



11th

**CHARUTAR
CROCODILE
COUNT**

Counting Crocodiles for Conservation

5TH TO 7TH JAN' 2024



VOLUNTARY NATURE CONSERVANCY

 www.vncindia.org

 A citizen science initiative

WHAT IS CHAROTAR CROCODILE COUNT?



The Charotar Crocodile Count, initiated in 2013, is an annual, citizen-based monitoring programme designed to engage participants from diverse backgrounds in understanding the ecological significance of mugger crocodiles and wetland ecosystems within the contemporary conservation landscape. This voluntary initiative contributes to a systematic assessment of crocodile population status and distribution across the Charotar region, while simultaneously offering participants the opportunity to interact with communities that coexist with crocodiles. Through this immersive approach, the programme fosters a comprehensive understanding of human–crocodile relationships and promotes informed conservation advocacy among participants, who subsequently serve as ambassadors for wildlife conservation in their respective regions. As the first initiative of its kind in India, the Charotar Crocodile Count has generated a robust and continuous dataset from 2013 to 2024, which is widely utilised by wildlife managers, researchers, and conservation organisations for informed decision-making and policy planning.

HOW DID WE COUNT THE CROCODILES?

To count crocodiles in Charotar we used the Citizen Science approach, an exciting, multifaceted way to bring people from all walks of life together for research and conservation. For the count, teams of 5-10 volunteers, depending on the size of the water body to be surveyed, were allocated to various villages. The crocodile surveys were carried out using the “Day/Basking Survey”, wherein the participants scanned the wetland from a suitable vantage point for the presence of crocodiles on the edge of water, basking areas and in water, and collected information on the number of individuals, size, location and activity (if any). The surveys began after 8:30 AM and continued till 2:00 PM, during which the crocodiles extensively indulged in basking.

HOW DOES THIS COUNT HELP?

The Charotar Crocodile Count offers an excellent opportunity to highlight the region’s biodiversity and demonstrate how villagers live in harmony with mugger crocodiles. Participants learn about the close connection between local communities and the wetland ecosystem, including how mugger crocodiles act as a keystone species that helps maintain ecological balance. All crocodile observations and population data gathered during the Count are compiled and shared with wildlife managers and conservation authorities. Over years of monitoring, this has generated valuable data on crocodile numbers and distribution, which scientists and managers use to guide effective wetland management and species protection.



WHY IS THE CHAROTAR REGION IMPORTANT?

The Charotar region (central Gujarat's Anand–Kheda area) is a unique agricultural-wetland landscape that harbors an exceptionally large and growing population of Mugger crocodiles. This makes Charotar one of India's most important Mugger strongholds outside protected areas. Several interrelated factors explain its conservation significance:



Robust mugger population & genetic linkages: Charotar holds “one of the largest populations of mugger crocodiles in India”. It sustains the local population and serves as a dispersal/breeding hub linking Central Gujarat's meta-population. An extensive network of irrigation canals interconnects its ponds and tanks, allowing crocs to migrate and exchange genes.

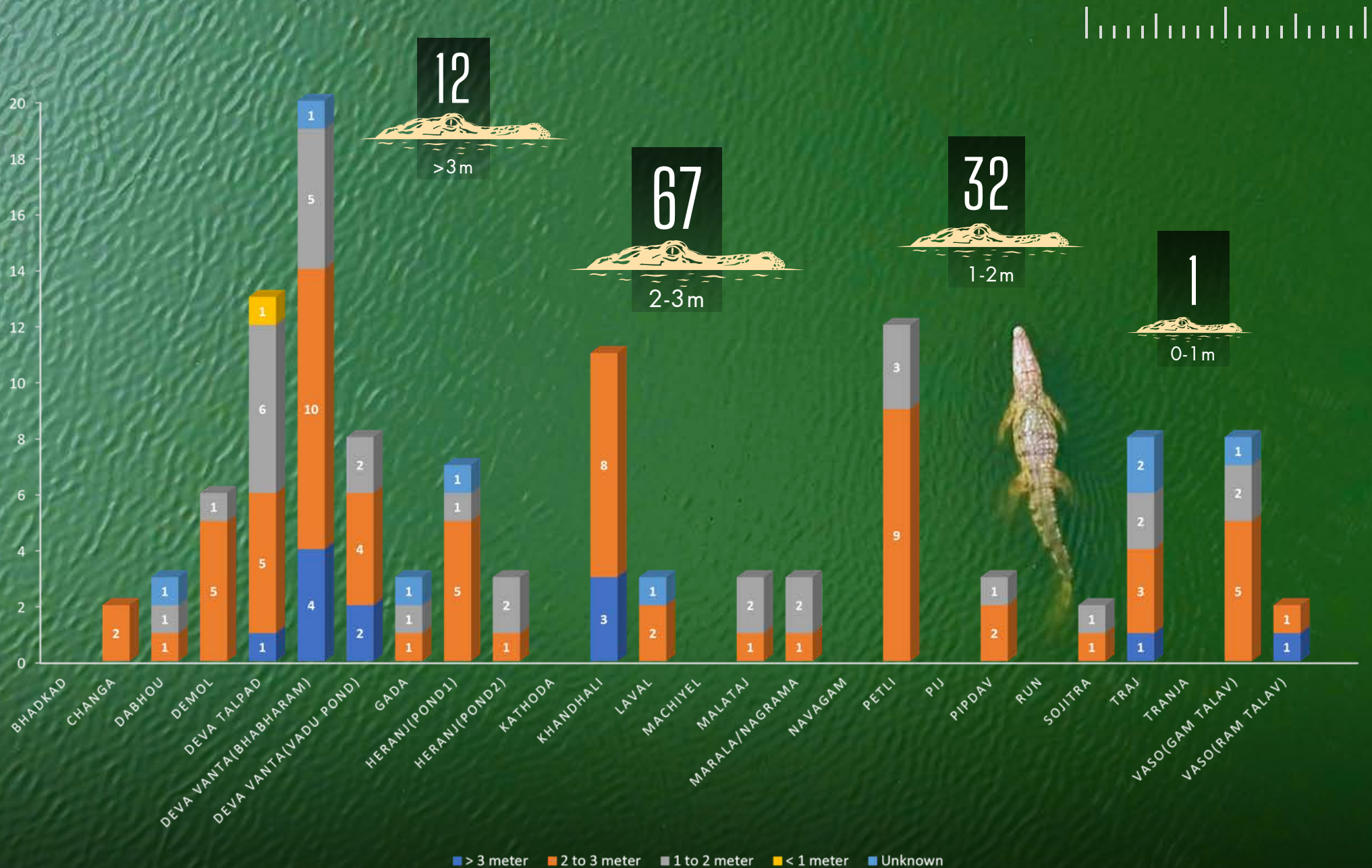
Rich wetland biodiversity: Beyond crocodiles, Charotar's wetlands support diverse fauna. It sustains Gujarat's largest Sarus crane population, many other waterbirds, amphibians and fish thrive here. As apex predators and keystone species, muggers themselves help maintain wetland health by regulating prey and recycling nutrients. Protecting Charotar thus preserves a rich mosaic of freshwater biodiversity.

Irrigation and ecosystem services: The same ponds and canals that house crocs are lifelines for local agriculture. Seasonal waterbodies store monsoon runoff and supply irrigation to fields. Villagers often lease these lakes to fishermen, generating income and increasing fish stocks – which in turn provide abundant prey for crocodiles. Healthy wetlands also recharge groundwater and buffer floods and droughts, directly benefiting the farming economy.

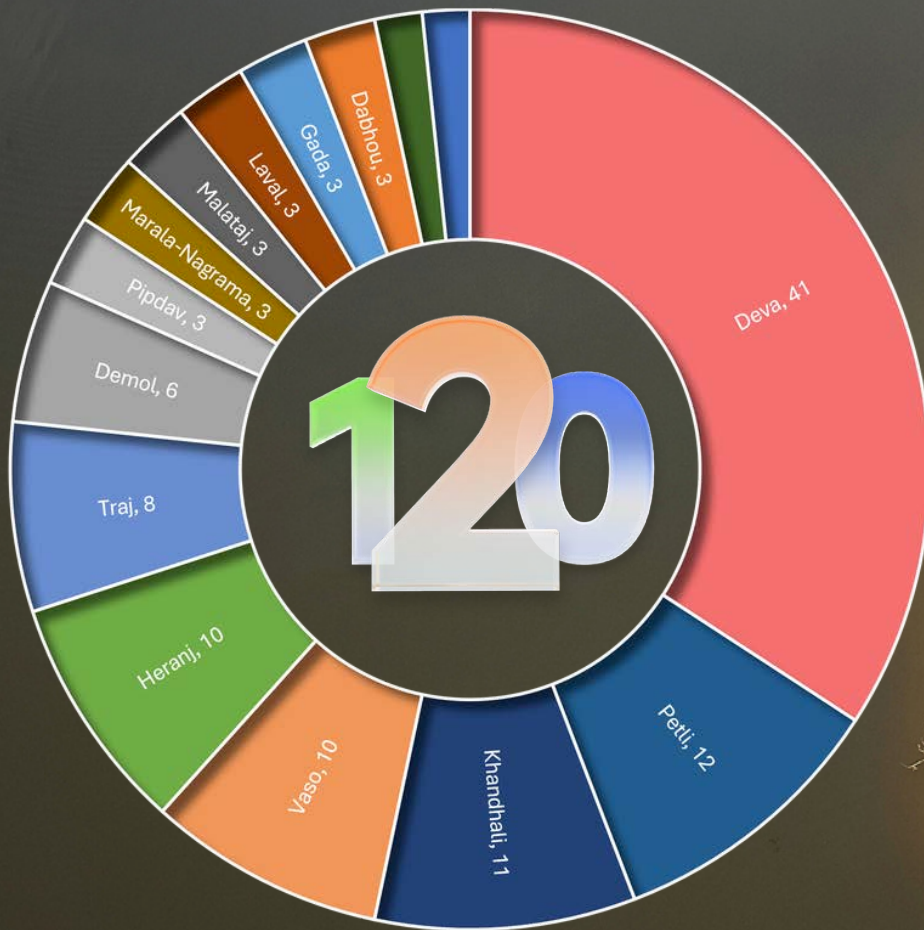
Human–wildlife coexistence: Perhaps most remarkable is Charotar's culture of tolerance. Unlike in many regions, crocs here share space with people in village ponds and rice fields without major conflict. Local attitudes are overwhelmingly positive; our surveys report rising crocodile numbers but the villagers do not retaliate. We hold “Children Crocodile fests” in schools to instill pride in these reptiles. Significantly, no Mugger has been poached or killed for its skin or eggs here– people understand that crocodiles have the right to live here.

Socio-economic and cultural value: Protecting crocodiles and wetlands preserves ecosystem services (irrigation, fisheries) that underpin the regional economy. It also maintains a socio-ecological heritage. In essence, saving the crocs means safeguarding the very water and land resources that communities depend on.

HOW BIG WERE THE CROCODILES?



HOW MANY DID WE COUNT?



The CCC data from 2020–2024 reveals a striking fluctuation in mugger crocodile populations across villages, reflecting both ecological dynamics and human influences. In 2020, 164 individuals were recorded, with Deva contributing nearly one-third of sightings (52). The population peaked in 2021 at 216, again dominated by Deva (88), followed by Heranj and Traj. However, 2022 saw a decline to 167, with Deva still leading but reduced to 45 individuals. The 2023 count rebounded sharply to 255, the highest in the decade, with Heranj (46), Deva (37), Dabhou (23), and Petli (20) together forming nearly half of the population. Yet, by 2024, the recorded sightings dropped dramatically to 120, the lowest since 2016, with Deva totaling 41 individuals, while other villages like Khandhali (11) and Petli (12) showed moderate presence.

This variability highlights how water levels, vegetation (especially water hyacinth), and pond management practices directly affect visibility and habitat quality. Years with unmanaged ponds (2022, 2023, 2024) saw reduced sightings in traditional hotspots like Deva, while smaller villages occasionally showed spikes.

The long-term trend suggests that while Charotar remains a stronghold for muggers, local ecological conditions and human stewardship critically shape annual counts. Sustained monitoring and community-led pond management are essential to stabilize these populations.

DR. KARTIK SHANKER



CHIEF GUEST

Dr. Kartik Shanker is an evolutionary ecologist, writer, and conservationist whose work has significantly shaped the landscape of marine and terrestrial biodiversity research in India. He is a Professor at the Centre for Ecological Sciences, Indian Institute of Science (IISc), Bangalore, where his research spans diverse taxa including frogs, reptiles, birds, plants, reef fish, and marine turtles. His scientific interests lie in evolutionary ecology, biogeography, and conservation biology, with a strong emphasis on integrating ecological research with community-based conservation practices.

Over the past two decades, Dr. Shanker has been deeply involved in sea turtle conservation across India, particularly with olive ridley turtles along the Odisha coast and in the Lakshadweep islands. His work has combined rigorous ecological monitoring with participatory approaches, ensuring that local communities play a central role in conservation. This philosophy led him to establish Dakshin Foundation, a non-profit organization that promotes sustainable governance of coastal and marine ecosystems by recognizing the social, cultural, and political contexts in which conservation operates.

Beyond academia, Dr. Shanker is a prolific writer and communicator. His book *From Soup to Superstar* (2015) traces the history of sea turtle conservation in India, while *Lori's Magical Mystery* (2017) and other children's stories blend ecological themes with imaginative storytelling. He is also the founder of *Current Conservation*, a magazine that bridges science, art, and narrative to make ecological issues accessible to wider audiences. His essays and reflections on diving, shola grasslands, and the Andaman Islands have appeared in popular outlets, furthering his mission of connecting people with nature.

His research contributions extend to macroecology and evolutionary biology, including studies on elevational diversity of birds, diversification of frogs in the Western Ghats, and global phylogeography of sharks and rays. He has also led long-term monitoring of reef fish communities and turtle foraging patterns in Lakshadweep, alongside collaborative projects that develop resource monitoring programs with coastal communities.

Outside of his professional life, Dr. Shanker is passionate about music, basketball, and creative writing. He often describes himself as a "turtle tracker" who finds equal joy in the mountains and the sea. His career exemplifies the integration of rigorous ecological science with grassroots conservation and creative communication, making him one of India's most influential voices in biodiversity conservation today.



ANIRUDH VASAVA

**Executive Director, VNC-INDIA
Member - Crocodile Specialist
Group**

An interdisciplinary biologist and a strong advocate of community-based conservation, he founded initiatives like the Charotar Crocodile Count, Children's Crocodile Festival, and Crocodile Guardian Initiative to engage communities and youth in wildlife coexistence.

DR. RAJU VYAS

**Joint Vice Chair of the IUCN/SSC/
Crocodile Specialist Group
South Asia and Iran**

Dr. Vyas has over 30 years of extensive research and field experience in various herpetological projects and has been carrying out extensive assessment and mitigation of human mugger conflicts in the Gujarat state. He is the Joint Vice Chair of the IUCN/SSC/ Crocodile Specialist Group - South Asia and Iran, and a member of the IUCN/SSC South Asian Amphibian and Reptile Specialist Group and IUCN/SSC/ Conservation Breeding Specialist Group



GUEST SPEAKER



YASHENDU JOSHI

**PhD Fellow at the National Museum
of Natural History**

He is studying human-nonhuman relationships and how animals adapt to cities. He holds a master's in Wildlife Biology and Conservation from NCBS-TIFR, Bengaluru. His thesis, "The Crocodile Conundrum of Charotar," explored the coexistence between people and marsh crocodiles in Gujarat

GUEST SPEAKER

DR. HARSHIL PATEL

**Scientist at the Thackeray Wildlife
Foundation, Mumbai**

A naturalist from Valsad, Gujarat, specializes in the systematics and taxonomy of reptiles and amphibians, while also exploring broader biodiversity and conservation. He earned his PhD in 2018 from Veer Narmad South Gujarat University, Surat.

In his career, he has described 4 new genera, 18 new reptile species, and one plant species, with nearly 70 research publications. His current focus is documenting biodiversity across scales and tackling the Linnean, Wallacean, and Darwinian shortfalls in conservation.



GUEST SPEAKER



Glimpses CCC 2024





11th Charotar Crocodile Count 2024



ACKNOWLEDGEMENT

It brings us great joy in bringing this report of the recently concluded 11th Charotar Crocodile Count-2024. The event was a great success. A major thanks you to Dr. Devang Joshi, Registrar (CHARUSAT) and Dr. Bhaskar Pandya, Principal, Indukaka Ipcowala Institute of Management (CHARUSAT) who have been supporting the event since its inception. We hearty thank them for their valuable support and inspiration.

This program wouldn't have been possible without the efforts of VNC's volunteers who helped manage the count and coordinated the team in the field. We thank all the volunteers for their liberal help. You guys did an excellent job.

We additionally thank numerous organisations who have been supporting our aim of conserving crocodiles in Charotar. The Rufford Small Grant Foundation and the Duleep Matthai Nature Conservation Trust supported our initial work on conservation of muggers in Charotar. Further supported was provided by Idea Wild. We are thankful to aforementioned organisation for supporting us.

At last yet most importantly, we thank the residents of Charotar region who have acknowledged this species as co-occupant, and are focused on supporting mugger conservation in this area

Crocodile Research Team
Voluntary Nature Conservancy





VOLUNTARY NATURE CONSERVANCY

www.vncindia.org/www.crocodilecount.org

101, Radha Darshan,
B/H Union Bank of India,
Vallabh Vidyanagar – 388120
Anand, Gujarat

Call: +91-9898142170

Email: info@vncindia.org/anirudh@vncindia.org