning of agriculture land and fishing along the wetland.

c) Gandak River (Bihar)

The nesting bird survey was conducted in the Gandak

River in May 2024 from Paniahwa, District Kushinagar, Uttar Pradesh to Sonapur, District Saran, Bihar, covering a length of 225 km. Three nesting events and 3 nests of small pratincole with 4 unhatched eggs were recorded from the river, with the clutch size varying between 1 and 2. Riverbed and river island agriculture are highly prevalent in the Gandak River. The river islands are extensively used for the cultivation of cucurbit crops. Heavy Machines like JCB excavators are frequently employed to plough the soil/sand for cultivation. The presence of the free-ranging dogs was also recorded during the survey.

d) Lower Ganga River (Bihar, Jharkhand and West Bengal)

The nesting bird survey was carried out in the lower stretch of the Ganga River, from Sitab Diara, Bihar to Farakka Barrage, West Bengal in May 2024. A total of 252 nests were observed for five river island nesting bird species, namely black-winged stilt, Indian skimmer, little tern, red-wattled lapwing, river lapwing and small pratincole. A total of 252 nesting events, 484 unhatched eggs, 57 hatchlings and 12 fledglings were recorded from this stretch. Small pratincole had the highest number of nests 143 nests with 264 unhatched eggs, 28 hatchlings and 6 fledglings, followed by little tern 80 nests with 166 unhatched eggs, 25 hatchlings. The river lapwing had 4 nests with 11 unhatched eggs, black-winged stilt had 3 nests with 12 unhatched eggs and red-wattled lapwing had 1 nest with 1 unhatched egg. In the case of clutch size, the black-winged stilt had a consistent clutch size of 4 eggs per nest. The little tern and river lapwing both exhibited a clutch size range of 1 to 4 eggs per nest. The red-wattled lapwing had a slightly smaller clutch size range, with 1 to 3 eggs per nest. Meanwhile, the small pratincole showed the greatest variation in clutch size



Black-bellied tern

with 1 to 5 eggs per nest. In this stretch of the Ganga River, high intensity of fishing activities was observed, numerous islands were utilised for the cultivation of crops encroaching potential nesting habitats. Additionally, the frequent presence of livestock and free-ranging dogs in this region contributed to disturbances. No of the nesting bird species was found in the state of West Bengal.

1.2 Intensive Biodiversity Survey of Ganga River

A boat-based intensive biodiversity survey was conducted in the Middle Ganga River (from Madhya Ganga Barrage, Distirct Bijnor, Uttar Pradesh to Sitab Diara, Distirct, Saran, Bihar) and the Lower Ganga River (from Sitab Diara, Distirct, Saran, Bihar to Nurpur, Distirct, South 24 Parganas, West Bengal) in November and December 2024. During the survey, sightings of Gangetic dolphins, otters, waterbirds, gharial and mugger were noted. All opportunistic sightings were recorded from the inflatable boat moving at a speed of 10 km/h on average.

Mammals

The encounter rate was 0.6 sightings/km. No otters were seen during the survey. In the of Lower Ganga River, 741 visual detections of dolphins were recorded on 289 occasions. The encounter rate was 0.85 ± 0.33 sightings/km. The encounter percentage for adults was 67.75%, calves was 17.14% and unclassified was 15.11%. Dolphins were encountered in river depths between 1.3 to 33.8 m. One smooth-coated otter (*Lutrogale perspicillata*) was observed in the stretch between Rajmahal, Jharkhand and Farakka, West Bengal.

Crocodylians

A total of 44 gharial (*Gavialis gangeticus*) individuals were seen during the survey in the Middle Ganga River, with an encounter of 0.29 individuals/km. No muggers were seen during the survey. No crocodilians were recorded in the Lower Ganga River.

Waterbird

In the Middle Ganga River, 69 species of waterbirds were documented. Anatidae (17 species) had the highest species count, followed by Scolopacidae (10 species) and Ardeidae (8 species). Anhingidae, Glareolidae and Phoenicopteridae were represented by only a single species (Figure 1). Of the species recorded, 56 were winter migrants and 13 were residents. Among the globally threatened categories, two species were classified as Endangered (black-bellied tern *Sterna acuticauda* and Indian skimmer), three as Vulnerable (common pochard *Aythya ferina*, river tern *Sterna aurantia* and sarus crane), five as Near Threatened and the remaining 59 species as Least Concern.

In the Lower Ganga River, 80 species of waterbirds were recorded. Scolopacidae (19 species) has the highest species count, followed by Anatidae (11 species) and Ardeidae (9 species). Anhingidae, Glareolidae, Podicipedidae and Pandionidae were represented by only a single species (Figure 2). Of the species documented, 48 were winter migrants and 32 were residents. Under the globally threatened categories, two species were classified as Endangered (Indian skimmer and great knot *Calidris tenuirostris*), eleven Near Threatened and the remaining 67 species were classified as Least Concern.

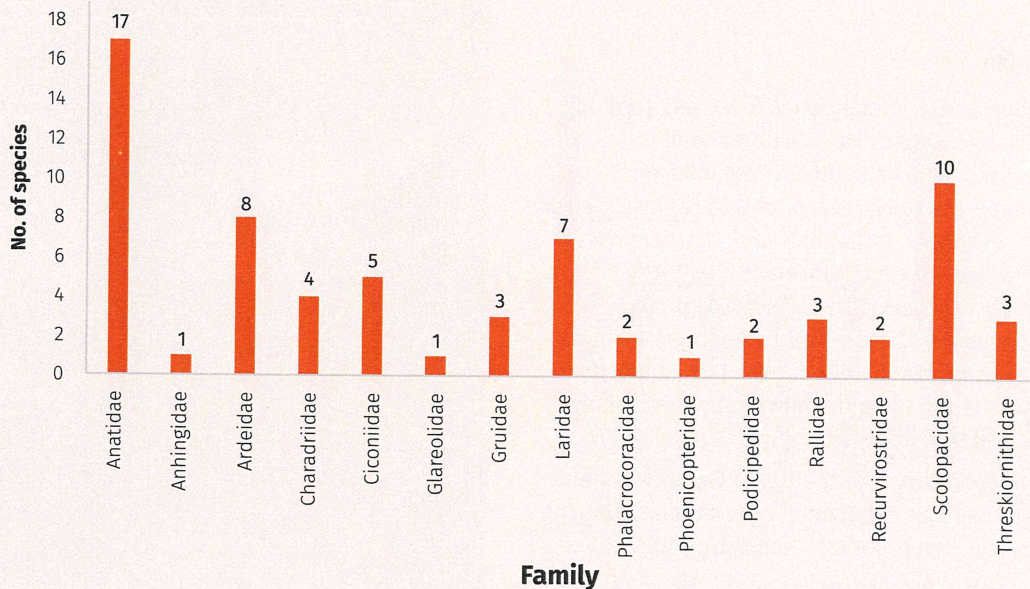


Figure 1: Family-wise species composition of waterbirds in the Middle Ganga River

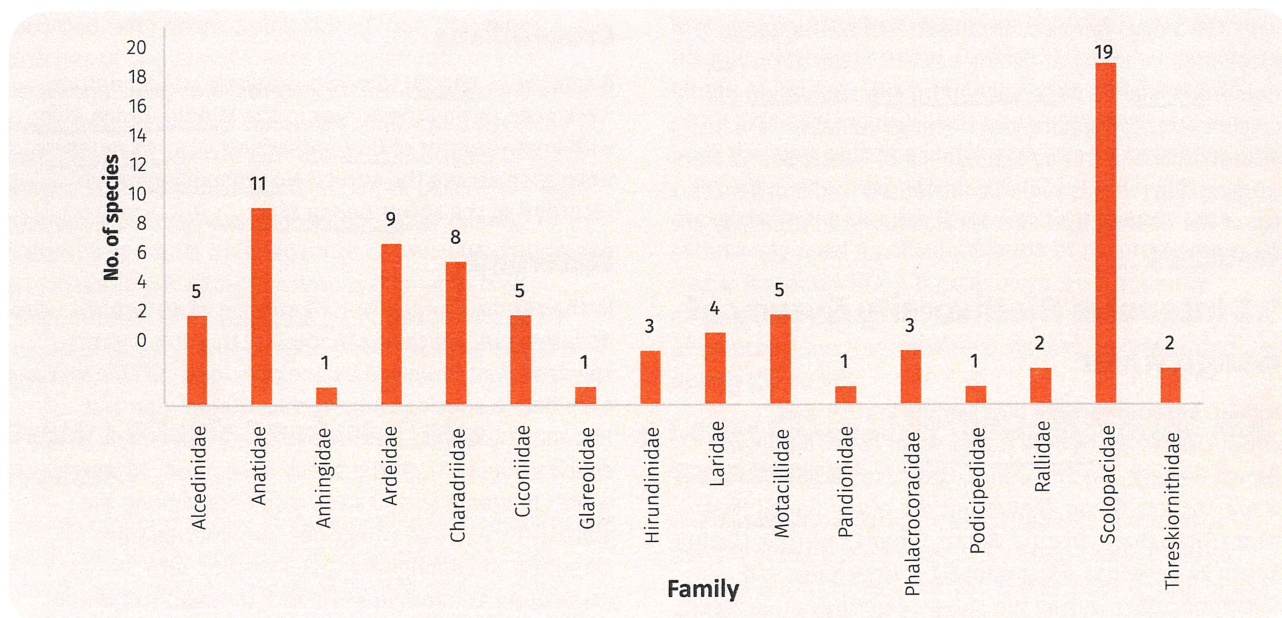


Figure 2: Family-wise species composition of waterbirds in the Lower Ganga River

1.3 Fish Survey

Kosi River

The post-monsoon fish survey of the Kosi River was conducted in May 2024, from Manjhaul, Begusarai district to Kursela, Katihar district (Ganga confluence) in Bihar. A total of 83 species belonging to 11 orders, 28 families, and 57 genera were recorded from the Kosi River. Of the 83 species recorded, 80 were native and 3 were exotic (*Ctenopharyngodon idella*, *Cyprinus carpio* and *Clarias gariepinus*). The study found that Cyprinidae was the most abundant Order with 21 species, followed by Danionodae with 13 species and Sisoridae with 10 species.

Ganga River

A pre-monsoon survey of the Ganga River was conducted from Mukhba, District Uttarkashi, Uttarakhand to Diamond harbour, District South 24 Parganas, West Bengal, in March and April 2024. A total of 121 fish species belonging to 88 genera, 34 families and 11 orders were recorded, of which 116 were native and 5 exotic fish species, namely *Cyprinus carpio*, *Cyprinus carpio specularis*, *Ctenopharyngodon idella*, *Hypothalmichthys molitrix*, and *Hypothalmichthys nobilis*. During the study, Cyprinidae was found to be the most abundant, followed by Sisoridae and Bagridae.

The post-monsoon survey of the Upper Ganga River and Lower Ganga River was conducted in December 2024. The Upper Ganga was surveyed from Haridwar, Uttarakhand to Mirzapur, Uttar Pradesh and the Lower Ganga was surveyed from Varanasi, Uttar Pradesh to Diamond Harbour, West Bengal at 28 intensive sampling sites. A



Goonch catfish (*Bagarius bagarius*) entangled in fishing net at Handia, District Prayagraj, Uttar Pradesh in the Ganga River

total of 89 species belonging to 29 orders and 13 families were recorded. Cyprinidae was the most dominant family with 30 species, followed by Siluriformes with 22 species (Figure 3). Three invasive fish species, namely Ctenopharyngodon idella, Cyprinus carpio and Oreochromis niloticus, were recorded. The highest Catch Per Unit Effort (CPUE) per panel hour (Fish abundance in individuals) was recorded at the site Kannauj (17.76), followed by Narora (15.08), Bijnor (12.14), and Tigri Ghat (8.13) (Figure 4). Due to the field constraints, the species information for Maheshtala and Diamond Harbour in West Bengal was recorded through a fish market survey.

Chambal River

The post-monsoon survey of the Chambal River was conducted in 2024 at 13 intensive sampling sites, from Rawatbhata, District Chittorgarh, Rajasthan to Pachnada, District Etawah, Uttar Pradesh. A total of 34 species were documented, of which 32 were native and two were exotic, namely Cyprinus carpio and Oreochromis niloticus. Cyprinidae was found to be the most dominant family with 16 species, followed by Bagridae with 3 species and Danionidae, Ambassidae and Dorosomatidae with 2 species each (Figure 5). The highest CPUE per panel hour (Fish abundance in individuals) was recorded at Pachnada (49.25), followed by Rawatbhata (38), Mandawara (38), Gandhi Sagar (28), Barsala (26), Shahanpur (17) and Kota (15), and the lowest was recorded at Liloli (9.5), Kenjra Ghat (9.25), Rajghat (7), Pali (6.5) and Gyanpura (2.5) (Figure 6).



Measuring the flow rate of river

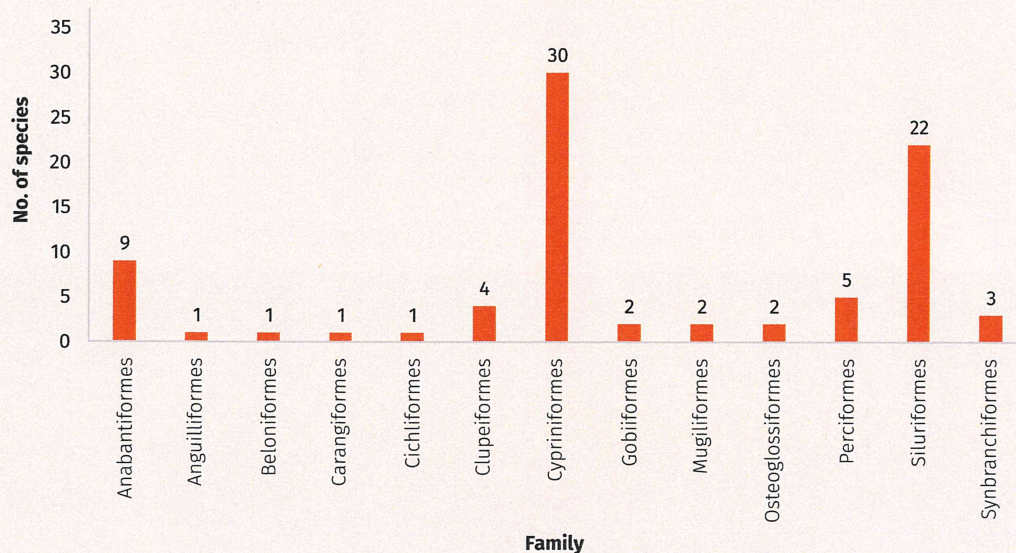


Figure 3: Family-wise species composition of fishes in the Middle and Lower Ganga River

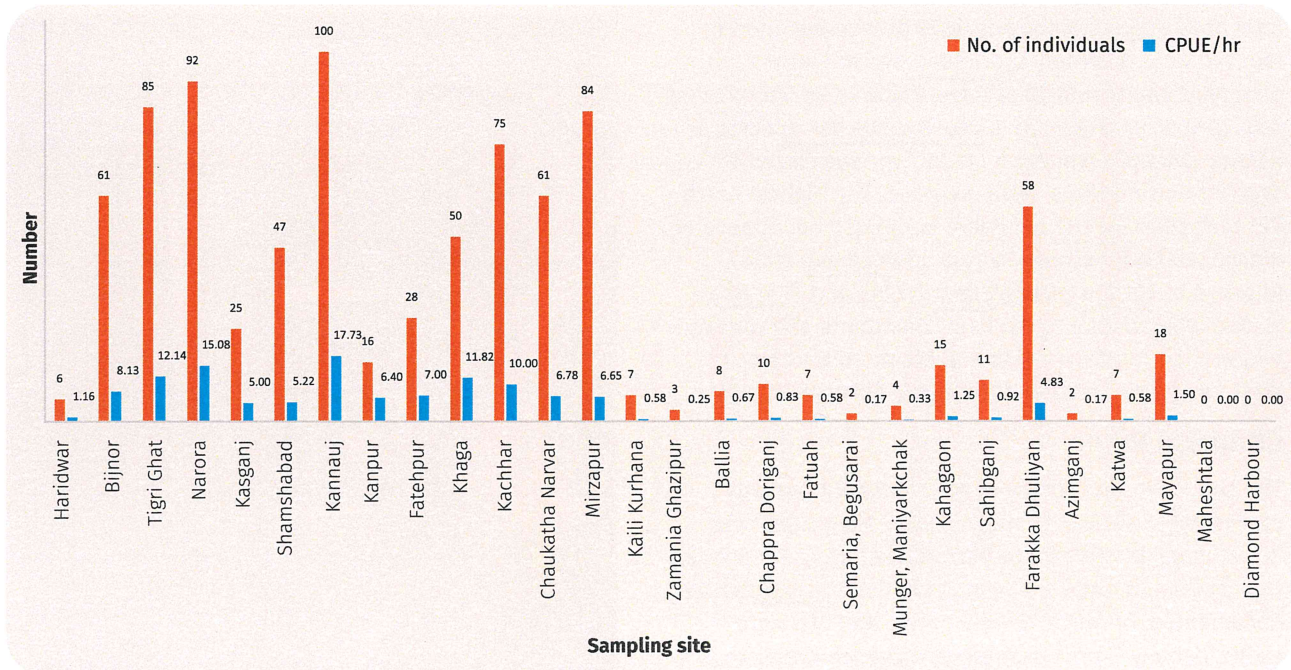


Figure 4: Catch per unit effort (Individuals/hr) across sampling sites in the Ganga River

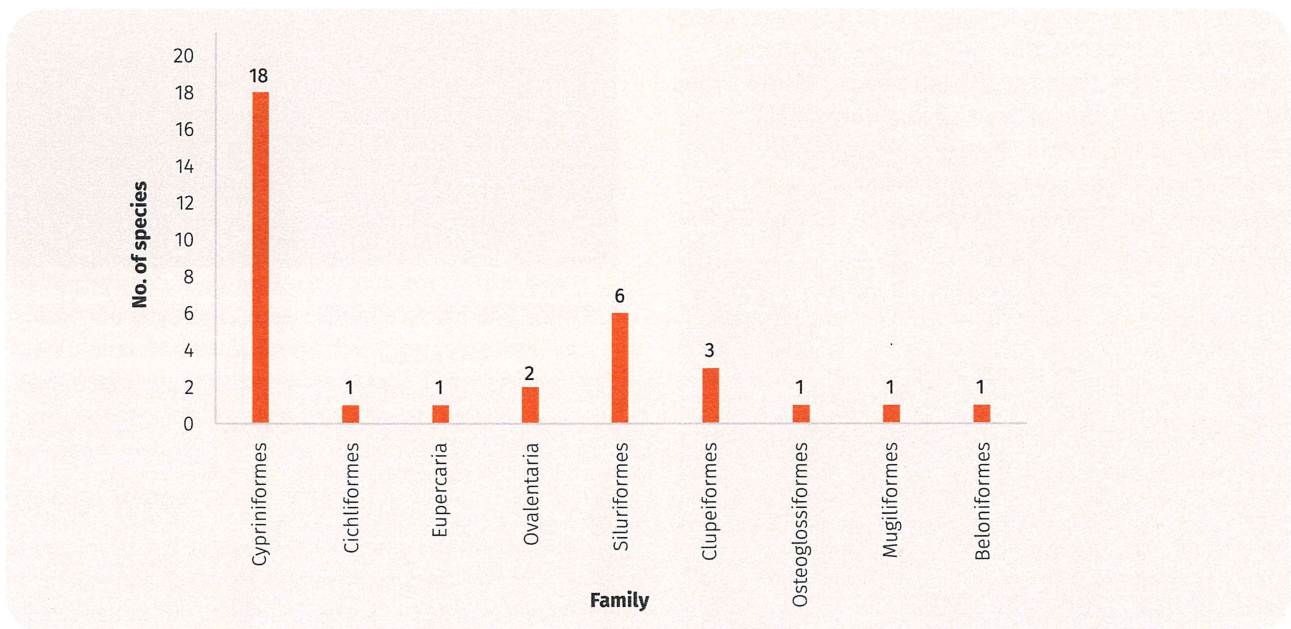


Figure 5: Family-wise fish species composition in the Chambal River



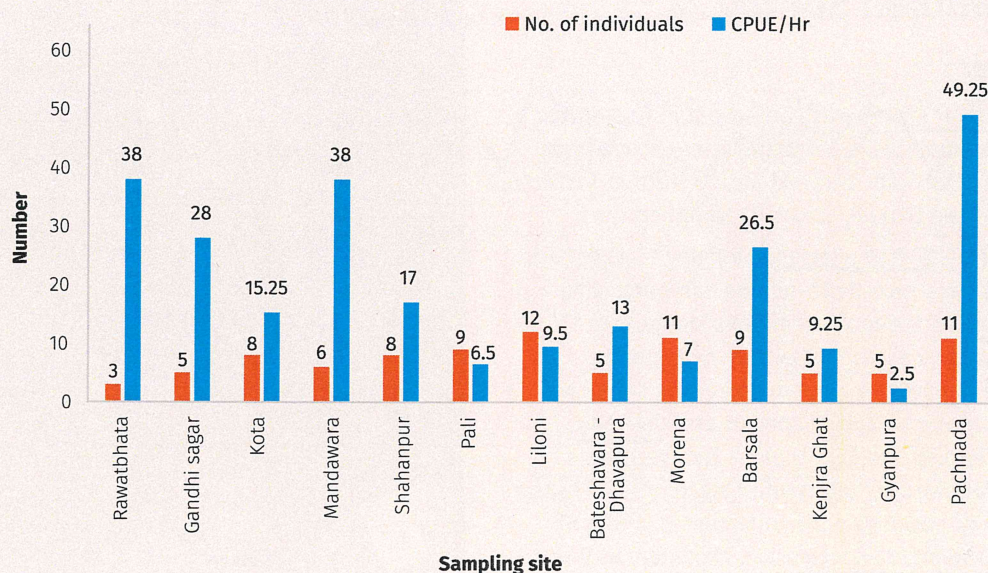


Figure 6: Catch per unit effort (Individuals/hr) across sampling sites in the Chambal River

Son River

The post-monsoon survey was conducted in the Son River from Mirwahi, Chhattisgarh to Koilwar, Bihar, in January and February 2025. A total of 39 fish species were recorded, representing eight orders, 14 families and 35 genera. Cyprinidae was the most abundant family with 30 species, followed by Danionidae with 25 species, Sisoridae with 11 species, Nemacheilidae with 6 species,

and Ambassidae and Mastacembelidae with 4 species each. Mugilidae was represented by 2 species.

No exotic species were recorded during the study period. However, Alam et al. (2024) previously reported the presence of four exotic species in the Son River: *Hypophthalmichthys molitrix*, *Ctenopharyngodon idella*, *Cyprinus carpio*, and *Oreochromis niloticus*.



1.4 Amphibian Survey

Ganga River

A visual encounter survey was carried out in September 2024 to assess amphibians along the Ganga River, from Harsil, District Uttarkashi, Uttarakhand to Nurpur, District Murshidabad, West Bengal, across 31 sampling sites.

During the survey, 27 frog species belonging to 13 genera and 5 families were recorded from the sampling sites. Dicroglossidae was the most dominant family, with 13 species, followed by Microhylidae with five species (Figure 7). The richness of amphibians at the sampling sites ranged between 4 and 17 species and diversity ranged between 1.05 and 2.35. Highest richness was at Bijnor (n=17) followed by Katwa and Kalyani (n=14) (Figure 6). Dharasu (n=4) supported the minimum richness of amphibians. Diversity of species was maximum at Buxar (2.35) followed by Bijnor (2.25). Minimum diversity of amphibians was observed in Devprayag (1.05) (Figure 8). Common species found in the Ganga River was *Hoplobatrachus tigerinus* and *Microhyla nilphamariensis*, *Amolops jaunsari*, *Duttaphrynus himalayanus*, *Fejervarya cf. moodiei*, *Minervarya sp.* and *Nanorana minica* had very narrow distribution and were recorded from only one sampling segment.

Additionally, 70 individual frog specimens and 54 DNA samples were collected for further analysis, as the species identity could not be confirmed in some cases.



Sampling of frog species with photographs taken on site

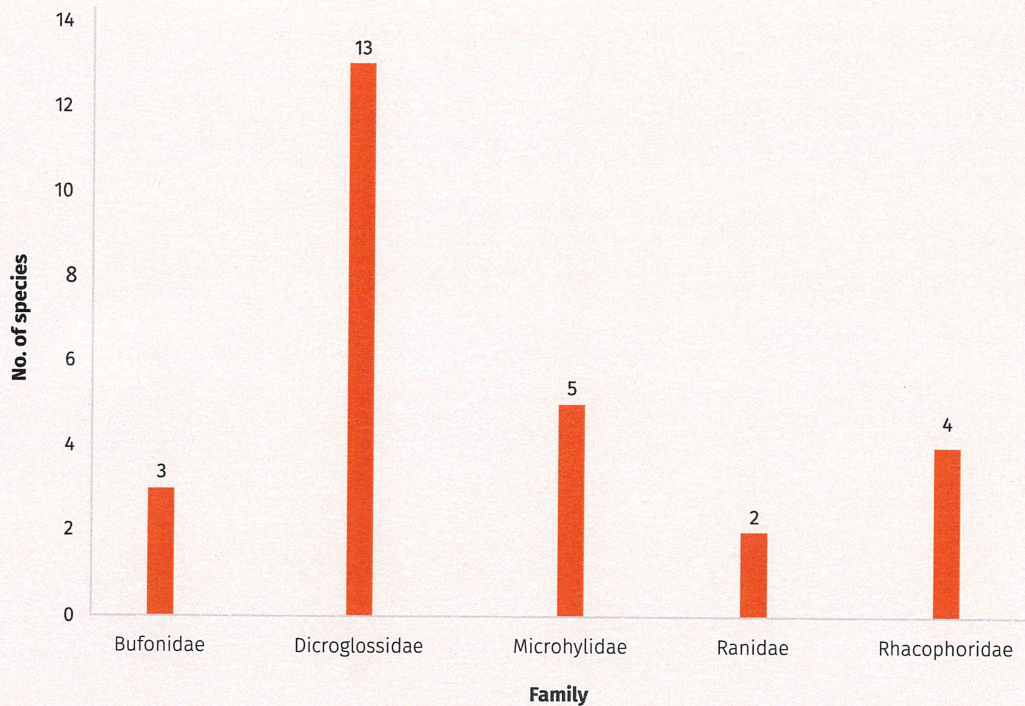


Figure 7: Species richness of amphibians in various families across the Ganga River

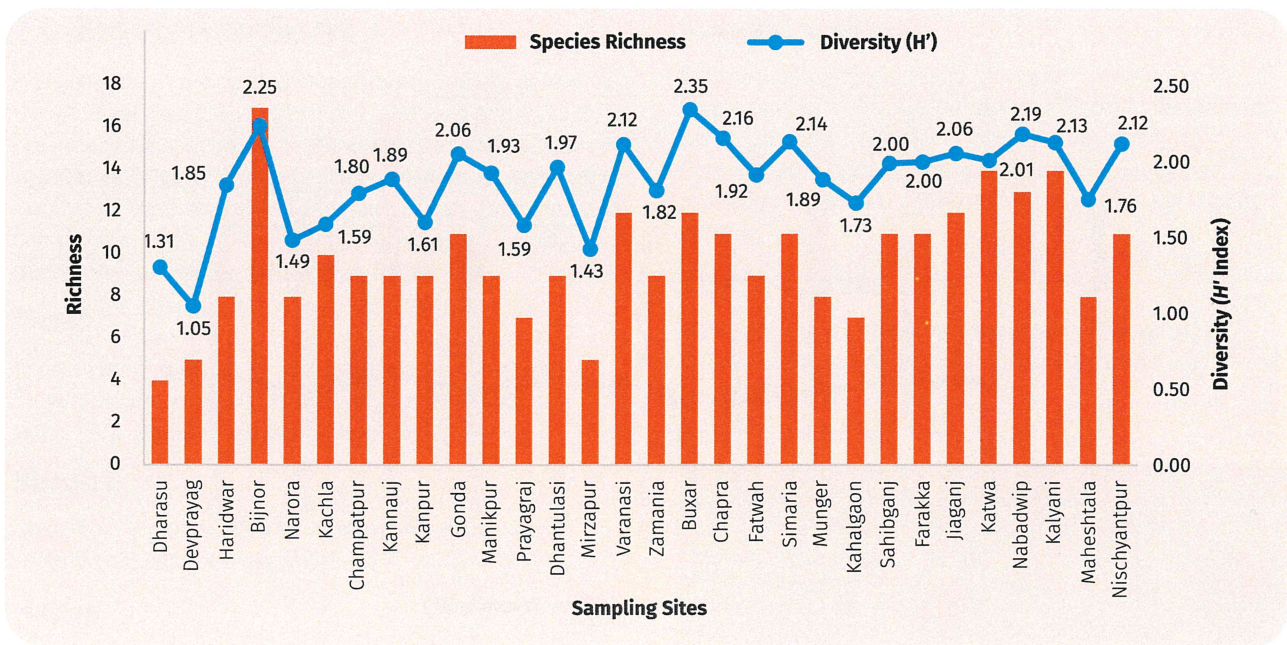


Figure 8: Richness and diversity of amphibians at various sampling segments of the Ganga River

Chambal River

A visual encounter survey for assessment of amphibians was conducted along the Chambal River during September 2024, at 11 sampling sites. Ten frog species belonging to 8 genera and 4 families were recorded. Dicroglossidae was the most dominant family, represented by 6 species, followed by Bufonidae with 2 species (Figure 9). The richness of amphibians at the sampling sites ranged between 4 and 10 species and diversity ranged between 0.846 and 1.859. Richness was highest at Rameshwar (n=10) followed by Ater, Batesura, Rijnhenta and Sarsaini (n=7). Pali (n=4) of supported the minimum richness of amphibians. Diversity of species was maximum in Sarsaini (1.859) followed by Rameshwar (1.852). Minimum diversity of amphibians was observed in

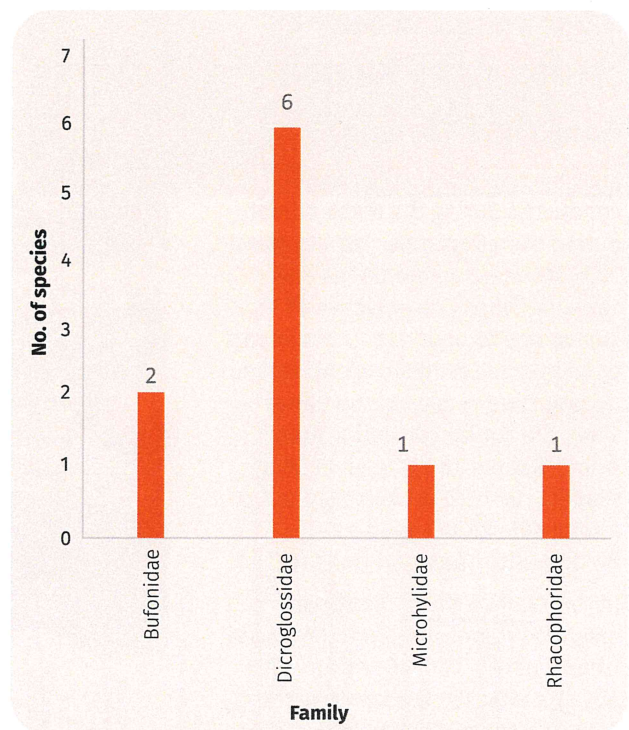


Figure 9: Species richness of amphibians in various families across the Chambal River

Pali (0.846) (Figure 10). *Euphlyctis cyanophlyctus*, *Hoplobatrachus tigerinus* and *Microhyla nilphamariensis* were recorded from all segments of this River. *Minervarya cf. agricola* and *Polypedates maculatus* had the very narrow distribution and were recorded from only one sampling segment each.

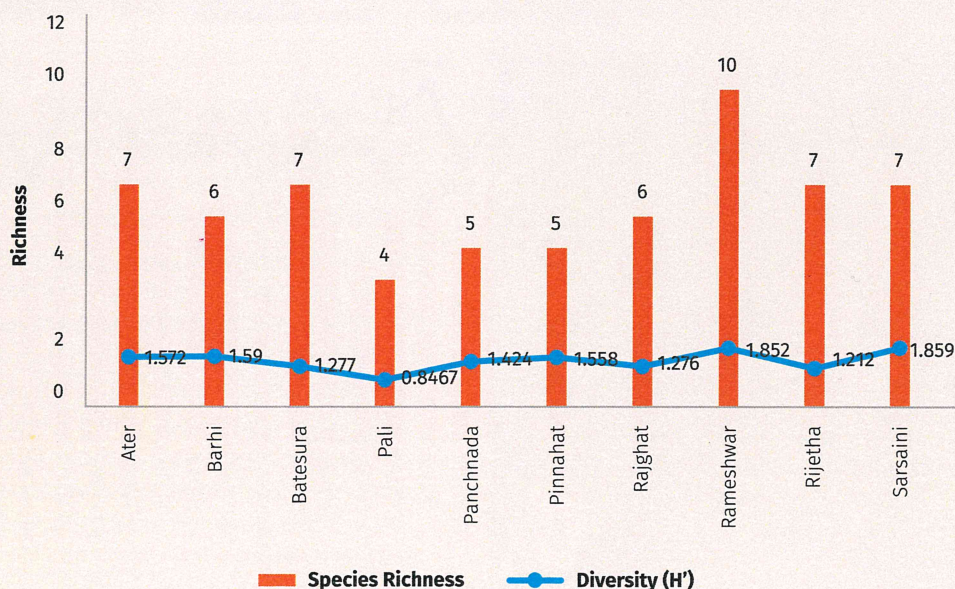


Figure 10: Richness and diversity of amphibians at various sampling segments of the Chambal River

1.5 Ecological Survey during Maha Kumbh

Ganga and Yamuna River

Four biodiversity surveys were conducted during the Maha Kumbh period from December 2024 to March 2025, focusing on the Ganga and Yamuna rivers. The objective of the survey was to understand the impact of large-scale religious gatherings on aquatic biodiversity. In the Ganga River, the survey covered a stretch from Fatehpur to Varanasi in Uttar Pradesh, with 30 km surveyed out of a total 405 km, covering six Biodiversity Evaluation Units (BEUs).

In the Yamuna River, the survey extended from Fatehpur to Prayagraj, Uttar Pradesh, with 15 km surveyed out of a total 120 km, covering three BEUs. The surveys were conducted in four phases across both rivers during the Maha Kumbh: one pre-Kumbh survey in December 2024, two during the Kumbh in January and February 2025, and one post-Kumbh survey in March 2025. Bird assessments followed the point count method, while a 5 km line transect was walked in each BEU to survey other taxa. Data analysis is currently in progress.



1.6 Vegetation Survey

A vegetation survey was conducted in 16 rivers of the Ganga River Basin, between April 2024 and March 2025, documenting species diversity across Ganga River and its tributaries (Figure 11). *Poaceace* was the most dominant family followed by *Cyperaceae*, *Asteraceae*, *Fabaceae* and *Lamiaceae*. Some of the common species recorded during the survey are mentioned below:

Trees

Acacia catechu, *Bombax ceiba*, *Holoptelea integrifolia*, *Syzygium cumini*, *Haldina cordifolia*, *Broussonetia papyrifera*, *Dalbergia sissoo*, *Ficus* spp.

Shrubs

Calotropis gigantea, *Clerodendrum viscosum*, *Hyptis suaveolens*, *Leonotis nepetifolia*.

Herbs

Aerva anata, *Bidens pilosa*, *Calyptocarpus vialis*, *Centella asiatica*, *Desmodium triflorum*.

Grasses

Coix lacryma-jobi, *Cyperus rotundus*, *Dactyloctenium aegyptium*, *Paspalum distichum*, *Rottboellia cochinchinensis*, *Sachharum benghalensis*, *S. spontaneum*, *Typha augustifolia*, *Phragmites karka*, *Vetiveria zizanioides*, *Cynodon dactylon*.

Aquatic Species

Eichhornia crassipes, *Pistia stratiotes*, *Lemna minor*, *Spirodela polyrhiza*, *Azolla pinnata*, *Hydrilla verticillate*, *Ceratophyllum demersum*, *Ipomoea aquatica*, *Potamogeton crispus*, *Vallisneria natans*, *Ludwigia adscendens*, and *Polygonum*, *Nelumbo* and *Nymphaea* species.

Exotic Species

Alternanthera ficoidea, *Alternanthera philoxeroides*, *Croton boplandianus*, *Eclipta prostrata*, *Ipomoea carnea*, *Lantana camara*.

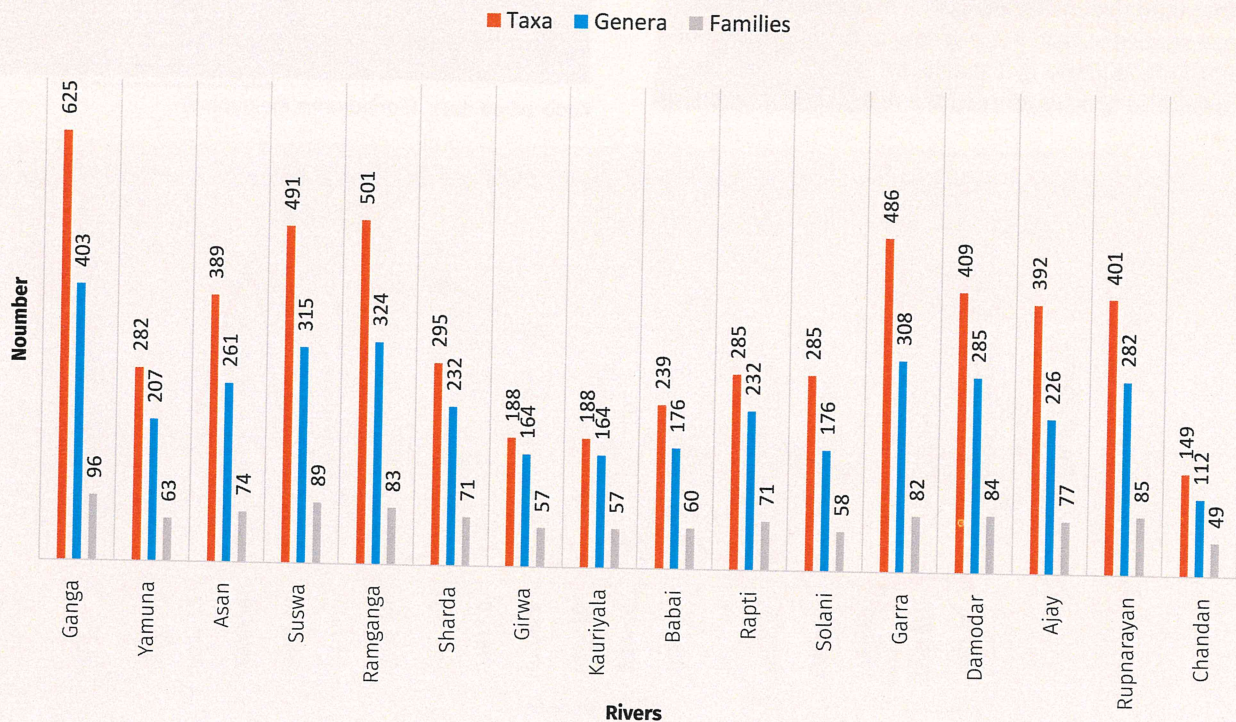


Figure 11: Taxonomic classification of plants recorded during the survey between April 2024 and March 2025 in the Ganga River Basin

1.7 Status of Waterbirds in the Ganga River Basin States: A Review

A dearth of information on the comprehensive status of waterbirds was realized thus existing peer-reviewed studies were compiled from the 11 states of the Ganga River Basin- Uttarakhand, Himachal Pradesh, Uttar Pradesh, Bihar, Delhi, Haryana, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand and West Bengal. Following the PRISMA framework, various databases were searched and scrutinized using different keywords between 1861 and 2023. Out of 3,157 peer-reviewed studies obtained from the different sources, only 573 (18%) were selected for the review, covering topics like status, diversity, composition, behaviour etc., and were mostly (57%) conducted by universities and colleges. Maximum peer reviewed studies were carried out in the state of Uttar Pradesh (n=135), followed by Bihar (n=80) and Rajasthan (n=67). Till year 2023, 550 peer reviewed studies have been conducted in the different types of wetlands in the basin (Figure 12). In quality assessment, 26% peer reviewed studies were indexed with SCI or SCOPUS and the rest were either indexed with NAAS or non-indexed journals.

A total 234 waterbirds species from 32 families and 15 orders were recorded from different wetlands of the basin including 51 Threatened or Near Threatened species on the IUCN Red List. Of these, 44% were identified as winter migrants and 16% resident to India. Most of the published studies occurred in the rural and urban non-riverine wetlands of Uttar Pradesh and Bihar rather than riverine habitats. The major emphasis of these studies was on the diversity and composition of waterbirds followed by behavioural studies. The number of waterbird species crossed the mark of 100 in most of

the basin states. Highest number of species were recorded in Uttar Pradesh (179), followed by Delhi (178) and Bihar (164). Point count and line transect were two key methods used for the assessment of waterbirds however, most of the studies lagged abundance/density estimations and seasonal information.

More collaborative scientifically robust studies are required to enhance quality and reliability of the data, and long term monitoring and micro level studies are recommended to cope up with site-specific threats and management challenges. Review underlines need for more access and waiver to developing countries like India for open access journals, which will ensure timely and quality publications. Focus on the socio-ecological, river ecosystem, migration pattern, threatened species and ecosystem service aspects will contribute more in the long term conservation of waterbirds and wetlands in the Ganga River Basin of India.



Knob-billed duck (*Sarkidiornis melanotos*)

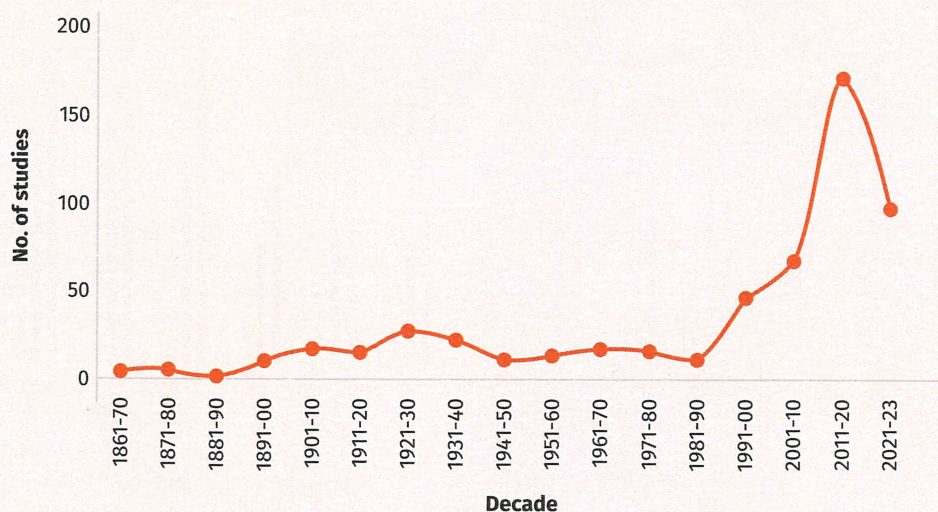


Figure 12: Decadal trend of published studies on waterbirds between 1861 and 2023 in the Ganga River Basin (n=550)

2. GENETIC ASSESSMENT

Genetic Diversity Assessment of Aquatic Species in the Ganga River Basin

For genetic assessment of Indian narrow-headed softshell turtle (*Chitra indica*), 17 samples were collected from the Chambal River. Three partial fragments of mitochondrial DNA viz., 16S rRNA, COI and ND4, were used to assess the genetic diversity in *C. indica*. The concatenated sequences analyzed revealed six distinct haplotypes with 19 polymorphic sites. Haplotype diversity (Hd) was estimated to be 0.867 ± 0.085 , indicating moderate genetic variation within the sampled individuals, while the nucleotide diversity (Pi) was calculated at 0.00259 ± 0.00100 , reflecting a relatively low level of sequence divergence. The haplotype network reveals that the Barhi samples exhibited the highest haplotype richness with three haplotypes, while Bateswara had two, and Kanakpura contained only a single haplotype, as shown in the haplotype network (Figure 13).

A total of 33 samples of ray-finned fish (*Cabdio morar*) were collected from the Lower Ganga, partial fragments of mitochondrial DNA viz., COI (fragment size- 660bp), was used to assess the genetic diversity. The mt COI sequences analyzed, revealed 11 distinct haplotypes with 16 polymorphic sites. Haplotype diversity (Hd) was estimated to be 0.763 ± 0.085 , indicating moderate genetic variation within the sampled individuals, while the nucleotide diversity (Pi) was calculated at 0.00597

± 0.00100 , reflecting a relatively low level of sequence divergence.

Furthermore, fish samples were collected (n=200) from the Ganga, Yamuna, Chambal and Ghaghra for genetic assessment. Data generation is currently under process. Additionally, samples of *Gavialis gangeticus*, *Batagur dhongoka*, and *Batagur kachuga* were collected from Chambal River and Barhi Turtle Rescue and Rehabilitation Centre at Bhind, Madhya Pradesh, for assessment of genetic diversity. The complete mitogenome of *B. kachuga* from the Chambal River was generated and analysis is currently under process.

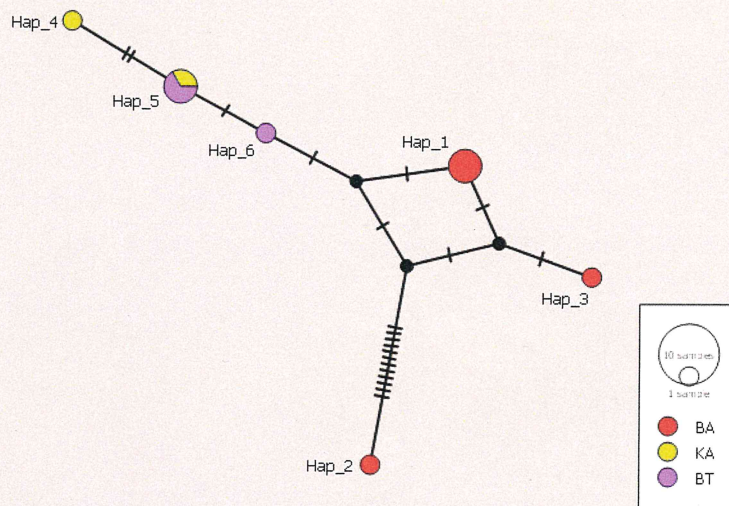
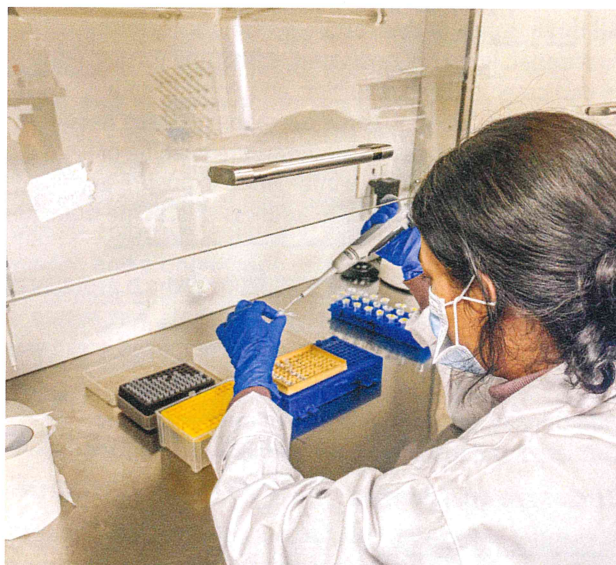


Figure 13: Haplotype Network of *Chitra Indica* using concatenated mitochondrial sequence.

BA = Barhi, KA = Kanakpura BT = Bateswara

3. RESCUE AND REHABILITATION

3.1 Renovation Activities

3.1.1 Sarnath Turtle Rescue and Rehabilitation Centre, Uttar Pradesh

The existing rescue and rehabilitation centre at Sarnath has three enclosures, one hatchery, and one medical care room. This infrastructure required renovation and improvements to meet the evolving needs of the centre. Renovations were carried out to improve the pond conditions of turtles and facilitate their rehabilitation before release back into the wild.

Enclosure renovation

All three ponds in this rescue centre are currently functional. Pond I is dedicated to Yearling turtles, Pond III is dedicated to Rescue turtles, and Pond II is for Hatchlings. In Pond II, some overhanging trees were blocking sunlight, which hindered the basking of hatchlings, especially in winter when exposure and temperature are very low. To address this, some branches were pruned.

The wire mesh covering the enclosures, which protects the in-house turtles from potential threats, was rusted and damaged in all three ponds. The damaged mesh was repaired.

Additionally, the banner board of our centre was outdated and torn, so a new banner was installed.

Enclosure enrichment

Enclosure enrichment is one of the most important parts of animal husbandry. It provides the environmental

stimuli necessary for optimal psychological and physiological well-being. To enhance the well-being of the turtles, the enclosures were upgraded with some enrichments.

- Wooden logs are used for basking and are potential hiding places. Additional wooden logs have been strategically placed in the enclosures.
- Turtles also prefer rubber mats for basking, as they provide a strong grip for the animals to haul out of the water and minimize abrasion from the coarse cement surface. The old rubber mats were replaced with new rubber mats.
- Bamboo thatch is an important shading platform preferred by captive turtles. It is also used for basking and hiding places. The old bamboo thatches were damaged, so new bamboo thatches have been added to the enclosures. The shades were mainly placed in spots identified as spaces normally used by the animals.
- Different types of bushy plants have been planted in the enclosures. This provides a more naturalistic space and protects the animals from excessive sunlight. It is also a potential hiding place for them.
- Water hyacinth (*Eichhornia crassipes*) has been added to the turtle ponds. It provides shade and hiding place for turtles, and it also keeps the water temperature cool.
- Live fish and superworms were used to feed the turtles. This helps enhance and maintain their ability to capture prey and provides a good source of nutrients for them.



Environmental enrichment

3.1.2 Barhi Turtle Rescue and Rehabilitation Centre, Bhind, Madhya Pradesh

This centre currently comprises three enclosures, a hatchery, three indoor pools, and an office space. To maintain the centre's efficient operation and ensure a clean, safe, and enriched environment for both resident and rescued turtles, minor repairs and upgrades were necessary. Various infrastructural enhancements have been implemented to improve the facility's functionality and overall appearance.

Enclosure renovation

All three enclosures are currently functional in this centre. The wire mesh covering the enclosures, which protects the in-house turtles from potential threats, was rusted and damaged and needed to be replaced. Therefore, new iron wire mesh was installed in each enclosure.

Enclosure enrichment

- Different types of bushy plants have been planted in the enclosures. This provides a more naturalistic space and protects the animals from excessive sunlight. It is also a potential hiding place for them.
- New wooden baskets were fastened from the roof of the enclosure into the water. These provide basking and hiding places for the turtles.
- Sand is one of the necessary enrichments for riverine turtles. To mimic the natural environment, it is necessary to enrich the enclosure with sand. Therefore, fresh sand has been added to enclosures.



Feeding enrichment

3.2 Daily Management and Maintenance

3.2.1 Sarnath Turtle Rescue and Rehabilitation Centre

At the turtle rescue and rehabilitation centre in Sarnath, daily activities are meticulously planned to ensure the welfare of the resident turtles. These activities include regular cleaning of the three ponds, involving water changes, algae removal, and sweeping to maintain a clean and conducive environment for the turtles. Each day, the turtles are fed at a specific time under the guidance of veterinary doctors. To support their overall health, the staff implements proper enclosure enrichment methods.

A crucial aspect of the centre's work involves morphometric assessments, focusing on *Batagur kachuga*, *Batagur dhongoka* (for the years 2023 and 2024), and *Nilssonina hurum* (for the 2023 batch). This detailed assessment, conducted between the 1st and 5th of each month, starts with careful algae removal and thorough cleaning of each turtle. Measurements taken include carapace length and width, plastron length, weight, and a photograph captured on graph paper. This systematic approach to morphometry allows the centre to monitor the physical characteristics of the turtles, thereby contributing to their overall health and well-being.

3.2.2 Barhi Turtle Rescue and Rehabilitation Centre

At the Barhi Turtle Rescue and Rehabilitation Centre, specific practices are followed to provide an enriched habitat and maintain a clean environment for both resident and rescued turtles. The turtles receive a proper diet daily, followed by routine pond cleaning, removal of leftover food, and regular water changes to ensure optimal water quality. Since water quality is critical for housing turtles in captivity, on-site personnel have been instructed to change 20% of the pond water daily. Additionally, full pond cleanings are carried out every 10 days to maintain a healthy aquatic environment.

Morphometric assessments at the Barhi Centre focus on *Batagur kachuga* and *Batagur dhongoka* and follow the same systematic approach as in Sarnath. Conducted between the 1st and 5th of each month, these assessments begin with algae removal and thorough cleaning of each turtle. The recorded measurements include carapace length and width, plastron length, head width, body weight, and a photograph taken on graph paper. This process helps monitor the turtles' physical development and overall well-being.

For captive chelonians, the ideal diet should closely resemble their natural food sources and include a variety

of options. Feeding charts were prepared based on the number and weight of the turtles, explained to the centre staff, and adjusted according to species, life history stage, and seasonal changes. The diet for *Batagur dhongoka* and *Batagur kachuga* includes a combination of seasonal vegetables, fruits, and commercial turtle feed, scheduled on alternating days. For rescued turtles (*Lissemys punctata*), the proportion of carnivorous food, primarily chicken meat has been provided.

3.3 Health Care and Management of Aquatic Species

3.3.1 Sarnath Turtle Rescue and Rehabilitation Centre

One of the primary objectives of this component is to treat and maintain the health of the animals at the rescue centre. When rescued turtles are brought in, their health conditions are assessed through triage. The rescued animals are categorized as either live or dead (if any), with deceased individuals undergoing post-mortem examination to determine the probable cause of death.

Live turtles undergo a thorough physical examination, and the treatment plan for injured individuals is determined based on the depth and severity of their injuries. Commonly encountered injuries include fractured shells, avulsion fractures, fractured toes, puncture wounds on various body parts, septic wounds, and more.

A necropsy was conducted on a rescued *Nilssonia gangetica* at the Sarnath Turtle Rescue and Rehabilitation Centre, revealing that the probable cause of death was septicemia. This resulted from deep perforated wounds on the lateral body, along with lacerated, perforated, and fractured wounds on all limbs. The necropsy also indicated prolonged starvation, as evidenced by an empty gastrointestinal tract and the presence of mucus, which may have contributed to compromised immunity.

Health assessments of in-house turtles are conducted monthly alongside routine morphometric analysis. Any individual suspected of infection is isolated and provided symptomatic treatment. In addition to these monthly check-ups, daily observations are carried out to monitor for any abnormal behaviour. Turtles displaying unusual behaviour or symptoms are immediately isolated and treated accordingly.

During winter, turtles often experience respiratory distress and hypovitaminosis, with symptoms including conjunctivitis, inflamed eyelids, nasal discharge, and nasal blockage. Affected individuals are treated symptomatically until recovery. Among the *Nilssonia gangetica* of the 2023 batch, some exhibited decaying lesions on the plastron, the posterior end of the eye orbit, and limbs. These lesions indicated a mixed infection and were treated accordingly, leading to recovery.



First aid for the confiscated turtle

3.3.2 Barhi Turtle Rescue and Rehabilitation Centre

At the Barhi Turtle Rescue and Rehabilitation Centre, juvenile turtles of three-striped roofed turtle (*Batagur dhongoka*), red-crowned roofed turtle (*Batagur kachuga*), and Indian flapshell turtle (*Lissemys punctata*) from the 2023 batch were routinely examined for any abnormalities. Their health and body condition scores were assessed, with healthy individuals released into the pond, while sick turtles were isolated for monitoring and treatment.

To ensure their overall well-being, the turtles were provided with suitable habitats and balanced diets. Their growth was monitored through monthly morphometric analysis, which included body weight measurements. Juvenile turtles require a protein- and calcium-rich diet for proper shell development and overall growth. At the centre, they were fed commercial pellets, seasonal vegetables, a mixed diet, occasional live or dead fish, and dried super worms to meet their nutritional requirements.

To encourage natural behaviours and reduce stress, environmental enrichment was introduced, including sieved sand, and wooden and bamboo platforms for swimming, basking, and exploration. The turtles' behaviour, eating habits, and general health were closely monitored, and detailed records of treatments, observations, and any changes in condition were maintained.

A necropsy was conducted on five deceased juveniles *Batagur dhongoka* at the Barhi Turtle Centre in Bhind. No external signs of injury or disease were observed, but the carcasses were emaciated and dehydrated. Internal examinations revealed generalized infection, fat degeneration, congestion, and enteritis in some individuals. Secondary bacterial infections in the gastrointestinal tract were suspected, possibly resulting from metabolic disturbances.

3.3.3 Gharial Eco-Park, Deori, Morena (M.P.)

At Gharial Eco-Park, Deori, the health and body condition of turtles and gharial hatchlings and juveniles were assessed. Injured and dehydrated individuals were treated with antiseptic dressing (ASD) using a 10% Betadine solution and Neosporin powder. To reduce dehydration, turtles were kept in a pond maintained at an ambient water temperature. Environmental enrichment, including sieved sand, wooden, and bamboo platforms, was set up to encourage natural behaviours such as swimming, basking and exploration, helping them overcome stress. Their behaviour, eating habits, and overall health were closely monitored. Detailed records of treatments, observations, and any changes in condition were maintained.



Monthly morphometry

Necropsy examinations were conducted on an adult *Batagur kachuga* and 101 *Gavialis gangeticus* hatchlings at the Gharial Eco-Park. The carcasses showed no external signs of injury or disease. However, congestion was observed in the lungs, liver, and heart. Mucus was present in the intestines, and hypertrophy of the gall bladder indicated starvation in turtles. In gharial hatchlings, incompletely absorbed yolk was found attached to the stomach and intestines. Undigested food was present in the stomach, along with enteritis and secondary bacterial infections in the gastrointestinal tract, likely caused by unabsorbed yolk sacs and metabolic disturbances.

3.4 Temperature Maintenance (wintering)

3.4.1 Sarnath Turtle Rescue and Rehabilitation Centre

Optimal temperature maintenance in captivity posed a challenge. During winter, temperatures in the Sarnath area dropped as low as 4-10°C, while in summer, they soared to highs of 40-48°C. To combat the winter chill, we insulated the entire enclosures with thick transparent plastic sheets and installed heating lights to maintain an ambient temperature of around 29-30°C. In summer, we employed bamboo thatch, aquatic macrophytes, and shrubs to shield the turtles from excessive heat. Additionally, we partially covered the enclosure roofs with green netting to mitigate direct sunlight. Twice daily, we changed the water in each pond with submersible pump water and utilized water filters to cool it down.

3.4.2 Barhi Turtle Rescue and Rehabilitation Centre

Optimal temperature maintenance in captivity posed a challenge. During winter, temperatures in the Barhi area dropped as low as 4-10°C, while in summer, they soared to highs of 40-48°C. To combat the winter chill, we

insulated the entire enclosures with thick transparent plastic sheets and installed heating lights to maintain an ambient temperature of around 29-30°C. In summer, we employed bamboo thatch, aquatic macrophytes, and shrubs to shield the turtles from excessive heat. Additionally, we partially covered the enclosure roofs with green netting to mitigate direct sunlight. Twice daily, we changed the water in each pond with submersible pump water and utilized water filters to cool it down.



Environmental enrichment

3.5 Rescue and Rehabilitation of Turtles

Sarnath turtle rescue and rehabilitation centre in the Varanasi Circle, is an important centre. Frequent cases of poaching and confiscation occur here. Many of the rescued turtles are handed over to this centre for rehabilitation. The rescue events that occurred in the last six months are as follows:

- On 01 April 2024, the Railway Police Force (RPF) and Forest Department successfully rescued 3 individuals of *Nilssonina gangetica* from Pandit Deen Dayal Upadhyaya Junction and handed them over to the Sarnath Rescue Centre.
- On 28 July 2024, the Varanasi Development Authority (VDA) and Forest Department successfully rescued 1 *Geoclemys hamiltonii* from Banaras Kothi and handed it them to Sarnath Rescue Centre.
- On 4 August 2024, the RPF and Forest Department successfully rescued 15 turtles, including 14 *Lissemys punctata* and 1 *Nilssonina gangetica*, from Pandit Deen Dayal Upadhyaya Junction and handed them over to the Sarnath Rescue Centre.
- On 24 August 2024, the Intelligence Bureau (IB) and Forest Department successfully rescued 40 turtles, including 35 *Batagur kachuga* and 5 *Batagur dhongoka*, from Pandit Deen Dayal Upadhyaya

Junction and transferred them to the Sarnath Rescue Centre.

- On 15 September 2024, the RPF and Forest Department successfully rescued 18 *Lissemys punctata* from Pandit Deen Dayal Upadhyaya Junction and handed them over to the Sarnath Rescue Centre.
- On 10 November 2024, the Government Railway Police (GRP) and Forest Department successfully rescued 5 *Nilssonina gangetica* from Pandit Deen Dayal Upadhyaya Junction and transferred them to the Sarnath Rescue Centre.
- On 10 December 2024, the RPF and Forest Department successfully rescued 75 *Lissemys punctata* from Pandit Deen Dayal Upadhyaya Junction and handed them over to the Sarnath Rescue Centre.
- On 14 January 2025, the RPF and Forest Department successfully rescued 30 *Lissemys punctata* from Pandit Deen Dayal Upadhyaya Junction and transferred them to the Sarnath Rescue Center.
- On 22 March 2025, the RPF and Forest Department successfully rescued 35 *Lissemys punctata* from Pandit Deen Dayal Upadhyaya Junction and transferred them to the Sarnath Rescue Center.



Environmental enrichment

3.6 Egg Rescue, Hatching Management and Post-Hatching Care

Rescue and rehabilitation of aquatic species forms the backbone of the successful species restoration and assisted colonization plan. Thus, egg rescue, hatchling management and post hatching care are crucial steps. From the Sarnath Centre, we carried out assisted colonization for *Batagur kachuga* and *Batagur dhongoka*. Details of which are as follows:

- **Egg Collection and Incubation:** The eggs of *Batagur dhongoka* and *Batagur kachuga* were collected from wild nests and confiscation cases in collaboration with local communities and forest departments. These eggs were carefully transported to the Rescue and Rehabilitation Centre for incubation.
- **Incubation Conditions:** The eggs were placed in artificial incubators set to replicate the natural incubation conditions required by each species. Factors such as temperature, humidity, and incubation duration were monitored and adjusted accordingly.



Ex-situ incubation of rescued eggs

- **Hatchling Management:** Upon hatching, the newly emerged hatchlings were closely monitored and provided with appropriate care to ensure their survival and well-being. This included monitoring their behaviour, feeding patterns, and health status.
- **Post-Hatchling Care:** After hatching, the post-hatchlings were placed in suitable enclosures with optimal environmental conditions, including temperature, humidity, lighting, and access to water and basking areas. Their diet was carefully planned and adjusted to meet their specific nutritional requirements.

Outcome

- The egg rescue efforts resulted in the successful hatching of over 742 animals, including 731 *Batagur dhongoka*, and 11 *Batagur kachuga* hatchlings.
- Through close monitoring and appropriate care, the hatchlings exhibited healthy growth and survival rates, contributing to the population recovery of these endangered turtle species.
- The post-hatchling diets were carefully planned and adjusted to meet the specific nutritional needs of each species. Regular monitoring ensured optimal growth and development.
- The enclosures provided suitable environmental conditions, including temperature, humidity, lighting, and access to water and basking areas, promoting the overall well-being and natural behaviour of the post-hatchlings.

The successful egg rescue, hatchling management, and post-hatchling care efforts at the Rescue and Rehabilitation Centre in Sarnath have contributed significantly to the conservation and population recovery of *Batagur dhongoka* and *Batagur kachuga*. Through careful incubation, appropriate care, and optimal environmental conditions, 742 hatchlings have been nurtured to support their growth, survival, and eventual



release into the wild. Continued monitoring, research, and public awareness initiatives will contribute to the long-term conservation of these endangered turtle species.

3.7 Updating of Stocklist of Turtles

3.7.1 Sarnath Turtle Rescue and Rehabilitation Centre

A total of 1,463 turtles reside at the Sarnath Turtle Rescue and Rehabilitation Center in Varanasi, including 1,165 individuals of *Batagur dhongoka*, 133 individuals of

Batagur kachuga, 57 of *Nilssonina gangetica*, 7 of *Lissemys punctata*, 1 of *Geoclemys hamiltonii*. Of these, *B. dhongoka*, *B. kachuga* and *N. gangetica* individuals were hatched at the centre.

3.7.2 Stock list of turtles at Barhi Turtle Rescue and Rehabilitation Centre

A total of 160 turtles reside at the Barhi Turtle Rescue and Rehabilitation Center, including two in-house species: *Batagur dhongoka* (101 individuals) and *Batagur kachuga* (50 individuals), as well as one rescued species of *Lissemys punctata*.



Hatching management

3.8 Release of turtles

On 2 April 2024, a release operation took place at the Turtle Wildlife Sanctuary in Ramnagar, Uttar Pradesh, with the Ramnagar Forest Department and the Wildlife Institute of India (WII) Rescue and Rehabilitation team. The event began with a briefing on turtle conservation and release procedures. Before the release, turtles underwent health assessments and necessary treatments. The release site was chosen for its suitable habitat, water quality, and food availability. Turtles were transported safely and observed post-release to ensure successful adaptation, with ongoing monitoring to evaluate their survival.

A total of 380 turtles, including 276 *Batagur dhongoka* (hatched at the centre), 101 *Lissemys punctata*, and 3 *Nilssonina gangetica*, were successfully released. The release aimed to restore these endangered turtles to their natural habitat and contribute to their conservation and population recovery.



Release of turtles at the Turtle Wildlife Sanctuary, Uttar Pradesh

4. ECO-TOXICOLOGICAL ASSESSMENT

Evaluating Pollutants and Risks to Biodiversity

A survey was conducted to collect eco-toxicological samples from the Ganga River and its tributaries, between April and December 2024. These surveys focused on investigating the pollution dynamics of emerging and legacy pollutants; while assessing the risks they pose to the biodiversity of the Ganga River Basin.

A total of 133 sampling sites along Ganga (43), Yamuna (23), Gomti (14), Ghaghra (10), Gandak (5), Kosi (5), Son (9), Chambal (11), and Ramganga (13) were surveyed. Additionally, four wetlands, namely Haiderpur, Gogabeel, Kabartal and Udhwa were also surveyed. Surface water, sediment and biota samples were

collected from the ecotoxicological assessment, with water quality parameters quantified on-site. Additionally, the survey for microplastic assessment was initiated in February 2025, with sample collection select rivers still ongoing. The analysis and quantification of target analytes are currently in progress.

Two reports assessing pollution levels and associated threats in select rivers of the Ganga River Basin, specifically within the states of Uttar Pradesh and Bihar, have already been submitted. Additionally, two scientific publications on the dietary exposure risk of emerging and legacy contaminants to the Gangetic dolphin have been published in peer-reviewed journals. These studies are the first to quantify the dietary exposure risk of contaminants for the Gangetic dolphin, marking a pioneering effort for any riverine cetacean species.



Eco-toxicological sampling in the Ganga River at Kanpur, Uttar Pradesh



COMPONENT 02



CAPACITY BUILDING OF THE FOREST DEPARTMENT AND OTHER STAKEHOLDERS IN MANAGING AQUATIC AND WETLAND RESOURCES

1. SPEARHEAD TRAINING

Multiple spearhead trainings were conducted to enhance the knowledge and skills of key stakeholders involved in river conservation. These trainings focused on various themes, including sustainable fisheries management, integrating river conservation into education, and handling aquatic species in distress. Participants included officials from the fisheries and forest departments, university professors, teacher trainees and zoo keepers equipping them with practical expertise to contribute effectively to freshwater biodiversity conservation. Each training combined theoretical discussions with hands-on activities and field-based learning to strengthen technical understanding and implementation capacity.

Between April 2024 and March 2025, four national-level and one state-level trainings were conducted under the Spearhead Training Initiative. Through these efforts, a total of 348 participants were trained, creating a well-informed network dedicated to preserving the Ganga River ecosystem (Table 1). The initiative not only built individual capacities but also encouraged collaboration among different sectors, ensuring a more comprehensive approach to aquatic wildlife conservation.

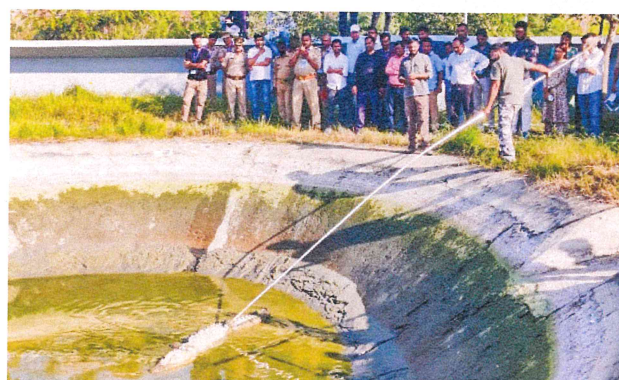
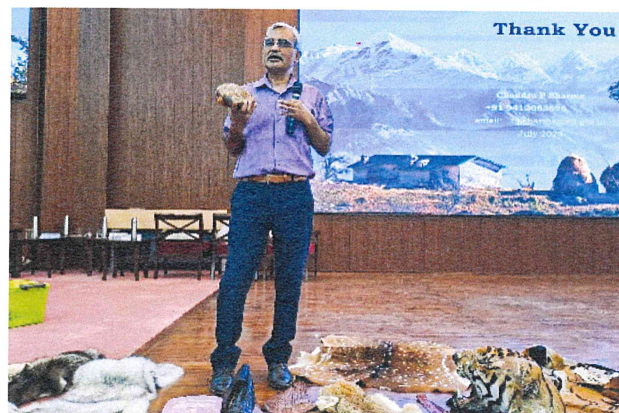
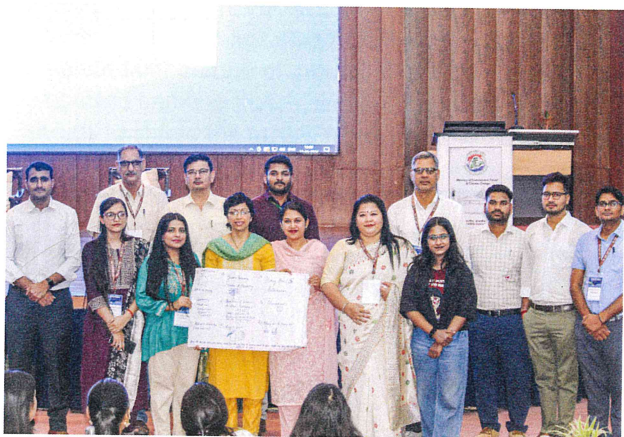


Table 1: Spearhead trainings conducted between April 2024 and March 2025

Training	Location	No. of participants
National-Level Trainings		
'Harmonizing Sustainable Fisheries for Freshwater Biodiversity Conservation in Ganga River Basin' for Fisheries Department	Wildlife Institute of India, Dehradun	39
'Integrated River Conservation into Education Programme' for teachers	Wildlife Institute of India, Dehradun	121
'Handling of Aquatic Species in Distress' for Veterinarians, Veterinary College students, Zoo keepers and Forest Department	Shaheed Ashfaq Ullah Khan Prani Udyan (Gorakhpur Zoo)	64
'Conservation of Macro Fauna of Riverine Ecosystem' for University Professors	Wildlife Institute of India, Dehradun	52
State Level Training		
'Conserving Aquatic Wildlife of Ganga River' Of Uttarakhand, Uttar Pradesh and Himachal Pradesh for Teacher Trainees	Wildlife Institute of India, Dehradun	72
Total		348



National Level Training Workshop for School Teachers



National Level Training Workshop at Shaheed Ashfaq Ullah Khan Prani Udyan (Gorakhpur Zoo), Uttar Pradesh



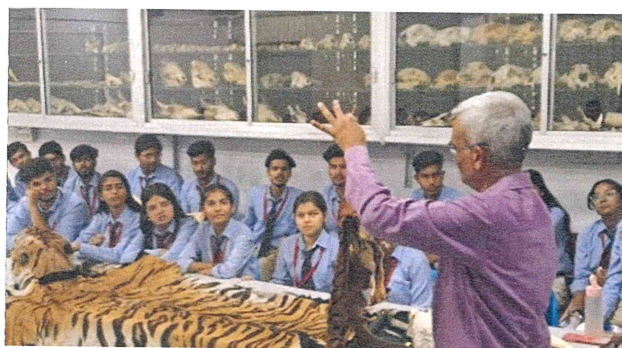
Teachers on Integrated River Conservation into Education Programme

2. TRAINING WITH OTHER STAKEHOLDERS

Multiple capacity-building trainings were conducted for diverse stakeholder groups, including zookeepers, forest staff, postgraduate students, and visually impaired trainees. Total six training workshops were conducted between April and December 2024, with 1,569 participants (Table 2). These trainings focused on key aspects of river conservation, biodiversity, and rescue and handling of aquatic species, aiming to enhance knowledge, practical skills, and inclusive participation in conservation efforts.

Table 2: Capacity-building training carried out for stakeholders between April and December 2024

Training	Location	No. of participants
'Ganga Biodiversity Conservation' was organized for youths	Wildlife Institute of India, Dehradun	56
'Ganga Biodiversity Conservation' was organized for the Zoo Keepers and Frontline Forest Staff	G. B. Pant High Altitude Zoo, Nainital	52
'Rescue and handling of macro aqua-fauna in distress' for zoo keepers and frontline forest staff	Shri Renuka Ji Mini Zoo, Sirmour, Himachal Pradesh	37
'Ganga biodiversity and wetland conservation' for youths	Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur, Uttar Pradesh	367
'Conservation of Ganga River and its macro aquatic species' for visually impaired trainees	Wildlife Institute of India, Dehradun	37
'Ganga Biodiversity Conservation' was organized for NSS volunteers	Mahatma Jyotiba Phule Rohilkhand University, Bareilly	206
Fundamental aspects of turtle biology, handling and significance	Turtle Rescue and Rehabilitation Centre, Sarnath	814
Total		1,569



Sensitization workshop for Quantum University Students



Onsite training workshop at Renukaji Zoo, Sirmour, Himachal Pradesh



National level training workshop for the school teachers

COMPONENT 03



**DEVELOP COMMUNITY BASED AQUATIC SPECIES
CONSERVATION AND OUTREACH PROGRAMMES FOR THE
GANGA RIVER BASIN**

1. CONSERVATION THROUGH A GROWING GANGA PRAHARI NETWORK

A total of 5,972 Ganga Praharis were registered, of which 3,945 are female and 2,027 are male. 136 Ganga Praharis (111 females and 25 males) were inducted to the cadre between April 2024 and March 2025, from various regions along the Ganga River and its tributaries, including Alaknanda, Ghaghra, Hooghly, Mahananda, Ramganga, Rapti, Sarayu, Sharda, Son, Noon and Yamuna (Figure 14).



Cleanliness drive along the Ghat

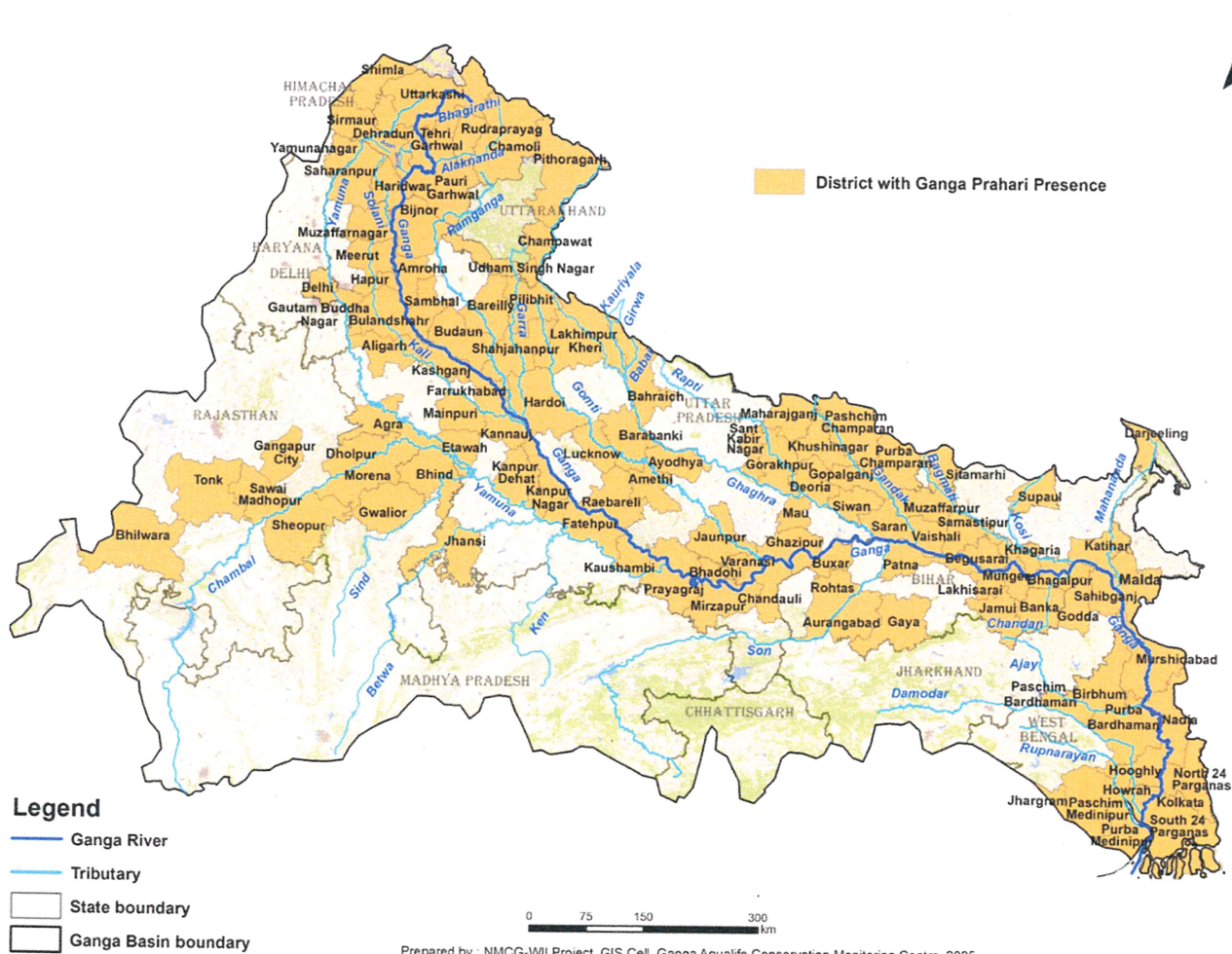


Figure 14: Distribution of Ganga Praharis in Ganga River Basin

2. EMPOWERING GANGA BASIN COMMUNITIES

A cumulative total of 1,391 activities, encompassing awareness programmes, cleanliness drives, plantation initiatives, sensitisation workshops, mobilisation, orientation workshops, consultative meetings, livelihood training sessions, cultural activities, participatory mapping, and ecological surveys were diligently carried out across 56 districts of seven states including Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Himachal Pradesh, and Madhya Pradesh across the Ganga River basin. Approximately, 43,330 participants, predominantly comprised of different stakeholder categories, including local community representatives, Ganga Praharis, Forest Department officials, district administration officials, NGOs and other line agencies, participated in these events (Table 3).



Meeting with local community for livelihood activities

Table 3: Activities conducted from April 2024 to March 2025

Activities	Type of meetings	No. of participants
Awareness and sensitization programme	386	18,628
Cleanliness drives	64	2,339
Consultative meetings	492	5,710
Livelihood activities	142	2,930
Livelihood training	27	1,037
Natural farming training	4	116
Focus group discussion	28	409
Plantation drive	34	939
Socio-economic survey	102	1,195
Special occasion and days celebration	83	8,712
Orientation and training workshops	3	194
Others	26	1,121
Total	1,391	43,330

3. LIVELIHOOD TRAINING AND SKILL DEVELOPMENT

Twenty-nine distinct livelihood training programmes were initiated in the Ganga River basin, each functioning as a specialized platform for skill development. Across these training sessions conducted at diverse locations, a cumulative total of 711 participants underwent comprehensive training in various fields, including bag making, basket weaving, food processing, incense stick and candle making and sewing and stitching (Table 4). Furthermore, Ganga Prahari's active participation in Jalaj initiatives was pivotal in establishing additional opportunities geared towards cultivating self-sufficiency and independence, aligning with the Arth Ganga initiative.

Table 4: Livelihood skill development trainings

Training	No. of trainings	No. of participants
Bag making	3	38
Basket weaving	2	34
Basket weaving & food processing	1	8
Bird guide	1	17
Electrician	1	10
Food processing	1	27
Health and wellness	2	53
Incense stick & candle making	1	10
Sewing and stitching	17	514
Total	29	711

From April 2024 to March 2025, Ganga Praharis, who underwent training, conducted a total of 417 activities, with 275 categorized as input activities and 142 as output activities (Table 5). These activities encompassed initiatives such as awareness and cleanliness drives, tree plantation, livelihood development, assistance in ecological monitoring and ecological surveys, microplan data collection and rescue and rehabilitation.

Table 5: Activities initiated by Ganga Praharis

Conservation activities	Input		Output	
	Activity	Participants	Activity	Participants
Awareness and sensitization	170	5,901	72	3,442
Cleanliness drive	36	381	8	183
Consultative meeting	2	28	1	12
Ecological monitoring	3	3	9	58
Participation in activities of other organizations			7	1,946
Plantation	13	225	8	82
Rescue and rehabilitation	20	177	20	158
Socio-economic survey	2	5		
Special day celebration	29	868	17	907
Total	275	7,588	142	6,788

4. PARTICIPATORY MAPPING OF ECOSYSTEM SERVICES

Participatory mapping of ecosystem services was carried out to assess the grassroots level perceived dependency on the ecosystem services provided by rivers such as the biotic and abiotic resources, cultural and religious services, and dependence of agriculture, livestock and other village-level economic constituents upon the riverine resources. Focus group discussions and ground truthing were conducted in five villages in the districts of Dehradun, Uttarkashi and Tehri Garhwal in Uttarakhand;

22 villages in Agra, Bhadohi, Chandauli, Etawah, Ghazipur, Jalaun, Jaunpur, Kanpur, Kaushambi, Mathura, Mirzapur, Prayagraj, Unnao and Varanasi in Uttar Pradesh; four villages in Chitthorgarh, Dhaulpur, Kota and Sawai Madhopur in Rajasthan; five in Bhind, Mandsaur, Morena and Sheopur in Madhya Pradesh; three villages in Faridabad and Sonapat in Haryana; and one village in North Delhi in National Capital Territory of Delhi. Overall, 40 villages were surveyed in six Ganga Basin states

across 28 districts, along Ganga (n=12), Yamuna (n=16), Gomti (n=2) and Chambal (n=10) rivers (Table 6). Participants were asked about the ecosystem services they receive from the riverine ecosystems in the vicinity of their village, identify the areas they receive these ecosystem services from on a Google Earth map of their village, the change in the supply of these ecosystem services over the years, and the consequent change in livelihood. Participants were also asked about any disservices provided by the river.

Table 6: Participatory mapping of ecosystem services carried out between April 2024 and March 2025.

State/Union Territory	Districts	No. of villages	Rivers
Uttarakhand	Dehradun, Uttarkashi, Tehri Garhwal	5	Yamuna
Uttar Pradesh	Agra, Bhadohi, Chandauli, Etawah, Ghazipur, Jalaun, Jaunpur, Kanpur, Kaushambi, Mathura, Mirzapur, Prayagraj, Unnao, Varanasi	22	Ganga, Yamuna, Gomti, Chambal
Rajasthan	Chitthorgarh, Dhaulpur, Kota, Sawai Madhopur	4	Chambal
Madhya Pradesh	Bhind, Mandsaur, Morena, Sheopur	5	Chambal
Haryana	Faridabad, Sonipat	3	Yamuna
National Capital Territory of Delhi	North Delhi	1	Yamuna

5. BAL GANGA PRAHARI PROGRAMME

5.1 Bal Ganga Prahari Corners (Ganga Aqualife Knowledge Centre)

Between April 2024 and March 2025, eight Bal Ganga Prahari Corners were successfully established, of which two were established in West Bengal, three were in Delhi and three in Uttarakhand (Table 7).



Awareness and sensitization programme organized for Bal Ganga Prahari

Table 7: Bal Ganga Prahari corner establishen in the GRB

Date of inauguration	Name of school
02-04-24	Government Inter College, Patel Nagar, Dehradun, Uttarakhand
29-05-24	Birla Vidya Niketan, Delhi
27-08-24	Rangabelia High School, Gosaba, South 24 Parganas, West Bengal
02-10-24	Julpia Andharmanik High School, South 24 Parganas, West Bengal
25-11-24	Mahavir Senior Model School, Ashok Vihar, New Delhi
27-11-24	Sarvodaya Bal Vidyalaya Zeenat Mahal, Kamla Market, New Delhi
10-12-24	Government Inter College, Nagni, Tehri Garhwal, Uttarakhand
26-03-25	Janki Children Academy, Dehradun, Uttarakhand

5.2 Bal Ganga Prahari Sensitization

Between April and December 2024, more than 15 schools were engaged in biodiversity conservation awareness programmes, reaching approximately 20,220 students. Through interactive workshops, educational games, puppet shows, hands-on activities and awareness campaigns, students gained insights into the ecological significance of the Ganga River and the need for its conservation.



Yoga activity conducted with Bal Ganga Prahari



Awareness and sensitization programmes organized for Bal Ganga Prahari

6. JALMALA SAMVAAD

Between April 2024 and March 2025, 18 Jalmala Samvaad were established in 17 districts of six states in the Ganga River Basin. A total of 13,984 students and 389 teachers were sensitized through these low cost interpretation corners (Table. 8).

Table 8: Location of newly established Jalmala samvaad

District and State	No. of students	No. of teachers
Dehradun, Uttarakhand	1,180	44
Haridwar, Uttarakhand	197	7
Tehri Garhwal, Uttarakhand	460	40
Rudraprayag, Uttarakhand	670	24
Nainital, Uttarakhand	250	10
Bulandshahr, Uttar Pradesh	1,700	27
Meerut, Uttar Pradesh	750	18
Kanpur, Uttar Pradesh	554	12
Bareilly, Uttar Pradesh	2,239	35
Kannauj, Uttar Pradesh	884	10
Varanasi, Uttar Pradesh	750	18
Bhopal, Madhya Pradesh	450	25
Morena, Madhya Pradesh	1,000	30
Samastipur, Bihar	840	24
Sahibganj, Jharkhand	560	25
Sirmour, Himachal Pradesh	1,500	40
Total	13,984	389



Awareness activities organized for Bal Ganga Prahari

7. AWARENESS WORKSHOP AND TRAINING FOR TEACHERS

A series of educational and awareness initiatives were conducted across multiple locations, engaging a total of 25,331 participants (Table 9). School awareness workshops and game-based activities were organized in several districts of Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Madhya Pradesh and Himachal Pradesh to enhance environmental understanding among students and teachers. Specialized teacher training sessions were conducted in Kanpur and Varanasi districts of Uttar Pradesh, Dehradun district of Uttarakhand and Sirmour district of Himachal Pradesh, to equip trainees and teachers with essential skills and knowledge. Additionally, awareness programmes, including *nukkad-natak* (street plays) and puppet shows, were held in one district of Uttarakhand and four districts of Uttar Pradesh, fostering community engagement and promoting conservation awareness. These initiatives contributed to strengthening environmental education and participation across diverse groups.

Table 9: Activities conducted with school children and number of participants

Activity	Participants	Location	No. of participants
School awareness workshops & game-based activities	Students and teachers	11 districts of Uttar Pradesh, 6 districts of Uttarakhand, 2 districts of Madhya Pradesh & 1 in district each of Bihar, Jharkhand & Himachal Pradesh	4,423
Teacher training session	Trainees and teachers	2 districts of Uttar Pradesh & 1 in district each of Uttarakhand & Himachal Pradesh	147
Awareness workshops, nukkad-natak & puppet shows	Students, teachers, zookeepers and community members	4 districts of Uttar Pradesh and 1 district of Uttarakhand	20,761
Total			25,331



Awareness activities and sensitization programme organized for Ganga Prahari and Bal Ganga Prahari

8. SPECIAL DAYS CELEBRATION WITH STAKEHOLDERS

A total of 13,058 school students, teachers, teacher trainees, tourists, forest department officials, and community members across 100 locations in Ganga River Basin were sensitized through awareness programmes held on significant occasions (Table 10).



Table 10: Special days celebrated across the Ganga River Basin

Special days/occasions	No. of locations	No. of participants
Children's Day	3	224
Dev Deepawali	1	4,635
National River Dolphin Day	1	26
World Wildlife Day	5	450
Earth Day	7	464
Endangered Species Day	1	75
World Environment Day	24	1,150
International Day for Biological Diversity	5	332
World Elephant Day	1	50
World Otter Day	2	85
National Fisheries Day	1	53
Ganga Utsav	2	780
Independence Day	9	785
National Wildlife Day	4	147
Republic Day	6	468
Teachers' Day	1	131
Vanmahotsav	1	17
World Wetland Day	5	219
International Women's Day	1	24
World Environment Health Day	1	169
World Migratory Bird day	1	69
World Turtle Day	2	245
International Day of Yoga	5	282
International Youth Day	1	188
World River Day	2	124
National Wildlife Week	7	1,766
World Water Day	1	100
Total	100	13,058

9. CONSERVATION CAMPAIGNS

Several awareness campaigns were conducted to promote river conservation, biodiversity protection, and sustainable practices among various stakeholders. These campaigns aimed to engage local communities, school children and government officials in meaningful actions for the preservation of the Ganga River and its ecosystem. Activities included river clean-up drives, biodiversity awareness rallies, plantation programmes, and interactive sessions on sustainable water usage (Table 11).

Table 11: Conservation campaigns carried out in Ganga River Basin between April 2024 and March 2025

Campaign	Location	No. of schools/ colleges/ university	No. of participants
Sensitization and Awareness Programme	National Book Trust, New Delhi	6	230
Origami Workshop	Wildlife Institute of India, Dehradun		20
Puppet Show	Wildlife Institute of India, Dehradun		80
Meeting Millets	Wildlife Institute of India, Dehradun		106
Har Ghar Tiranga	Uttarakhand, Uttar Pradesh, West Bengal, Himachal Pradesh	20	13,660
Swachhata Abhiyaan	Chhattisgarh, Haryana, West Bengal, Uttar Pradesh, Uttarakhand, Delhi, Bihar, Jharkhand, Himachal Pradesh, Rajasthan	36	5,892
Awareness and Sensitization during Mahakumbh Festival	Prayagraj, Uttar Pradesh	Multiple Schools	300
Awareness with NSS Volunteers	Chamba, Tehri Garhwal, Uttarakhand	1	105
Amrit Dhara Campaign	Himachal Pradesh, Uttarakhand, Haryana, Rajasthan, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Bihar, Jharkhand, West Bengal		2,563
Total			22,956



Swami Atmanand Govt. Excellence English Medium School, Chhattisgarh



Drawing Competition, Special Tree Learning School, Dehradun



Awareness Rally, Julpia Andharmanik High School West Bengal



Har Ghar Tiranga at R.N.I. Inter College



Awareness programme at Maha Kumbh 2025



Awareness programme at Maha Kumbh 2025



Awareness programme at Maha Kumbh 2025

10. EDUCATIONAL TOURS

A total of 52,699 school students, teachers, trainee teachers, were sensitized through educational tours at Ganga Darpan Interpretation Centre at Varanasi, Anubhuti Interpretation Centre at Kanpur in Uttar Pradesh and at Ganga Avlokan at Haridwar in Uttarakhand.



Educational tour at Ganga Darpan

11. DIGITAL OUTREACH

Comic strips for biodiversity awareness and conservation were posted through social media and 29 blogs were posted on "Ganga Darpan - an environmental blog."

Gangetic Dolphin – a comic series

Illustrations & text compilation – Kumari Babli

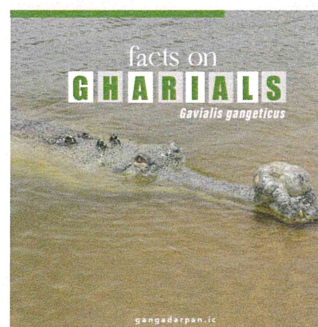


Welcome to our blog dedicated to biodiversity and conservation education! This is a part of National Mission for Clean Ganga and Wildlife Institute of India's (NMCW-WII) Ganga Biodiversity Conservation Initiative. Our goal is to provide a platform for sharing knowledge, experiences, best practices and stories in the field of river conservation, with a focus on education and outreach as well. In this blog, we will explore a wide range of topics related to biodiversity and conservation education, such as:

- The importance of riverine and basin biodiversity and the benefits it provides to humans and other species
- The threats to biodiversity and the causes of biodiversity loss
- The strategies and tools used in biodiversity conservation, protected areas, restoration, and

Gharial Chronicles: Facts About the Fish-Eating Crocodile

Designed by – Kumari Babli



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- The threats to biodiversity and the causes of biodiversity loss
- The strategies and tools used in biodiversity conservation, such as protected areas, restoration, and sustainable use

Ganga Darpan blogs

12. VISITOR FOOTFALL INSIGHTS

The interpretation centres established in the Ganga basin attract a large number of visitors. During the April 2024 to March 2025, on an average about 144 visitors per day visited the centres. Amongst the three centres, Anubhuti at Kanpur Zoological Park, Uttar Pradesh had the highest footfall (Table 12).

Table 12: Visitor footfall at Interpretation centres between April 2024 and March 2025

Interpretation centre	District	No. of visitors
Ganga Darpan	Varanasi	4,080
Anubhuti	Kanpur	38,755
Ganga Avlokan	Haridwar	9,864
		52,699

के नाम लगाने का किया आह्वान
 तीव्र वन्यजीव संस्थान के सौजन्य से मसकलैया पंचायत के सिला के प्रतिभागियों के साथ गंगा प्रहरियों ने पुराना पंचायत भवन परिसर में पौधरोपण किया। कार्यक्रम में एक पेड़ में के नाम लगाने की अपी के पर गंगा प्रहरी राजेश कुमार सिन्हा, कामदेव कुमार, ललन कुमार, पूनम देवी आदि मौजूद थे।

वन्यप्राणी सप्ताह के अंतर्गत आयोजित पेंटिंग प्रतियोगिता संपन्न

गरीबों का सहारा



कन्नौज। भारतीय वन्य जीव संस्थान देहरादून की जलज प्रियोजना सहायक रमा तिवारी ने नेतृत्व में कन्नौज जनपद की ग्राम पंचायत गंधमपुर के राजकीय अभिनव इंटर कॉलेज में पेंटिंग प्रतियोगिता का आयोजन किया गया। जिसमें पांच विद्यालयों के सौ छात्र-छात्राओं ने प्रतिभाग किया। जलज परियोजना सहायक रमा तिवारी ने बताया की जलज प्रियोजना के प्रोजेक्ट साइटस्ट सौरभ गवन के निर्देशन एवं प्रोजेक्ट एसोशियेट अंजना मार्गदर्शन में कन्नौज के के एन इंटर कॉलेज में वन्य जीवों के संरक्षण एवं जलीय जीवों के प्रति जन जागरूकता कार्यक्रमों का आयोजन दो अक्टूबर से आठ अक्टूबर के बीच वन्य प्राणी सप्ताह मनाया जाता है। जिसमें गंधमपुर के विद्यालयों के छात्र-छात्राओं ने जागरूक कि

तिवारी ने छात्र छात्राओं को जैव विविधता जागरूक करते हुए कहा की सिंगल यूज प्लास्टिक का उपयोग न करें। हुए कहा की प्रदूषण से बचाने हेतु लोगों को जागरूक पर्यावरण को प्रदूषण से बचाने हेतु लोगों को जागरूक करें, पेंटिंग प्रतियोगिता कराने का उद्देश्य ही है। पर्यावरण एवं जीव जंतुओं का संरक्षण करना। तथा उनके प्रति जागरूक करना इस अवसर पर विद्यालय के

गंगा की निर्मलता से घाट पर नजर आती है डाल्फिन : असीम अरुण

जार्स, कन्नौज : गंगा की शुद्धता, अविरलता और निर्मलता बनाए रखने के लिए हम सबको मिलकर कार्य करना है। गंगा के जीवों को किसी प्रकार का नुकसान न हो। गंगा की निर्मलता से ही जनपद के गंगा तट पर जीवन भी दिखना शुरू हो गई हैं। न, मां गंगा की निर्मलता के लिए और कार्य करना है। सोमवार को गंगा उत्सव व समाज अरुण ने

पकारों का कौशल वि प्रशिक्षण का शुभारंभ



ददाता लघु एवं ग्रेड रांची के शल उन्नयन शिल्पकारों को 25 दिवसीय का है। इसका को दक्षिण त सचिवालय में नवन कुमार एवं ब्रया नफीसा खातुन र किया। इस दौरान री मोहीबुर रहमान ने शिल्पकारों का एक सभा को मास्टर ट्रेनर दनों तक प्रशिक्षण दिया गया। पूरा होने के उपरांत का प्रशिक्षण का

जाएंगे। प्रशिक्षण के संपन्न के बाद रोजगार उपलब्ध करवाने हेतु स्मृति या क्लासटर डिप्लोमैट स्कम के साथ जोड़ दिया जाएगा। वहीं अंचलाधिकारी पवन कुमार ने सभी शिल्पकारों को प्रशिक्षण हनुमंद बनने को कहा। बनने से जिंदगी में कुछ तलाश ही लेंगे। जरूरी पुख्ता नौकरी ही कर

परिवार का भरण-पोषण कर रहा है। पंचायत की मुखिया ना खातून ने सभी शिल्पकारों के योजना की फायदा उठाने के प्रेरित किया। बताया कि यह प्र पंचायत के लिए व

१३७ गंगा टास्क के जवानों सं

स्वतंत्र चेतना वाराणसी। श्री कृष्ण वालिका र सरसील के प्रांगण में गंगा 137 गंगा टास्क फेस 39 राइफल के जवानों द्वारा

स्कूली छात्रों के बीच चित्रकला प्रतियोगिता

संवाद सहयोगी, जागरण तालझारी (साहिबगंज) : भारतीय वन्य जीव संस्थान देहरादून की ओर से मंगलवार को कन्हैयास्थान इस्कॉन मंदिर परिसर में चार स्कूल के करीब 76 छात्र-छात्राओं के बीच चित्रकला प्रतियोगिता का आयोजन किया गया है। इस प्रतियोगिता में उच्च विद्यालय महाराजपुर के 27, प्रस्तावित योगीचक जयरामपुर उच्च विद्यालय सरकंडा के 21, प्लस टू उच्च विद्यालय मंगलहाट के 13 तथा उत्कर्मित उच्च विद्यालय मसकलैया के 15 छात्र-छात्राओं ने भाग लिया है।



बताया गया कि प्रतियोगिता में शामिल प्रतिभागियों में से विजेता प्रतिभागी को आगामी 14 नवंबर को भारतीय वन्य जीव संस्थान देहरादून में पुरस्कृत किया जायेगा। मौके पर भारतीय वन्य जीव संस्थान के वरुण कुमार,

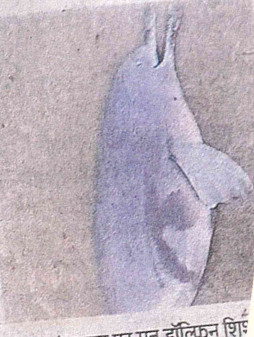
चित्रकला प्रतियोगिता में शामिल विभिन्न स्कूल के बच्चे जागरण सरकंडा स्कूल के प्रधानाचार्य तिवारी, सिंदू मंडल, कामदेव रुपेश चौरसिया, विजय गुप्ता, मंडल, दीपक मंडल सहित अन्य प्रीति कुमारी, निलेश कुमार लोग थे।

प्राप्त तीन कछुओं को उपायुक्त एवं वन अधिकारी के द्वारा गंगा में छोड़ा गया

निवार को वन विभाग ने जलीय जीवों के प्रफलता सूचना अधिकारी एफ व हयोग

पटना में गंगा किनारे मृत मिला डाल्फिन शिशु

संवाद सूत्र, जागरण, खानपुर (आजीपुर) : गंगा नदी में पटना गांव के किनारे मंगलवार की सुबह डाल्फिन शिशु का एक मृत शिशु मिला। शले चार साल से पटना में गंगा के आसपास सैकड़ों की संख्या डाल्फिन मछलियों दिखाई देती हैं। का शांत सुरम्य वातावरण शांति गंगा गाय डाल्फिन को बहुत है। इस जगह को डाल्फिन गण केंद्र बनाने के लिए वन गंगा सहित देहरादून की जलीय संरक्षण समिति भी कई बार दौरा से सुरक्षित एवं संरक्षित करने की कोशिश कर चुके हैं। जिला की घोर लापरवाही और की से यहां के जलीय डाल्फिन गंगा का जीवन खतरे में पड़ गया नवार की सुबह डाल्फिन शिशु मिलने के बाद वन विभाग के नहीं पहुंचे। नाविकों ने उसे धारा में प्रवाहित कर दिया। नाविकों का कहना है कि



पटना गंगा घाट पर मृत डाल्फिन शिशु इसके पूर्व भी एक डाल्फिन कुत्तों और जानवरों ने नष्ट था। औड़िहार के आशीष जागरण का कहना है कि वन विभाग जिला प्रशासन की लापरवाही डाल्फिन मछलियों की उ है। सैदपुर के वन रेंजर उपाध्याय ने बताया कि ये डाल्फिन मछली मिला। हम लोगों नाविकों ने उसे जल

जिला पर्यावरण समिति एवं जिला गंगा समिति के तत्वाधान में चलाया गया जन जागरूकता अभियान

मो मुनबबर ब्यूरो चीफ दैनिक अयोध्या टाइम्स कन्नौज कन्नौज। श्रावण मास के मेले के दौरान मेहदीघाट पर जिला पर्यावरण



समिति एवं जिला गंगा समिति, कन्नौज के संयुक्त तत्वाधान में जिला परियोजना अधिकारी के नेतृत्व में स्वच्छता हेतु जन जागरण अभियान चलाया गया जनपद कन्नौज में महादेवी घाट पर जिला परियोजना अधिकारी अजय त्रिपाठी के नेतृत्व में जन-जागरूकता कार्यक्रम का आयोजन किया गया। जिसमें उपस्थित प्रतिभागियों को पर्यावरण संरक्षण से सम्बन्धित पम्फलेट वितरित किये गये तथा घाट पर उपस्थित नाविकों, दुकानदारों तथा पुजारियों से आग्रह करते हुये स्नान करने वाले श्रद्धालुओं के द्वारा घाट पर कूड़ा-कचरा, कपड़ा, पॉलीथीन तथा पूजन सामग्री गंगा नदी में न डालने के लिये प्रेरित किया गया। परियोजना अधिकारी द्वारा बताया गया कि माँ गंगा हम सभी की पूजनीय है और हम सभी लोगों को मिलकर ही माँ गंगा को अविरल, निर्मल व स्वच्छ करना होगा। गंगा ग्राम के स्थानीय लोगों को घाट पर विशेष रूप से साफ-सफाई रखने हेतु आग्रह किया गया। कार्यक्रम में स्थानीय गंगा प्रहरी अनस खान तथा डब्ल्यू०आई०आई० के फील्ड असिस्टेंट शाबान खान, स्थानीय ग्रामीण रोहित, मोहित, प्रांशु माधव, नन्हे, मनोज, विनीत कश्यप आदि लोग उपस्थित रहे।

स्वच्छता अभियान चलाया गया



के निगम म.म.घाट गंगा घाट पर तो तरफ से गंगा घाट पर अभियान चलाया गया गंगा समिति के सदस्यों गंगा घाट से प्लास्टिक कचरा साथ-साथ गंगा घाट पर तीर्थ यात्रियों को जागरूक रहे।

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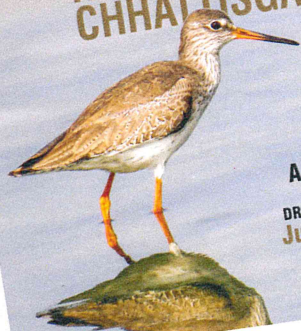
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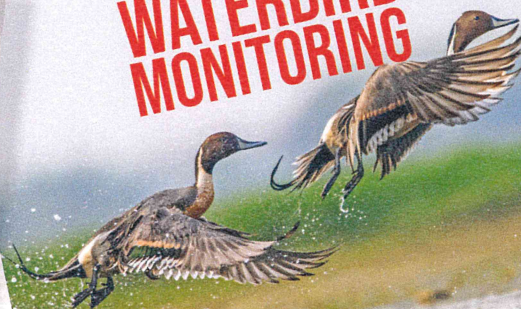
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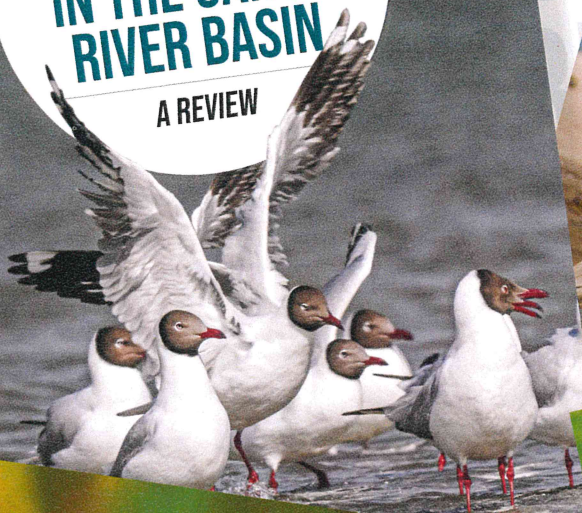
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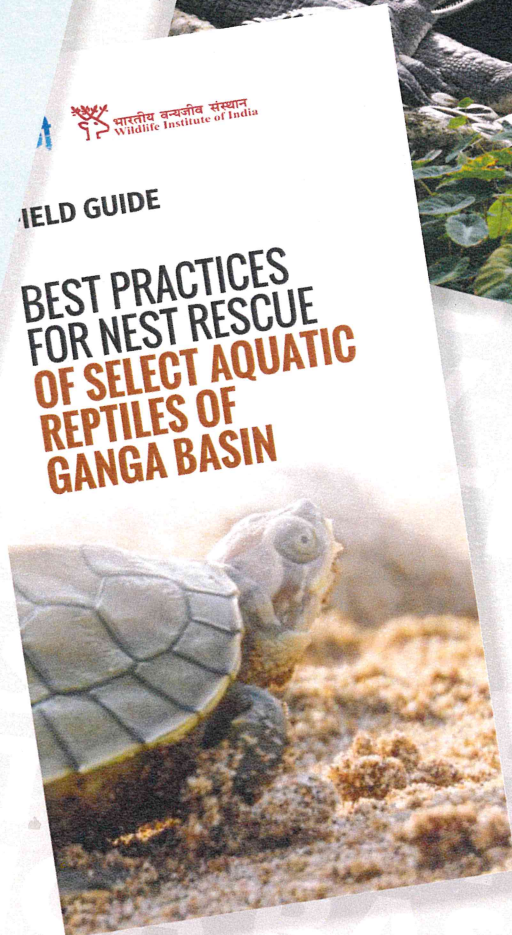
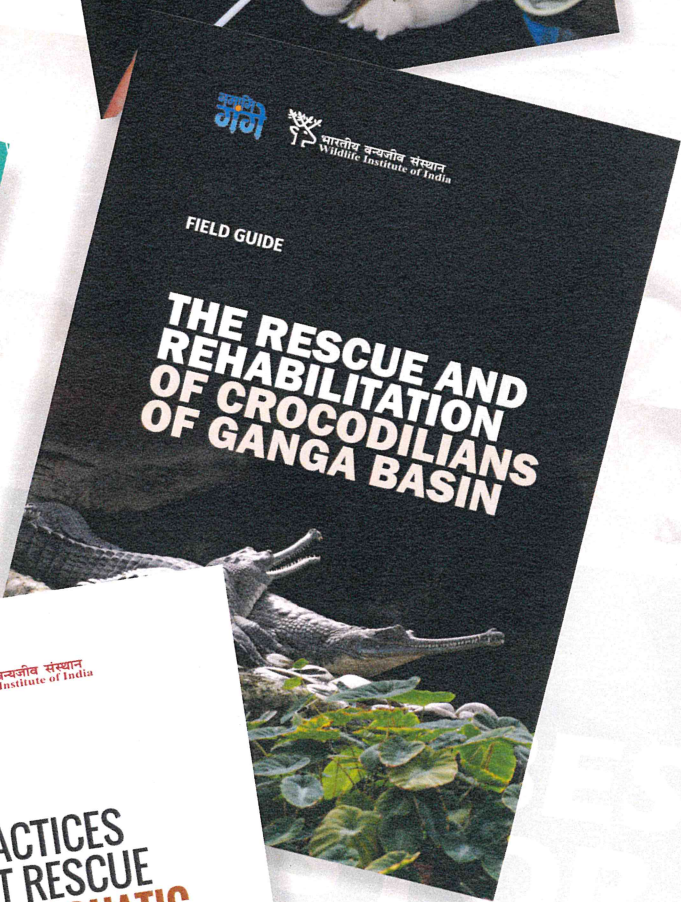
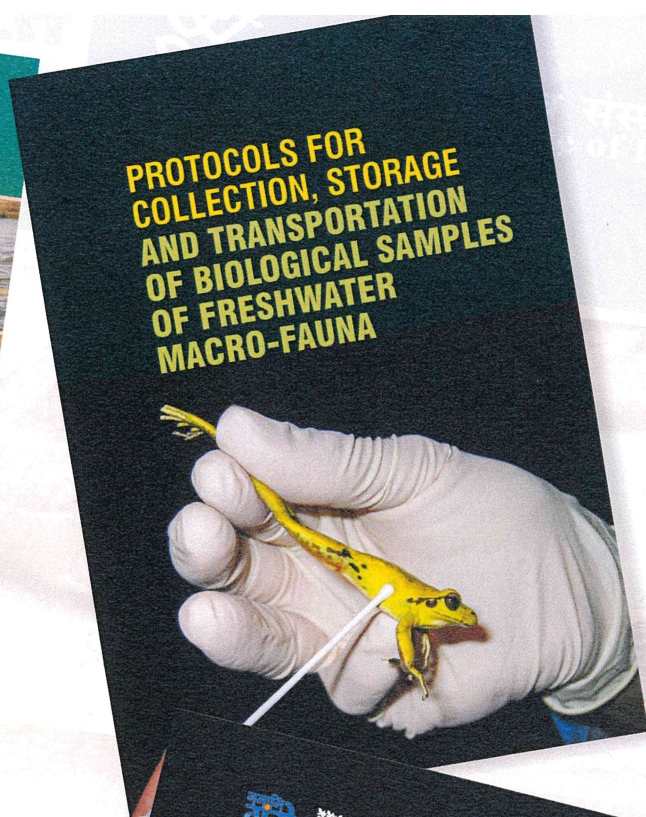
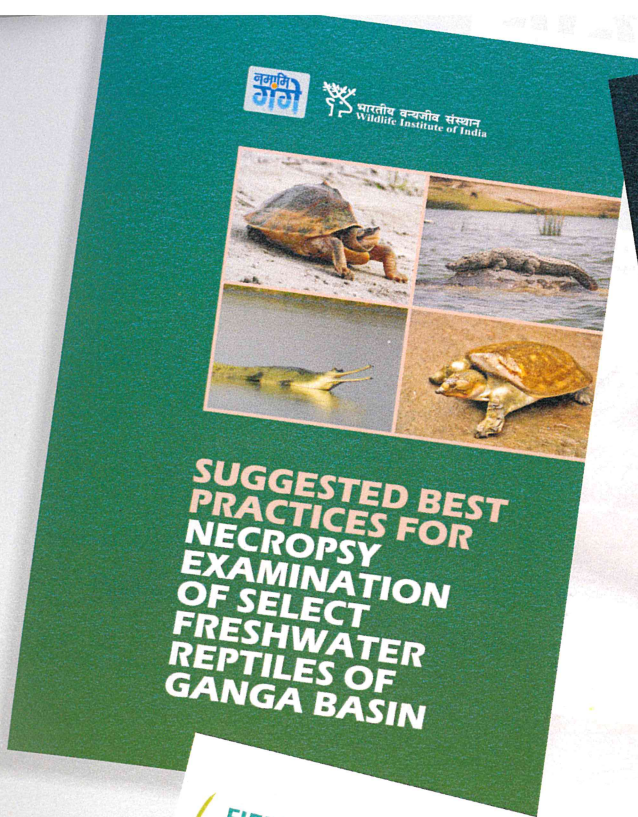


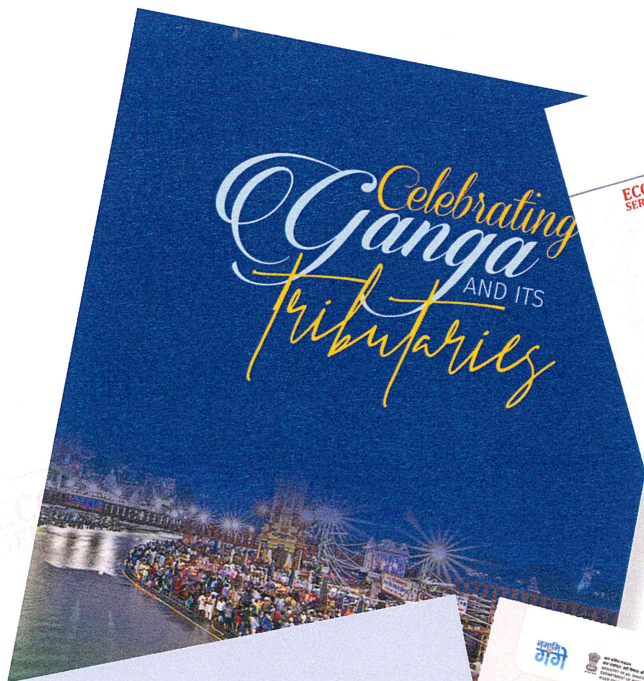
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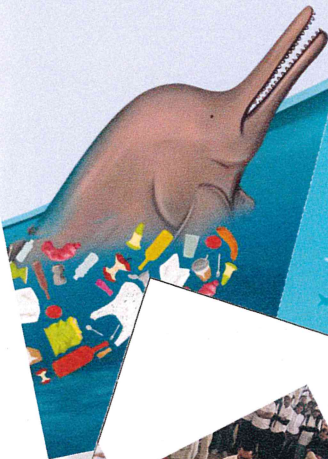
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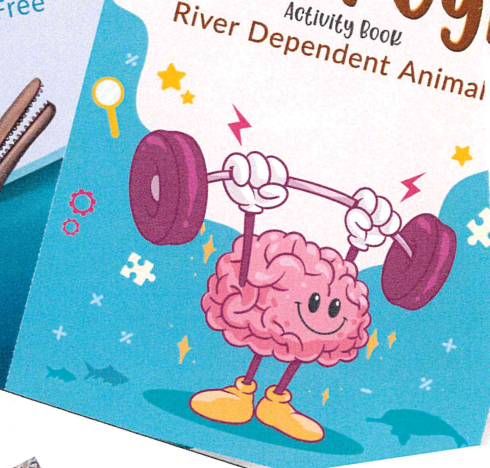


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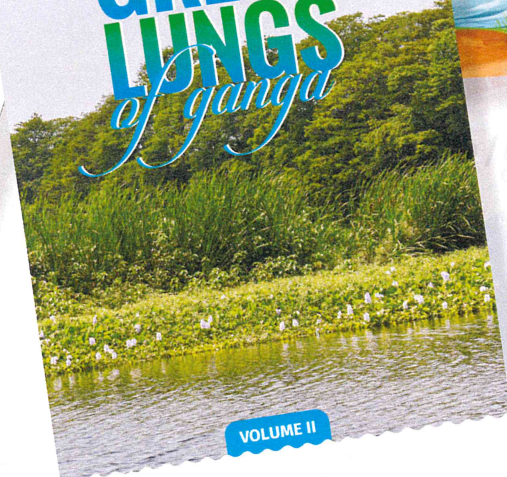
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