Agenda Item: SC. 2.5.

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

South Asia & Iran

INDIA

2025 marked a milestone for Indian crocodilian conservationists and biologists, celebrating 50 years of India's efforts to conserve its crocodilian species. Consequently, every Indian state, along with experienced and emerging crocodilian biologists, scientists, state forest department officials, and naturalists, commemorated the success of crocodilians and raised awareness about the threats facing all three Indian crocodilian species. The current status of crocodilians in India results from projects launched 50 years ago by the Indian Government with technical support from UNDP/FAO (1975) under the 'Grow, Headstart, Release and Restocking' program. Additional developments include the establishment of the 'Central Crocodile Breeding & Management Training Institute (CCBMTI)' in Hyderabad in 1978, for Capacity Building. In 1976, a crocodilian-related organization with similar goals was established with support from WWF, called the Madras Crocodile Bank Trust (MCBT), and the Center for Herpetology, aiming to conserve endangered crocodilian species and promote reptile and amphibian conservation in India.

Therefore, whatever we observe in the Indian landscape, especially the three Indian crocodilian species, are safe and protected, thanks to the efforts of pioneering institutions, projects, crocodilian biologists, their research teams, state forest departments, and their staff from the grassroots level to top government policymakers, and many unsung heroes who have finally accepted crocodilians in their waters. The current status and account of three crocodilian species in India are as follows, based on collaborative efforts by CSG members, various state governments and their forest departments, and numerous NGOs and NGIs.

Gharial (*Gavialis gangeticus*)

- Estimation of Wild Gharial Population: 3500+ animals of various sizes surviving in the Chambal, Katarniaghat, Beas, Hastinapur, Gandak, Corbett National Park, Ken and Son Rivers, with other populations distributed across the Ganges, Hugli, and Mahanadi.

- Captive Stock: Over 1000 sub-adult and adult animals (in 38 captive facilities: CZA, 31 March 2025, and various Gharial rearing centers in different states)

- Distribution: Across India, including Chambal, Son, Ken, Gandak, Geruwas, Kosi, Sarda, Ramganga, the main streams of the Ganga and Mahanadi Rivers

- Survey & Ongoing Activity

  Gharial Survey in Upper Ghaghra: A Gharial survey was conducted by Dr. Shailendra Singh of the Turtle Survival Alliance Foundation - India, Lucknow, UP, along with his research team in the upper Ghaghra River, covering a 110-km stretch up to Ayodhya. This is an important habitat for the Gharial, and more than 150 Gharials were observed, including 50 adults. The important finding was the recording of a Gharial nesting site in the Bahraich district. Also, the lower section (400 km+) has smaller populations, as confirmed by Dr. Tarun Nair (in personal communication), possibly due to high fishing pressure. However, it is estimated that there are more than 50 adults along that stretch. The Uttar Pradesh Forest Department has released over 800 Gharials in the upper reaches of the Ghaghra over the last 11 years (2014-2025). TSA Foundation-India assisted them with soft-release exercises in 2014 and 2015, and radio-tagged 10 juveniles. One of the animals released in 2014 was sighted near the Ghaghra-Ganga confluence post-monsoon that same year.

  The Geruwa-Ghaghra system has experienced an unprecedented decline in water levels in recent years, possibly due to an upstream dam in Nepal. Due to altered flow conditions, certain Gharial populations have shifted into both Katerniaghat (Geruwa) and the Ghaghra systems. The team members have been recording high levels of strandings of Gharials in canals, possibly due to the reduced population near the barrage gates, which are at the deepest points. To that end, Dr. Singh has initiated a community monitoring network to report on and rescue Gharials and other megafauna. Alongside Bahraich town, they have been conducting awareness and education programs along Shradha and the upper stretches of Ghaghra for Gharials and other aquatic animals.

Gharial Survey in Brahmaputra River: A Gharial survey was carried out by Dr. Shailendra Singh from the TSA Foundation - India, Lucknow, in collaboration with the Assam Forest Department and his research team over a 160-km stretch of the river from Kaliabhomora bridge to west Komolabari ghat. The detailed study information and results are available in CSG Newsletter 43(2): 25-27.

Gharial Survey in the Ganga Basin: A detailed study was conducted focusing on understanding population trends, habitat preferences, breeding patterns, and threats to the species by a research team of the Wildlife Institute of India (WII), in collaboration with the National Mission for Clean Ganga (NMCG), with financial help from the Ministry of Jal Shakti (MoJS). This study determined the population status of Gharial in the Ganga Basin. Field surveys were conducted in rivers that fall within the Gharial's historical and current ranges in the Basin. Boat-based visual encounter surveys were conducted between November 2020 and March 2023, covering 7680 km across 22 rivers in 7 states. The basin-wide population survey recorded 3037 Gharial individuals in 13 out of the 22 surveyed rivers. The Chambal River supports the largest population (n = 2097), followed by the Ghaghra River (n= 463) and the Girwa River (n= 158). The highest encounter rate observed in the Girwa River (mean ± SEM) was 7.9 ± 4.95, followed by the Chambal River (5.11 ± 0.51) and Kauriala River (1.8 ± 1.8). The lowest encounter rates were observed in the Kosi River (0.02 ± 0.02) and the Ganga River (0.02 ± 0.01). More detailed, state- and river-wise results are available in the reports (WII-GACMC 2025).

Ex-Situ Activities: The species is now being bred regularly in 7-8 zoos and other captive facilities in India. These captive-bred and reared Gharials are being released into the wild through reintroduction programs regulated by the Central Zoo Authority (CZA) of the Ministry of Environment and Forest, as part of the *ex-situ* and *in-situ* integrated conservation policy.

- Gharial Re-introduction Program in India

Prof. BC Choudhury participated in a consultation organized by the MoEFCC, Government of India, to help develop the proposal for the New Gharial Project, declared by the Prime Minister in March 2025. The proposal includes refocusing project activities to shift the Gharial from the Critically Endangered category to the Endangered category. This will involve revisiting all Gharial reintroduction sites in the Ganges, Mahanadi and Indus Rivers and expanding reintroduction of Gharial into the Brahmaputra River system. The new Gharial project activities would be coordinated by the Wildlife Institute of India, led by Dr. Bivas Pandav and Dr. Abhijit Das. Also, as part of the reintroduction program and future of species, a new conservation genetics study of the Gharial has been initiated by WWF India and scientists at the Wildlife Institute of India.

In February 2026, Prof. B.C. Choudhury took part in a discussion forum to form a Gharial conservation coalition involving various NGOs, including WWF India, Aranyak, and WTI, to advance the Gharial reintroduction in the Brahmaputra River in Assam. He also initiated dialogue with the Field Director of Kaziranga National Park, Assam, and visited a potential Gharial reintroduction site on the Brahmaputra River within the renowned Protected Area.

- Restocking Activities

The restocking and reintroduction programs are progressing well, and monitoring activities for the species continue at Hastinapur Wildlife Sanctuary (Uttar Pradesh), Beas Conservation Reserve (Punjab), and the Lower Ganga Basin, carried out by the relevant state forest departments with assistance from WWF-India under the supervision and guidance of Prof. B.C. Choudhury.

Hastinapur Wildlife Sanctuary, Uttar Pradesh: B.C. Choudhury continued supervising and spearheading the Gharial reintroduction and monitoring work of WWF India projects in Hastinapur Wildlife Sanctuary, involving the mainstream of the Ganges, and a report entitled "A decade of Gharial Reintroduction in State Animal Barasingha Sanctuary: Key Lessons and Way Forward" was published in June 2024.

Beas Conservation Reserve, Punjab**:** Monitoring of released Gharials in the reserve continued, with the latest survey completed in winter 2025. The survey showed that almost 33% of the released Gharials were directly sighted, and some individuals migrated into Pakistani territory within the Indus River basin. A further release of adult male Gharials into the Beas River in Punjab is under consideration.

Lower Ganges, West Bengal: WWF-India has expanded its Gharial conservation efforts into the lower Ganges in West Bengal and has completed a rapid survey of the species' occurrence. This was followed by the release of captive-reared gharials into the lower Ganges. The report on this is being provided separately by CSG member Mohd Shahnawaj.

Gandak Gharial Project, Bihar: The Gandak Gharial Project in Bihar, implemented by the Wildlife Trust of India and led by B.C. Choudhury as the Principal Investigator, has marked its 12th year of operation. The most recent survey, completed in February 2026, documented direct sightings of 433 Gharials and 12 Mugger crocodiles, indicating a healthy breeding adults 67 Gharials. To date, 53 Gharial nests have been successfully protected by the project, and over 800 hatchlings have been safely relocated from the nests to the river. An interpretation, incubation and rearing center for Gharials and other aquatic fauna is being planned at Valmiki Nagar, possibly with support from the Los Angeles Zoo.

Ganga Lower Basin Area: The Gharial reintroduction conservation program of WWF-India started in 2024. The program began with careful planning, including developing scientific protocols, consulting with communities, and selecting sites through a thorough process. During this time, ecological and social suitability assessments were jointly conducted by Mohd Shahnawaj and the West Bengal Forest Department. As part of this effort, a joint WBFD-WWF-India team surveyed 13 rivers (over approximately 674 km) in West Bengal to find suitable sites for Gharial reintroduction. Based on these assessments, the first reintroduction took place on 24 February 2024, with the release of 37 juvenile Gharials into a suitable section of the Ganga River in Murshidabad District.

Alongside these ecological efforts, community engagement has been a key part of the program from the beginning. Before and after the release, joint teams from the West Bengal Forest Directorate and WWF-India conducted extensive awareness and outreach activities in villages both upstream and downstream of the release sites. These efforts, through community meetings and open discussions, aimed to explain the goals of the reintroduction program, address concerns, and encourage local involvement.

Early challenges arose; in March 2024, three Gharials became entangled in ghost nets in the Ganga River. In response, efforts were made to remove these nets, and no further deaths have been reported since. The second phase occurred on 20 January 2026, involving the release of 10 captive-bred juvenile Gharials into the Fulahr River at Nakkati Bridge in Malda District. Overall, these efforts mark an important step towards restoring the species in the eastern part of its historical range and improving long-term conservation success in the lower Ganga basin.

Mahanadi Gharial Project, Odisha: Media reported that the Mahanadi Gharial project of the Odisha Forest Department, led by Shri Sudarshan Maharana, and assisted by a team of field researchers, has released 7 sub-adult and juvenile Gharials fitted with VHF and GPS tags into the Mahanadi River in Odisha's Satkosia Tiger Reserve. These releases took place during the winter of 2025-26, and a large-scale effort involving riparian villagers through education and awareness campaigns is in progress. Additionally, the research team continues to monitor the hatchlings from the 2025 nesting season in the wild using modern technologies.

- **Gharial Ecology Project (GEP): Updates from 2024-2026 (**Jailabdeen Ajjim, Gharial Ecology Project & Madras Crocodile Bank Trust).

Fast Track - Reimagining 'Head-Starting': GEP is now in its 18th year since a mass die-off in the National Chambal Sanctuary - the last and most critical stronghold of wild Gharials. Effective conservation efforts depend on detailed knowledge of how the target species lives in the wild. Since the 1980s, Gharial conservation has focused on traditional head-starting, such as egg collection, rearing young in captivity, and releasing juveniles at 2-4 years old. This method requires costly infrastructure and intensive management. Routine post-release monitoring was not conducted to assess survival rates. However, post-release tracking has revealed that these older, smaller, inexperienced captives have poor survival rates and short residency periods.

Meanwhile, field research shows that wild hatchlings begin feeding actively on live fish, leading to rapid growth in just 4-6 months to sizes comparable to those of 2-4-year-old captive juveniles at release. In the wild, hatchlings quickly become skilled at catching prey and avoiding predators. Taking an innovative, new approach, GEP launched FAST TRACK head-starting. In partnership with the Rajasthan Forest Department and supported by funding from the Astral Foundation, we developed new protocols for feeding live fish and maintaining warm conditions, which promote rapid growth. Once released at 4-6 months of age, FAST TRACK juveniles will be closely monitored for growth, residency, and survival in the wild. FAST TRACK head-starting offers a less costly, more efficient, and highly effective conservation strategy, grounded in GEP's field research. In short, our approach leverages conservation science - understanding gharial ecology and behavior - to guide and enhance conservation efforts.

River Watch & Local Community Engagement: GEP has focused on integrating traditional ecological knowledge with modern scientific methods. Since 2008, the GEP field team has monitored Gharials across the entire Chambal River. Key differences are now evident between the upper Chambal and the downstream sections of Dholpur. Compared to the downriver areas with more meanders and extensive sandbanks, the upper reaches are fast-flowing and rocky, with only pockets of sand. The upper section, which holds just a third of Chambal's Gharials, faces intense human pressures, including large-scale sand mining and illegal fishing. In response, we partnered with the

Madhya Pradesh Forest Department and the Astral Foundation to develop community-led monitoring and protection of the limited nesting sites. In a 14-km stretch, local community members are employed to safeguard sand shorelines where Gharials nest. This pilot program, called River Watch, has led to significant conservation gains, showing a 30% annual increase in nesting. Once proven effective, River Watch will be expanded throughout the upper Chambal and extended to key downstream nesting sites. Long-term engagement with local communities remains crucial for protecting and maintaining vital gharial river habitats.

Saltwater Crocodile (*Crocodylus porosus*)

- Estimation of wild population: 3000-4000 at three locations, namely - Andamans (archipelago), Sundarbans (West Bengal), and Bhitarkanika (Orissa)

- Captive Stock: 500+ animals of various ages/sizes across captive facilities in India, including zoos of West Bengal, Orissa, Andhra Pradesh, MCBT, Tamil Nadu and Andaman & Nicobar

- Distribution: East coast of India, from Orissa to Sundarbans, West Bengal and Andaman-Nicobar

- Survey & Ongoing Activity

  Bhitarkanika National Park, Odisha: Based on information provided by a retired former Senior Research Officer Dr. Sudhakar Kar, a winter census was carried out by the forest department in January 2026 in the river systems of Bhitarkanika National Park/Wildlife Sanctuary. A total of 1858 crocodiles were counted [531 hatchlings (28.6%); 442 yearlings (23.8%); 365 juveniles (19.6%); 167 sub-adults (9.0%); 353 adults (19.0%)]. There is an increase of 32 crocodiles over the January 2025 count of 1826 crocodiles. There has been an 18-fold increase compared to the first census carried out in the winter of 1976 (96 individuals). Besides, this habitat provides shelter for a small population (16 individuals) of partially white crocodiles (local name ‘Sankhua'), which is noteworthy.

  Sunderban Salty Survey: Between December 2024 and February 2025, the West Bengal Forest Department assessed the population status of *C. porosus* in the Sundarban Biosphere Reserve This initiative focuses on understanding population trends, habitat preferences, breeding patterns, and threats to the species in this unique estuarine ecosystem. Direct sightings along the 1168-km transect totaled 213 individuals of various sizes. The population in the Indian Sundarbans is estimated at 220-242 individuals. The detailed report is available from the Department of Forests, Government of Bengal (2025).

  Andaman & Nicobar Islands Survey: Dr. Abhijit Das (WII) and a team of researchers conducted a detailed survey of the island groups in the Andaman & Nicobar Islands during the early months of 2026, following the forest staff training program. The Wildlife Institute of India, Dehradun, Uttarakhand, is leading the project "Conservation and Management Plan of Saltwater Crocodile in the Andaman and Nicobar Islands". The project aims to estimate crocodile populations, their distribution, nesting sites, movement ecology, and genetic structure. As part of this project, an island-wide estimate of Saltwater crocodiles was carried out in 176 creeks across 9 forest divisions, with support from 480 forest staff and 13 researchers and scientists from WII. The census was conducted in three phases, between 8-12 February and 9-10 March 2026. The survey results are currently under analysis. Additionally, exploratory surveys using questionnaires, camera traps, and eDNA were conducted to identify crocodile presence. Furthermore, 21 crocodiles had already been marked at Chidiyatapu Biological Park in the Andaman Islands with assistance from the forest department.

  Training and Capacity Building: Dr. Abhijit Das (WII) conducted a training program in collaboration with the Andaman and Nicobar Forest Department. The training program for staff at various levels to conduct a Saltwater Crocodile population survey took place during February-March 2025; the detailed results are not yet finalized.

  Research Activity: Since December 2025, Ms. Aryaki Banerjee, MSc student in Wildlife Science (Ornithology) at SACON, Coimbatore, in academic collaboration with the Central University of Tamil Nadu (CUTN), has been working on the Saltwater crocodile in the Sundarbans for her dissertation ("Factors affecting the habitat use by the saltwater crocodile (Crocodylus porosus) in the India Sundarbans). Objectives are: to assess ecological parameters along with prey availability and aquatic biodiversity, that may influence habitat use and creek preference in Saltwater crocodiles; and, to evaluate the impacts of anthropogenic disturbances on ecological conditions and their subsequent influence on the distribution and habitat use of Saltwater crocodiles in Indian Sundarbans. Her study area includes the National Park East and Basirhat ranges, Raidighi and Sajnekhali Wildlife Sanctuary, and the border shared with Bangladesh. Aryaki has been interacting with the local community, forest officials, and fishermen, and also collecting data on water and biodiversity.

Mugger Crocodile (*Crocodylus palustris*)

- Estimation of Wild Population: 10,000 to over 12,000, various-aged/sized animals distributed across most Indian States.

- Captive Stock: 2400+ (in various captive facilities, including MCBT: Annual Inventory of Animals in Indian Zoo, CZA, 2025)

- Distribution: Andhra Pradesh, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal

- Survey Activities

  State Forest Departments of Gujarat, Chhattisgarh, Madhya Pradesh, some local NGOs, and some individuals, PhD Scholars/Programmers have initiated surveys to estimate wild Mugger populations, conduct habitat assessments, raise citizen awareness, and run training programs.

  Charotar Crocodile Count: The program was established in 2013 as a citizen science initiative to bring together diverse participants worldwide to monitor the crocodile population in the Charotar region of Gujarat, India. Mugger Crocodile Count, January 2025, and again in 2026, recorded 287 individuals in the most recent count in January 2026 across 25-30 villages, by Anirudh Vasava, Dhaval Patel, Vishal Mistry, and volunteers of VNC (Voluntary Nature Conservancy, Vidyanagar, Gujarat), as part of the Citizen Science incentives. A count of 255 Muggers of all sizes was recorded in 25 waterbodies across the non-urban landscape of Charotar's Region, Gujarat.

  Vishwamitri River Mugger Count: Gujarat Ecological Education and Research (GEER) Foundation (Gandhinagar, Gujarat) carried out a survey of a 25-km river stretch in Vadodara city as part of a flood mitigation project, with Vadodara Municipal Corporation, Vadodara. The survey was conducted by scientists, volunteers from local NGOs, and staff from the state forest department. The GEER Foundation's report shows that 442 Muggers were sighted. In 2026, the same stretch of the river was surveyed by a scholar from M.S. University, Vadodara, as part of their PhD work, resulting in a count of 412 Muggers across various age/size classes.

  Kotmi Sonar, Jangir-Champa District, Chhattisgarh: A survey was carried out by the state forest department with the help of volunteers of Nova Nature Welfare Society. The survey covered 20 waterbodies in the Kotmi-Sonar area from December 2024 to March 2025, as part of a citizen science initiative that used drones for direct day and aerial counts. The survey results show that over 200 Muggers of various sizes were inhabiting the area.

  Shivpui Waterbody, Madhya Pradesh: Mugger population was monitored by students of Prof. R.J. Rao, Jiwaji University, Gwalior, MP. Details of the study report are being finalized.

  Rapar, Kutch Mugger Survey: A survey was conducted by Mr. Yasendu Joshi, PhD scholar, in the eastern dry region of Kutch, known as Wagad, Gujarat. The survey reported 52 Muggers of various sizes across 20 man-made waterbodies. About 82% of the observed individuals were over 2 m long, indicating that sub-adult and adult crocodiles are the main age groups in the surveyed habitats. No juveniles or hatchlings were observed, which may be due to the lower detectability of smaller individuals, a lack of suitable nesting and nursery habitats in the area, or reduced reproductive success resulting from harsh environmental conditions. These artificial water sources, mainly used for irrigation during the dry season, seem to provide crucial refuges, although on a small scale, where one or two individuals can persist in a pond.

  Ongoing Research Activity

  - MSc on "Factors influencing Habitat Usage of Mugger Crocodile" was conducted from December 2025 to June 2026, by Mr. Bryan Rana Thompson, under the supervision of Prof. G.V. Gopi at the Wildlife Institute of India. The research was carried out in and around the Sathyamangalam Tiger Reserve, Mudumalai Tiger Reserve, and in Coimbatore and Erode districts of Tamil Nadu, India.

  - The following 'Multipronged approach towards conservation of the freshwater Mugger crocodiles across different habitats within India'. A number of research studies are carried out by Dr. Ratna Ghosal, Biological and Life Sciences, Ahmedabad University, Ahmedabad, Gujarat, with the help of his students and in collaboration with various organizations.

    1. Developing an Android-based application: The application for biometric identification: Created a deep learning algorithm to recognize individual mugger crocodiles by their dorsal scute patterns. The algorithm

is now being deployed and optimized on mobile devices, which reduces the computational load for on-field identification of focal crocodiles.

2. Behavioral biology: a) We identified the mating repertoire of Mugger crocodiles and characterized signature behaviours that males and females exhibit during their dyadic interactions. Additionally, we described the aggressive behaviours displayed by females during the breeding season. Furthermore, we are continuing to investigate the acoustic structure of calls produced by courting males, and work is ongoing to understand variations in call patterns across populations to explore local adaptation profiles. Data on reproductive behaviours were collected in collaboration with the Madras Crocodile Bank Trust, Chennai, and data on acoustic patterns are being analyzed in collaboration with Dr. Raghav Rajan, IISER-Pune. b) Thermoregulation is essential for ectotherms. We are monitoring the thermoregulatory patterns of Mugger crocodiles across different habitats in Gujarat, including both basking and nighttime thermoregulation to understand cooling-off patterns. We have also created a framework that connects microclimates to a heat-balance model and behavioural rules to predict when Mugger crocodiles should bask or return to water, thereby identifying the optimal basking strategy in terms of duration and frequency under ideal conditions. Any deviations from the simulated basking behaviours are linked to human-induced disturbances in the habitat.

3. Conservation physiology: Physiology is closely connected to the health and survival of living organisms. Our research group monitors reproductive hormone metabolites, stress-related hormones, and nutrition-linked hormone dynamics in Mugger crocodiles. We have validated all hormone measurements and demonstrated that hormone dynamics differ not only between populations but also between breeding and non-breeding seasons.

4. Physical well-being: Assessing the growth and physical condition of free-ranging animals is a logistical challenge. We are currently developing body condition scores for wild Muggers using a photogrammetric method based on UAV imagery. Our research is being conducted across different populations in India, where individuals experience diverse local environments, from resource-rich to resource-scarce conditions.

- The non-profit Voluntary Nature Conservancy-India (VNC), led by Anirudh Vasava, Dhaval Patel and Vishal Mistry, has worked to conserve crocodiles and reduce human-crocodile conflicts in Gujarat. VNC has equally focused on research and education. Recently, the organisation celebrated the 'Children Crocodile Festival 2025,' a community-based conservation initiative designed to encourage the local community, especially children living alongside crocodiles in this region, to emphasise their relationship with reptile species. This event is a celebration of Crocodile Conservation through fun and games aimed to: promote wildlife conservation education in the Charotar Region, Gujarat, India; and to promote awareness among children as the next generation of Mugger preservationists/guardians in the area.

Human-Crocodile Conflict

Direct and indirect instances of Human-Crocodile Conflict (HCC) have been recorded in Gujarat, Odisha, Uttar Pradesh, Uttarakhand, Karnataka, West Bengal, and Tamil Nadu. Therefore, a state-level action plan will identify these areas of concern for immediate attention.

- Mr. Baijuraj M.V., Director of the Conservation Project at Wildlife SOS (WSOS), collaborated with the Uttar Pradesh Forest Department to address human-animal conflict mitigation in the state from January 2024 to January 2026 across several districts. Fourteen (14) Mugger crocodiles of different sizes were rescued from human habitats in Firozabad and Agra Districts, U.P., and released back into their natural environment to prevent or reduce HCC. The Wildlife SOS Report mentioned three mysterious deaths of Muggers and included a postmortem. The water canal where crocodile sightings have been reported connects to Gopalpur Jhal - another canal that links to the Upper Ganga Canal, which is known to support a healthy crocodile population. Due to the potential presence of crocodiles, local Forest Department officials were alerted, and assistance was requested from the Wildlife SOS team based in Agra. Following an intensive 3-day search operation by the National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF), the crocodiles were safely recovered from the canal.

- Mr. Romulus Whitaker, founder of Madras Crocodile Bank in Chennai, Tamil Nadu, has helped compile and update crocodile attack data for India, including the Andaman Islands, Sunderbans (West Bengal), Bhitarkanika (Odisha), and other locations on the mainland, for the CrocATTACK project with Mr. Brandon Sideleau, who manages the worldwide crocodile attack database.

In General: Zoo - Captive Crocodilians

- Awareness Activities, Saurashtra: Mr. Pranav Vaghashiya actively contributed to crocodile conservation, rescue, rehabilitation, and public awareness activities in the Saurashtra region in collaboration with the Vasundhara

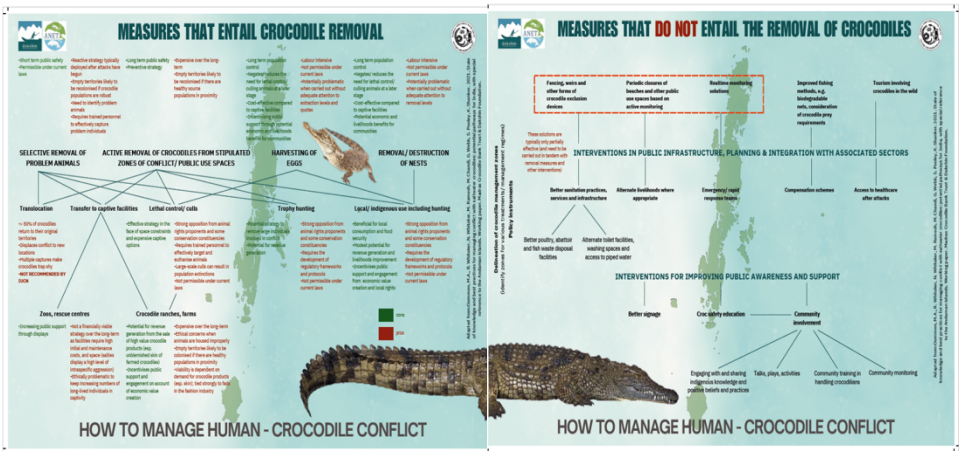
Nature Club in Junagadh and the State Forest Department, Gujarat: on the occasion of World Crocodile Day 17 June 2025; Crocodile: Conservation and Ecology 29 June 2025; Reptile Rescue and Rehabilitation Program for Forest Department 23 August 2025; Basic Protocols and Basic Training of Technical Rescue for Wildlife Division Sasan Gir on 25 February 2025 for ground level staff of forest.

- Awareness Activities, Kutch: Dr. Brinky Desai, in collaboration with Mahim Pandhi Wildlife Foundation in Kutch, Gujarat, conducts research, records, and studies the behaviour of regional wildlife, including Mugger crocodiles, to inform region-specific nature education programs and promote human-wildlife coexistence. She also designs and implements capacity-building initiatives to mitigate human-Mugger conflict in the Kutch region and has worked extensively with underprivileged schools and colleges to deliver education programs that also raise awareness about mugger habitats and encourage coexistence between local communities and wildlife. She was appointed as the focal point, along with Dr. Phoebe Griffith, for the IUCN SSC Young Professionals Task Force (YPTF), which has given her the opportunity to participate in CSG Steering Committee meetings. She actively works for the Early Career Crocodile Network (ECCN). The network was established to connect early-career individuals working with crocodilians across research, conservation, and education, providing a supportive and collaborative platform. The network that started in Southeast Asia has now gone global after receiving requests from early-career researchers worldwide. Through regular online meetings, expert talks, workshops, and peer-to-peer interactions, ECCN facilitates knowledge exchange, mentorship, and global networking opportunities, helping bridge the gap between emerging researchers and established experts in the field.

- **MCBT Report & Activities**

Survey of Kollidam River, Tamil Nadu: A study was conducted by Dr. Nikhil Whitaker and staff of Madras Crocodile Bank Trust (MCBT), from February to October 2025. This collaborative study assessed Mugger crocodiles along 186 km of the river. Using spotlight surveys and GIS analysis, they estimated 131-143 individuals in summer (0.77/km) and 91-101 during the monsoon (0.54/km). Crocodiles were concentrated in deeper pools during summer and dispersed as water levels rose during the monsoon. Preferred habitats included sandy banks, slow-moving pools, and gentle slopes used for basking and nesting. The ichthyofaunal survey recorded 26 fish species across 10 families, with Cyprinidae, Bagridae, and Cichlidae being dominant. Anaikkarai's population highlights the regional importance of Mugger crocodile conservation, with recommendations for eco-tourism, tagging, and rescue training.

Andaman Crocodile Conflict & Action: Mr. Romulus Whitaker, created a poster on 'HOW TO MANAGE HUMAN-CROCODILE CONFLICT' for the Andaman Islands to address awareness and reduce attacks from Saltwater crocodiles (see below and here). The project included a productive meeting at the ANET field station in the Andamans with a group of collaborating organizations, including the Madras Crocodile Bank/Centre for Herpetology, the Dakshin Foundation's ANET field station, and others (Meera Anna Oommen, Nikhil Whitaker, Madhuri Ramesh, Manish Chandi, Grahame Webb, Simon Pooley, Kartik Shanker). They conjointly produced a working document titled "State of Knowledge and Best Practices for Managing Conflict with Saltwater Crocodiles: Potential Pathways for India" (Oommen *et al*. 2021), which focused on the Andaman Islands.



Celebration: 50 years of India's Efforts to Conserve Crocodiles

- On 17 June 2025, all CSG members from Gujarat State, after celebrating events, recommended to the Principal Conservator of Forest (PCCF) and Wildlife Warden, Gujarat, to include 'Crocodile Watch Location in Gujarat' on the tourist map of Gujarat. This suggestion aimed to commemorate the 50th anniversary of crocodile conservation in India, led by Prof. B.C. Choudhury. The recommendation is currently pending at the PCCF office for further review.

- Prof B.C. Choudhury facilitated the organization of several "50 years of Crocodile Conservation in India" through various state-level events in Bhubaneswar, State Forest Department, Odisha; 4th National Conference on lesser-known species of Central Indian Landscape, SNHC, Bhopal, Madhya Pradesh; Gujarat Institute of Desert Ecology (GIDE), Bhuj; and Charotar, Voluntary Nature Conservancy-India, Gujarat. Further events were organized in Kolkata and Hyderabad, where talks on 50 years of crocodile conservation in India.

- Dr. Raju Vyas delivered a presentation on 50 years of Crocodile Conservation in India and Crocodile Conservation Awareness during Wildlife Week in October 2025 at Gujarat Institute of Desert Ecology (GIDE), Bhuj, Gujarat, and at the Charotar Crocodile Count in January 2026, organized by Voluntary Nature Conservancy-India, Gujarat.

- Dr. Rajeev Chauhan celebrated 50 years of the Crocodile Conservation Project in India on World Crocodile Day, 17 June 2025. It featured a joint effort by the Forest Department and the Society for Conservation of Nature (SCON), Etawa, Uttar Pradesh. The Society for Conservation of Nature, Etawah, plays a vital role in raising awareness and educating local communities about the importance of protecting these species in the Yamuna and Chambal Rivers. Through nature walks, awareness campaigns, and school programs, the society encourages people to coexist peacefully with wildlife and recognize their ecological importance.

Publications

Abedin I, Singha H, Singh S, Mukherjee T, Kim H.-W, Kundu S, 2025. Riverine Realities: Evaluating Climate Change Impacts on Habitat Dynamics of the Critically Endangered Gharial (*Gavialis gangeticus*) in the Indian Landscape. *Animals 15:* 896. https://doi.org/10.3390/ani15060896

Banerjee D, Bauri P, Bhutia A, Danda AA, Kar MK, Khan MS, Ray D, Sen A, 2025. Reintroduction of Gharials (*Gavialis gangeticus*) in the Lower Ganga River, Murshidabad, West Bengal, India. Reptiles & Amphibians 32: e23010 https://doi.org/10.17161/randa.v32i1.23010

Department of Forests, Government of Bengal, 2025. Population Assessment & Habitat Ecology Study of Saltwater Crocodiles in Sundarbans, 2025, Sundarban Biosphere Reserve, Department of Forests, Government of West Bengal. Pp. 55.

Desai B, Bhowmik T, Srinivasan R, Whitaker N, Ghosal R, 2024. Monitoring stress physiology of free-ranging mugger crocodiles (*Crocodylus palustris*) across diverse habitats within central Gujarat, India. *Conservation Physiology*, 12(1), coae035.

Desai B, Bhowmik T, Wadekar A, Bhatt U, Ghosal R, 2025. Investigating reproductive biology of female mugger crocodiles (*Crocodylus palustris*) by using behaviour and endocrine measures. *Applied Animal Behaviour Science,* 292, 106832.

Erfani M, Elham A, Mobaraki A, Haji GK, Pandi D, Stevenson C, Ziegler T, Rödder D, De Silva A, Whitaker N, Le MD, Samarasinghe D, Vasava A, Karunarathna S, 2025. Nuchal scalation patterns in Iranian Mugger crocodiles (*Crocodylus palustris* Lesson, 1831) point to an overlooked conservation unit, *Journal of Wildlife and Biodiversity* 9(4): 153–167. https://doi.org/10.5281/zenodo.18222676

Parida SN, Tripathy PS, Kumar N, Rout AK, Panda A, Dobriyal MJ, Parida PK, Behera BK, 2025. The evaluation of prospects for human and saltwater crocodile (*Crocodylus porosus*) conflict: the case of coastal Bhitarkanika National Park, India. *Front. Amphib. Reptile Sci*. 3:1639071. https://doi.org/10.3389/famrs.2025.1639071

Rath LP, Dash SK, Mohapatra RK, Patnaik A, Khan A, Maharana S, 2025. Exploring the human dimensions of gharial conservation in the Mahanadi River, India. *Wildlife Research* 52: WR24088. https://doi.org/10.1071/WR24088

Rao RJ, Sharma RK, 2026. A Bibliographic Compendium of Wildlife Conservation and Research in the National Chambal Sanctuary, India.

Singh LAK, 2025. Crocodile Conservation: 50-years in Odisha, India, with a selected Bibliography. *Cheetal* 62(2) (2025): 74–85.

Sharma SP, Katdare S, Badola R, Hussain SA, 2025. Unraveling Population Trend of a Critically Endangered Freshwater Crocodylian, Gharial (*Gavialis gangeticus*) in the National Chambal Sanctuary, India. *Ecology and Evolution* 15: e72643. https://doi.org/10.1002/ece3.72643

Stevenson C, De Silva A, Vyas R, Mobaraki A, 2025. Crocodiles. Status Survey and Conservation Action Plan: Mugger Crocodile *Crocodylus palustris,* Fourth Edition, ed. by S.C. Manolis & C. Stevenson. CSG: Darwin.www.iucncsg.org/365_docs/attachments/ protarea/1b50c4af9119656246f593e34497385e.pdf

Vaghashiya P, Chauhan D, Vyas R. 2025. Nesting and Parental Care by a Disabled Mugger Crocodile (*Crocodylus palustris*) and a Record of a Congenital Defect in a Hatchling from Junagadh, Gujarat, India. *IRCF Reptiles & Amphibians* 32: e22290. https://doi.org/10.17161/randa.v32i1.22290

Vyas R, Chauhan D, Vaghashiya P, Patel H, 2024. Noteworthy observations on food and feeding behaviors of mugger crocodiles (*Crocodylus palustris* Lesson) at Lal Dhori, Girnar Wildlife Sanctuary, Gujarat, India. *Journal of Animal Diversity* 6 (1): http://jad.lu.ac.ir/article-1-432-en.html

Whitaker N, 2025. A preliminary survey of the mugger crocodile (*Crocodylus palustris*) at Baghdarrah Lake, Udaipur, Rajasthan, India. *CSG Newsletter* 44 (2):10-13.

Whitaker N, 2025. A second survey of Baghdarrah Crocodile Conservation Reserve, Udaipur, Rajasthan. Report to Madras Crocodile Bank Trust. Pp. 12. (Unpublished).

Whitaker N, Lakshmanan R, Samuel A, Krishnamoorthy B, 2025. Husbandry and Veterinary Protocols for Reptiles in Captivity. *Indian Zoo Yearbook* 10: 131-147.

WII-GACMC, 2025. Population Status and Conservation Action Plan for Critically endangered
Gharial (*Gavialis gangeticus*) in the Ganga River Basin. Ganga Aqualife Conservation Monitoring Centre, National Centre for River Research, Wildlife Institute of India, Dehra Dun, Uttarakhand,
India. Pp. 80.

Whitaker N, Jesudasan A, Muthiah G, Ahmed S, Tiruvarur V., 2026. Population studies on the mugger crocodile (*Crocodylus palustris*) on the Cauvery River, Tamil Nadu. A report submitted to the Tamil Nadu Forest Department. Pp. 122. (Unpublished).

CSG members reveal: A bibliographic compendium of Wildlife Conservation and Research in the National Chambal Sanctuary, India. Compilation by R.J. Rao and R.K. Sharma (2026). Report submitted to Madhya Pradesh Forest Department, Bhopal, India, on the occasion of the 50-year celebration of the Indian Crocodile Project.

Country Report prepared by: Raju Vyas and B.C. Choudhury, with valuable inputs from R.K. Sharma; Sudhakar Kar (Orissa Forest Department); Anirudh Vasava, Dhaval Patel and Vishal Mistry (Voluntary Nature Conservancy, Gujarat); Brinky Desai (Mahim Pandhi Wildlife Foundation in Kutch, Gujarat); R.J. Rao (Gwalior, Madya Pradesh); Shailendra Singh (Turtle Survival Alliance Foundation - India, Lucknow, UP); Baijuraj M.V. (Wildlife SOS, Agra, U.P.); Pranav Vaghasiya (Vasundhara Nature Club, Junagadh); Jeffrey Lang (U. North Dakota, Senior Scientific Adviser, GEP & MCBT) and Jailabdeen Ajjim (Gharial Ecology Project & Madras Crocodile Bank Trust); Ratna Ghosal (Biological and Life Sciences School of Arts and Sciences, Ahmedabad University, Ahmedabad, Gujarat); Mohd Shahnawaj (Lead-Aquatic Species & Habitats, WWF-India); Yeshendu Joshi (National Centre for Biological Sciences (NCBS), Bangalore); Rajeev Chauhan (Conservation of Nature (SCON), Etawa, Uttar Pradesh); Abhijit Das

(Wildlife Institute India); Nikhil Whitaker (Madras Crocodile Bank Trust, Tamil Nadu) and Romulus Whitaker (Madras Crocodile Bank Trust/Centre for Herpetology, Chennai, Tamil Nadu).

NEPAL

In Nepal, the two species of freshwater crocodiles, Mugger (*Crocodylus palustris*) and Gharial (*Gavialis gangeticus*), occur primarily in major rivers and wetlands in southern lowland Terai region.

Gharial (*Gavialis gangeticus*)

Distribution*:* In Nepal, Gharials occur primarily in the Chitwan National Park (Narayani-Rapti River system) and Bardiya National Park (Karnali and Babai Rivers). Two former populations of Gharials in Koshi and Mahakali have become extinct. Reintroduction efforts have been initiated to re-establish the Gharial populations with release of captive-raised animals from Gharial Conservation Breeding Center (Kasara, Chitwan). In Koshi River, 95 Gharials released between 1981 and 2010 (DNPWC 2018) and additional 20 Gharials were released in Koshi in 2022, with no evidence of survival. Similarly, 10 Gharials (5M, 5F) were released in West Rapti River (Banke National Park) in 2023, with report of a few Gharials in following years too. Similarly, 25 Gharials (3M, 22F) were reintroduced in 2024 in Chaudar River, a tributary of Mahakali River, in Shuklaphanta National Park (DNPWC 2024). However, their status is not known and believed to be washed by the flood in the following season as no reports of Gharials in following years.

Population:

a. Wild Gharial: Recent population survey in Chitwan shows 366 Gharials (9 adult males) in Rapti (231) and Narayani (135) Rivers (CNP 2026). Details of the population structure is not available from the recent survey. The following table shows the population structure based on survey in 2018/2019.

Location	River	Adult	Sub-adult	Juvenile & yearling	Total	Remarks
Chtiwan NP	Rapti	36	12	70	**118**	Poudyal *et al.* (2018)
	Narayani	31	54	16	**101**	
Bardiya NP	Babai	10	6	3	**19**	Bashyal *et al.* (2021). Irregular movement of adult Gharial into the Karnali and Mohana, often outside of census season, from the downstream Katerniaghat National Park are reported annually, with a small number of nests in both rivers 2023-2025.
	Karnali	1	0	0	**1**	
	Mohana	NA	NA	NA	**NA**	Some Gharials are reported in this river with no population estimate information available
Koshi Tappu WR	Koshi	NA	NA	NA	**NA**	20 released in 2022
Banke NP	West-Rapti	NA	NA	NA	**NA**	10 released in 2023
Shuklaphanta NP	Chaudhar	NA	NA	NA	**NA**	Planned for release of 20 Gharials in 2024

Average (min-max) of Gharial surveys by Khadka *et al.* (2024), from 2018-2022, indicated an increasing Gharial population of at least 234 by 2022.

River	Adults	Sub-adults	Juveniles	Hatchlings	Total
Rapti	27 (17-38)	65 (35-104)	5 (0-11)	0	97 (64-131
Narayani	33 (25-40)	65 (41-84)	3 (0-10)	3 (0-9)	104 (84-120)

b. Captive Gharial: There are over 600 individuals at Gharial Conservation Breeding Center, Kasara, Chitwan NP. Similarly, the Gharial Breeding Center in Bardia has ~100 Gharials.

Conservation measures: Gharials are legally protected in Nepal by the 'National Parks and Wildlife Conservation Act 2073'. Gharial Conservation Breeding Center was established in 1978, in Chitwan National Park (Kasara) and another breeding center has been established in Bardia National Park. Over 2000 Gharials raised in these breeding centers have been released in the various rivers. Nepal formulated and implemented the Gharial Conservation Action Plan (2018-2022). Revision of the Action Plan is currently ongoing. Management plans of Chitwan and Bardia has also prioritized Gharial conservation. Various initiatives by community and conservation organizations for Gharial conservation has

been initiated to ensure long-term survival of Gharial in Nepal. Awareness and community engagement programs in Nepal, especially in Chitwan, have been led by individuals and organisations, such as the Gharial Conservation Fair by Care for Nature and collaborators, most recently in December 2023.

Mugger (*Crocodylus palustris)*

Distribution: Mugger crocodile has a wider distribution than Gharials. They occur in the rivers and lakes of Koshi Tappu WR, Chitwan NP, Banke NP, Bardiya NP, Shuklaphanta NP. Outside of the PA system, Muggers are also recorded in Ghodaghodi Lake, a Ramsar site in western Nepal.

Population: Population surveys of Mugger crocodile are not conducted on a regular basis, thus, comprehensive information is not available. Survey of Muggers in Chitwan's lakes and ponds showed 245 Muggers in 2014 (Khadka *et al.* 2014). In Koshi, 35 Muggers were reported in 2022 (Bhattarai *et al.* 2022). Basyal *et al.* (2021) reported sighting of 65 Muggers in Bardia during survey of Gharials in 2019. In Ghodaghodi Lake, 26 Muggers were reported by (Lamichhane *et al*. 2022). A survey in Chitwan's largest rivers (Narayani, Rapti, Dhungre and Budhi Rapti) had a minimum count of 120 Muggers (90 adults) in 2021 (Khadka 2022).

References

Bashyal, A., Shrestha, S., Luitel, K. P., Yadav, B. P., Khadka, B., Lang, J. W., & Densmore, L. D. (2021). Gharials (*Gavialis gangeticus*) in Bardiya National Park, Nepal: population, habitat and threats. Aquatic Conservation: Marine and Freshwater Ecosystems 31(9): 2594-2602.

Bhattarai, D., Lamichhane, S., Pandeya, P., Bhattarai, S., Gautam, J., Kandel, R.C. and Pokheral, C.P. (2022). Status, distribution and habitat use by Mugger crocodile (*Crocodylus palustris*) in and around Koshi Tappu Wildlife Reserve, Nepal. Heliyon 8(8).

CNP. (2026). Press Release of Gharial Survey in Rapti and Naryani Rivers. Chitwan National Park Office, Kasara, Chitwan.

DNPWC. (2018). Gharial Conservation Action Plan for Nepal (2018-2022). Department of National Parks and Wildlife Conservation, Kathmandu, Nepal.

DNPWC. (2024). Annual Report 2023/2024. Department of National Parks and Wildlife Conservation, Kathmandu, Nepal.

Khadka, B.B. (2022). Habitat Assessment of the Rapti and Narayani Rivers and their Tributaries in Chitwan National Park. WWF Nepal: Nepal.

Khadka, B.B., Bashyal, A. and Griffith, P. (2024). Population changes in gharial (*Gavialis gangeticus*) vary spatially in Chitwan National Park, Nepal. Reptiles & Amphibians 31.1 (2024): e21018-e21018.

Khadka, B.B., Maharjan, A., Thapalia, B.P. and Lamichhane, B.R. (2014). Population status of the mugger in Chitwan National Park, Nepal. Crocodile Specialist Group Newsletter 33(3): 9-12.

Lamichhane, S., Bhattarai, D., Karki, J.B., Gautam, A.P., Pandeya, P., Tripathi, S. and Mahat, N. (2022). Population status, habitat occupancy and conservation threats to Mugger crocodile (*Crocodylus palustris*) in Ghodaghodi lake complex, Nepal. Global Ecology and Conservation 33: e01977.

Poudyal, L.P., Dahal, B., Lamichhane, B.R., Giri, S.R., Rayamajhi, B., Shrestha, P., Khadka, B.B. and Shrestha, P. (2018). Population Status and Distribution of Gharial in Rivers of Chitwan National Park. Chitwan National Park Office: Kasara, Chitwan.

Country Report prepared by: Babu Ram Lamichhane, with input by Phoebe Griffith

---

SRI LANKA

Currently, we are conducting the following programs on crocodiles:

1. Population and Distribution: A population count of Saltwater crocodiles (*Crocodylus porosus*) in Sri Lanka has been completed. This objective of this work was to collect data on population density and distribution status across

the island. This data will be used to minimise conflicts between crocodiles and humans. These data sets are currently being analysed.

2. Human-Crocodile Conflict (HCC) and Ecotourism: Reports of conflict between crocodiles and humans in the wet zone of Sri Lanka are rising, particularly in the Nilwala River. To address this, awareness programs have been launched alongside the development of a crocodile-based ecotourism industry. Currently, about 10 boats are operating in this sector. 'Crocodile Watching Tours' are becoming increasingly popular among both local and foreign tourists. The primary objective is to generate a source of income for the local community through crocodile conservation. We are currently conducting follow-up assessments, tourism attraction activities, and awareness sessions.

3. Public Complaint Analysis and Mitigation: There is a noticeable growth in the crocodile population, especially in the wet zone. Consequently, reports of HCC and complaints regarding potential crocodile threats are increasing. As a remedy, an analysis of public complaints was conducted, and the "Kelani" and "Kalu River Basin" were identified as two major regions (in addition to the Nilwala River) where such conflicts were likely to arise by 2023. To manage these situations, 22 awareness programs have already been completed across the wet zone, specifically targeting government field officers.

4. Conservation and Management Research: In collaboration with the Department of Wildlife Conservation (DWC), a study is currently being conducted regarding the conservation and management of Saltwater crocodiles in the wet zone. This research focuses on their distribution, population growth, and migration in the new environments (including the underlying causes) for the management of conflicts between high human population density and crocodiles, as well as the specific environmental characteristics of areas where these conflicts occur.

Publications

de Silva, A. (2024). Crocodiles of Sri Lanka: a Monograph. WILDLANKA 12(2): 246-391.

Proctor, T.L., Rathnasiri, P. and Honarvar, S. (2025). Preliminary data on saltwater crocodiles, *Crocodylus porosus* Schneider, 1801, and an updated assessment of threats in the Nilwala River, Matara, Sri Lanka. Herpetology Notes 18: 361-363.

Country Report prepared by: Predeep Rathnasiri, Trevor Proctor and Anslem de Silva

---

Assembled by: Anslem de Silva, CSG Regional Chair, South Asia & Iran.
Date: 4 April 2026