



Charotar Crocodile Count

# 7<sup>TH</sup> CHAROTAR CROCODILE COUNT

*Counting Crocodile for Conservation*

**3<sup>rd</sup>-5<sup>th</sup> January 2020**

**Vallabh Vidyanagar, Gujarat**



**VNC**

*Voluntary Nature Conservancy*

[www.vncindia.org](http://www.vncindia.org)



# 7<sup>TH</sup> CHAROTAR CROCODILE COUNT-2020

*Counting crocodile for Conservation*

**3<sup>rd</sup> – 5<sup>th</sup> January 2020**

**A Citizen Science Initiative By**  
*Voluntary Nature Conservancy*



**IN COLLABORATION WITH**



**PROGRAM PARTNERS**

**OUR SUPPORTERS**



**Duleep Matthai**  
Nature Conservation Trust



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**Report Design & Preparation:** Anirudh Vasava

**Cover Photo:** Anirudh Vasava

**Back Cover Photo:** Shubham Parmar

*Voluntary Nature Conservancy*

101 - Radha Darshan, Behind Union Bank of India,  
Vallabh Vidyanagar-388120  
Gujarat, India

info@vncindia.org / www.vncindia.org / Phone No. - (+91) 9898142170



## WHAT'S CHAROTAR CROCODILE COUNT?

Charotar Crocodile Count, born in 2013, is an annual event, designed to bring together a diverse set of participants to understand the importance of muggers and wetland in the present day conservation scenario. This voluntary based initiative while helping us to gain a better understanding of crocodile's status and distribution across the Charotar region and providing participants an opportunity to meet people who live alongside crocodiles, aims at inculcating a holistic understanding of the subject amongst the participants, who can then become the ambassador of conservation in their respective regions. This program is first of its kind in Gujarat and has generated a very useful population data over the years (2013-2019), which is being used by wildlife managers, researchers and conservation organisations alike.

## IMPORTANCE OF CHAROTAR REGION

Charotar region is significant for sustenance of mugger population of Charotar and for meta-population of Central Gujarat. The region is also an important dispersal and breeding ground for muggers between the meta-populations in Central Gujarat. The region not only hosts an important population of muggers but also multitude of fascinating rich faunal diversity, especially birds. Notable is the largest population of Sarus cranes in the state that survives in Charotar, and other parts of Anand-Kheda districts. However, the reason this population is important is that this population does not survive in any forested or protected area but in village pond and canals amongst the humans. And the most intriguing aspect of these population is that the muggers and the villagers survive along each other without much conflicts, setting a fine example of what we know as "co-existence". Mahi Irrigation Project irrigates large areas in this region, and therefore an intensive irrigation canal network interlinks most of the water bodies. This extensive network of canal acts as travelling routes for the dispersing crocodiles, and thus favours genetic exchange.

These wetlands serve as a lifeline for agriculture in and around the landscape. Moreover, this population is very much safe compared to other population where habitat destruction and negative attitudes threatens their survival. Our earlier surveys have found that there exists a high tolerance of muggers amongst the people of Charotar. This ecological diversity and richness, in synergy with ecological services, acts as a lifeline for the people living in the region corridor. In order to secure this rich socio-ecological heritage, understanding and working towards protecting this area and the social habitat, this area corridor is of critical importance.

## CROCODILE POPULATION ASSESSMENT METHOD?

VNC uses an approach called "Citizen Science" to count crocodiles in Charotar. Citizen Science is an exciting, multifaceted way to bring people from all walks of life together for research and conservation.

For crocodile counts, a team of 5-12 volunteer, depending on the size of the water body to be surveyed, was 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 individual, size, location and activity (if any). The surveys began after 8:30 AM and continued till 2:00 PM.

## HOW DOES THIS CROC COUNT HELPS?

The count provides an ideal opportunity to understand the significance of biodiversity and how villagers harmoniously coexist with muggers.

-It also helps participants understand the intimate relationship local communities share with ecosystem and understand how muggers indirectly manage ecosystem by functioning as keystone species.

-All relevant information on population observed during the count will be shared with concerned authorities for the management purposes.



# PARTICIPANT'S DEMOGRAPHY

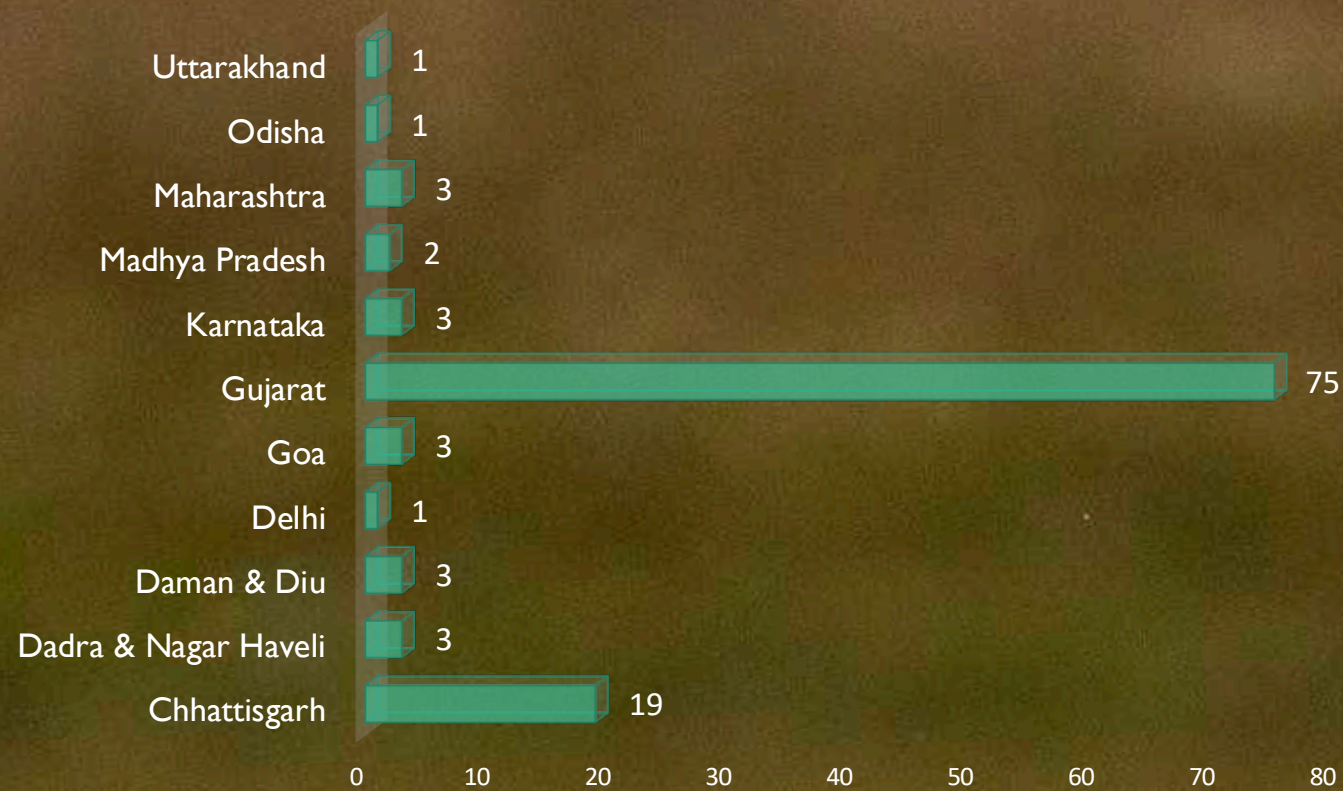


Fig 1: Statewise participation of individuals in the 7<sup>th</sup> Charotar Crocodile Count 2020.

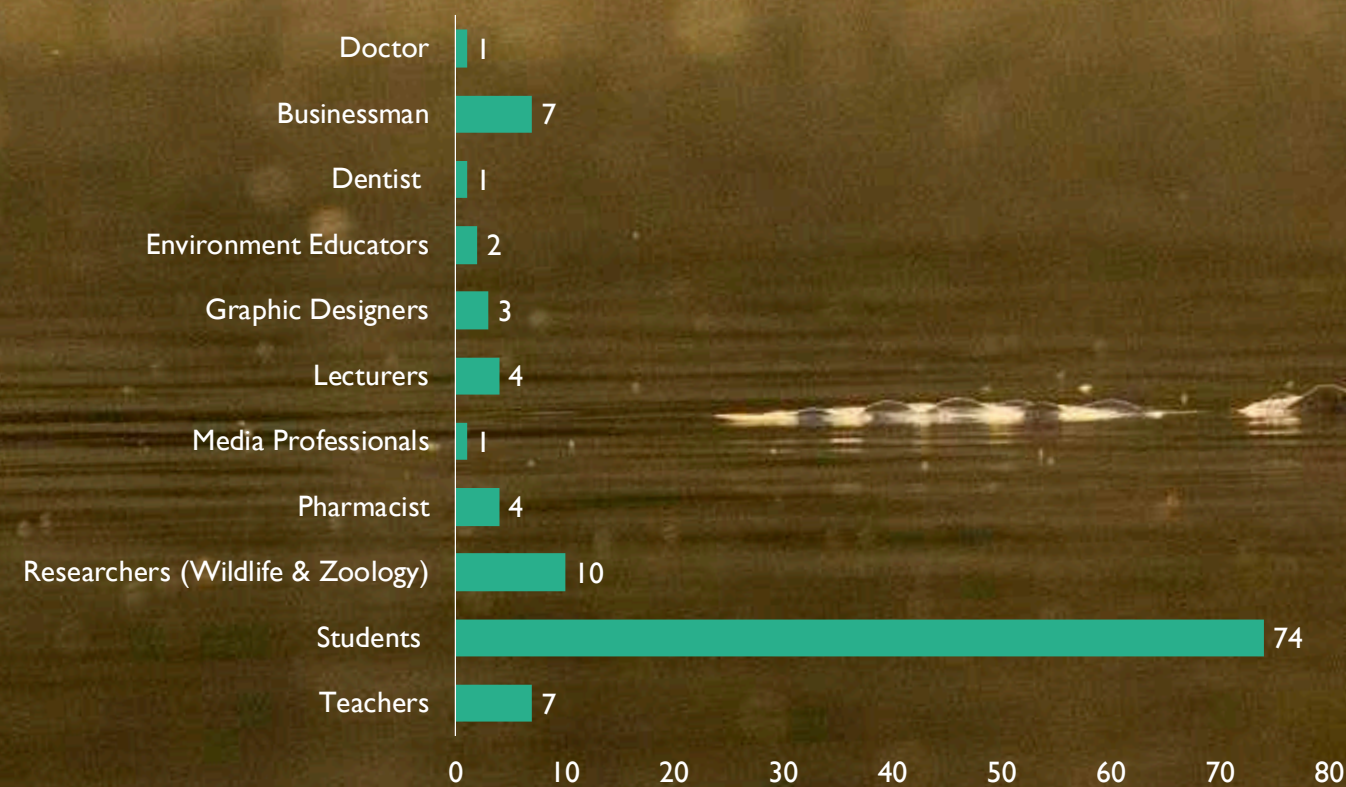


Fig 2: Profession/career wise participation of individuals.

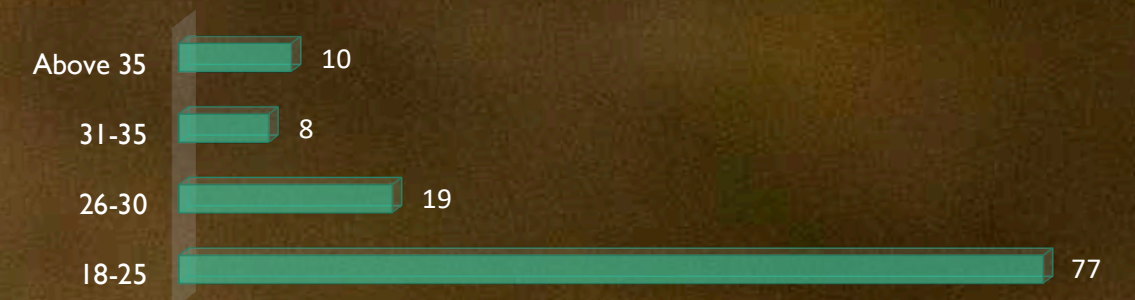
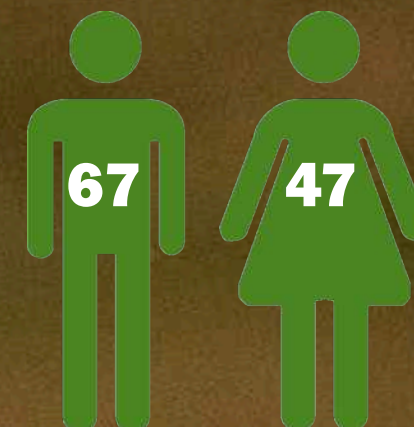


Fig 3: Age-wise participation of individuals.



**114**  
Participants

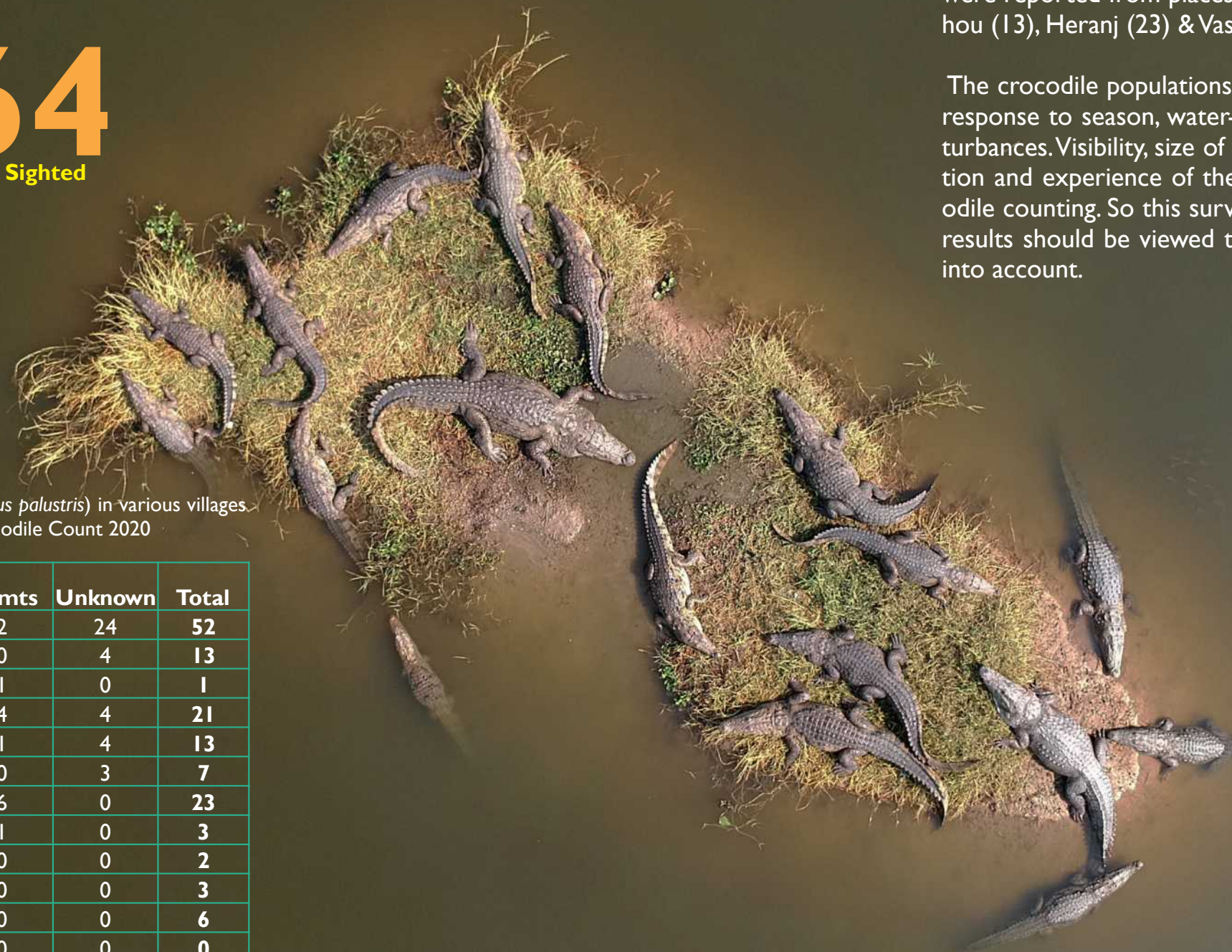
**9**  
States

**2**  
UT's



**114** Participants  
**2** Days  
**22** Villages Visited  
**30** Wetlands Surveyed

**164**  
 Crocodiles Sighted



## How MANY Did You COUNT?

Most of the crocodile sightings came from 12 villages, with nearly one third of the population (52/164) reported from Deva village alone. Significant populations (>10 individuals) were reported from places like Malataj (21), Petli (13), Dabhau (13), Heranj (23) & Vaso (10).

The crocodile populations in Charotar is highly dynamic in response to season, water-level fluctuation and human disturbances. Visibility, size of the wetland, presence of vegetation and experience of the observer also affects the crocodile counting. So this survey is not conclusive enough, and results should be viewed taking the aforementioned factors into account.

Table 1: Population estimation of mugger crocodiles (*Crocodylus palustris*) in various villages of Charotar region, Gujarat, India during the 7<sup>th</sup> Charotar Crocodile Count 2020

Villages	>3 mts	2-3 mts	1-2 mts	<1 mts	Unknown	Total
Deva	5	3	18	2	24	52
Petli	1	3	5	0	4	13
Changa	0	0	0	1	0	1
Malataj	0	2	11	4	4	21
Dabhau	0	3	5	1	4	13
Marala-Naghrama	0	4	0	0	3	7
Heranj	2	12	3	6	0	23
Khandhali	0	2	0	1	0	3
Laval	0	1	1	0	0	2
Bhadkad	0	1	2	0	0	3
Traj	1	4	1	0	0	6
Tranja	0	0	0	0	0	0
Kathoda	0	0	0	0	0	0
Devataj	0	0	0	0	0	0
Sojitra	0	0	0	0	0	0
Gada	0	0	0	0	0	0
Dali	0	0	0	0	0	0
Navagam	0	0	1	4	0	5
Pij	0	2	1	2	0	5
Vaso	1	1	2	3	3	10
<b>Sub-Total</b>	<b>10</b>	<b>38</b>	<b>50</b>	<b>24</b>	<b>42</b>	<b>164</b>

## How BIG WERE THE CROCDILES?

**24** <1 m  
**50** 1-2 m  
**38** 2-3 m  
**10** >3 m  
**42** Unknown Size



# COMPARISON OF CROCODILE COUNT DATA (2013-2020)



Fig 4: Comparison of mugger crocodiles estimated in various villages of Charotar region during the 7th Charotar Crocodile Count (2020) and earlier counts (2013-2019)

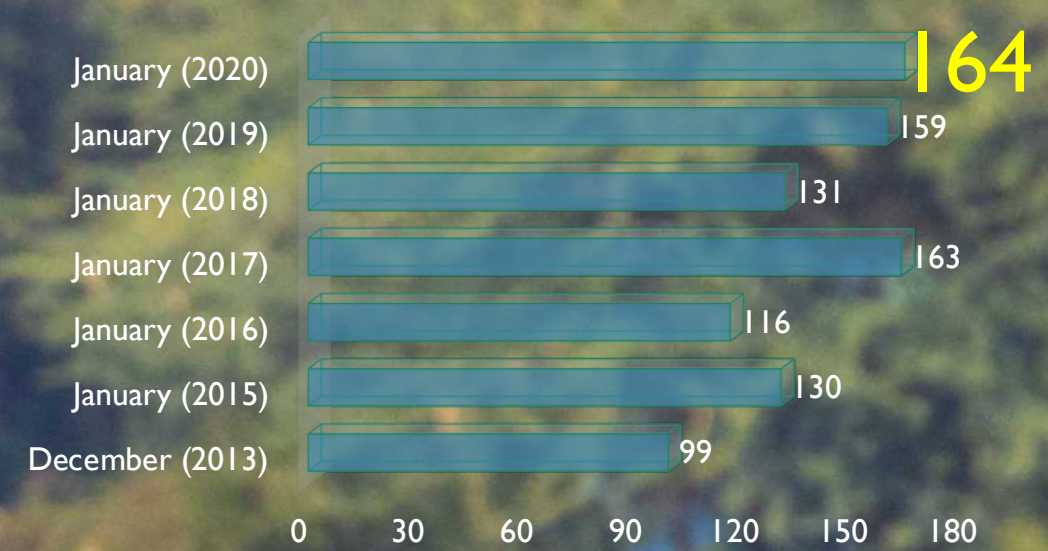


Fig 4: Population estimates of mugger crocodiles in Charotar region counted over the years (2013-2020) during the Charotar Crocodile Count.



Photo By: Niyati Patel



# Dr. A.J.T. JOHNSINGH

## THE HONORABLE GUEST

The words can't communicate the delight and honor that VNC felt having gotten Dr.A.J.T. Johnsingh as the chief guest of the 7<sup>th</sup> Charotar Crocodile Count 2020. He enthusiastically visited villages such as Petli, Malataj, Deva, Heranj and Traj. While glad to see that such a solid populace survives in such human dominated area, he was similarly happy to observe the peaceful co-existence among human and crocodile in Charotar. He appreciated the work that VNC does here in Charotar and offered very valuable suggestion for sustaining the crocodile population and management of habitat. He was also happy to see a healthy population of sarus crane here in Charotar.

He was facilitated by VNC for his commitment to conservation of wild-life in India with a memento, presented to him by Dr. Bhaskar Pandya, Head, Humanities and Social Sciences (HSS), Indukaka Ipcowala Institute of Management (I2IM), CHARUSAT.

### INTRODUCTION

**Eminent Wildlife Biologist**, Nature Conservation Foundation,  
**Honorary Scientific Advisor**, Corbett Foundation, WWF-India  
**Former Dean**, Wildlife Institute of India,  
**Ex-Memembe**, National Board for Wildlife, Government of India,  
**Past member**, National Tiger Conservation Authority  
**Past member**, Uttarakhand State Wildlife Board.

**Member**, IUCN's Asian Elephant, Cat, Canid, Bear and Caprinae Specialist Groups.

#### Author

- Field Days: A Naturalist's Journey through South and Southeast Asia' (2005),
- Walking the Western Ghats' (2015) '
- On Jim Corbett's Trail and Other Tales From the Jungle' (2018).
- Mammals of South Asia (Part I-2)

#### Awards & Recognitions-

- Distinguished Service Award, Society for Conservation Biology, 2004
- Carl Zeiss Wildlife Conservation Award, 2004
- ABN AMRO Sanctuary Lifetime Wildlife Service Award, 2005
- Kirkoskar Vasundhara Sanman, 2014
- Salim Ali Conservation Award, 2015





# EXPERTS

CHAROTAR CROCODILE COUNT 2020

**Dr. Raju Vyas**, a veteran herpetologist and crocodile scientist shared his in-depth understanding of the human-crocodile conflict and its mitigation, acquired through his more than 30 years of research on crocodile and conflicts in Gujarat.



Photos By: Krutarth Patel



Photos By: Mehul A. Patel

**Soham Mukherjee**, a well-known herpetologist and wildlife rehabilitator, talked about crocodile, conflict and conservation in Gujarat.

**Dr. Pranav Trivedi**, A wildlife Scientist and a Nature Educator, formerly Senior Scientist with Nature Conservation Foundation (NCF), Mysore, talked on the subject of human-nature relationship and its restoration through nature education



Photos By: Shubham Parmar



# A GLIMPSE.... 7<sup>TH</sup> CHAROTAR CROCODILE COUNT 2020



Anirudh Vasava, introducing the program to the participants



Dhaval Patel, Managing Trustee during the orientation of participants



Participants understanding indirect signs in the field



Participants collecting human-crocodile relation data



Participants in the field



Participants in the field



Shreyash Patel, VNC's volunteer, explaining the diet of a crocodile from a scat



Jilesh Patel, explaining the participants about the crocodile habitat



Participants and guests listening to other speakers.



Gunjan Buch, VNC's volunteer, coordinating interaction session



On field training of the participants



Participants interacting with local villagers



Dr. Pranav Trivedi, delivered a lecture on "Back to Nature"



Soham Mukherjee, delivered a lecture on crocodile management





Participants learning about crocodile habitat



Gunjan Buch, explaining the nesting mugger's behaviour to participants



Dr. AJT Johnsingh talking about "My life with wildlife"



Dr. Bhaskar Pandya presenting the memento to Dr. AJT Johnsingh



Neel Talati, VNC volunteer, leading a team of participants



Participants enjoying viewing crocodiles at Deva village



Mukesh Dave presenting a token of gift to Dr. Bhaskar Pandya



Mehul B Patel presenting a token of gift to Dr. Raju Vyas



Participants counting crocodiles



Participants counting crocodiles



Swati Sucharita a participant from Bangalore sharing her views



Sricharan Desai a participant from Goa sharing his views



Dr. A.J.T. Johnsingh in the field, visiting Malataj (Left) and Heranj villages (Right), respectively.



Geeta Yadav, a participant from New Delhi sharing her views



Tanvi Gohel, a participant from Bhavnagar sharing her views



## ACKNOWLEDGEMENT

Once again! The main credit goes to all the participants and volunteers who worked tirelessly for two days to make the “7<sup>th</sup> Charotar Crocodile Count 2020” a huge success. It was great to see many faces from different parts of India, enjoying themselves together in the field! Thank you to all who took part! We hope that you enjoyed your stay the way we enjoyed it. (See page 19-20 for the group photo and list of the participants).

Our thanks and gratitude go out to the special guest Dr.A.J.T.Johnsingh, Scientist, Conservationist and Author, for taking the time to participate, and motivating the participants. One of India’s leading naturalists and field biologists, Dr. Johnsingh has gotten a few global honors including the Distinguished Service Award by the Society for Conservation Biology, the Carl Zeiss Wildlife Conservation Award, both in 2004, the ABN AMRO Sanctuary Lifetime Wildlife Service Award in 2005, ‘Kirkoskar Vasundhara Sanman’ in 2014’ and Salim Ali Conservation Award in 2015. It was a flat-out respect for VNC to have him and show him around our field sites and work in Charotar. His visit became one of the significant occasions at VNC. Seeing you here and having so much support made the event memorable.

A major thanks you to Dr. Devang Joshi, Registrar (CHARUSAT) and Dr. Govind Dave, Principal, Indukaka Ipcowala Institute of Management for their help and facilitating the occasion at CHARUSAT, Changa. Dr. Bhaskar Pandya, Head, Humanities and Social Sciences, showed an active interest in the event and took care of everything at the end of the CHARUSAT. We hearty thank him for his valuable assistance during the event.

We also thank Dr. Pranav Trivedi, a Wildlife Scientist and a Nature Educator, former Senior Scientist with Nature Conservation Foundation (NCF), Mysore, for joining us and revealing the subject of human-nature relationship and its restoration through nature education. We appreciate the time he took to visit and us.

We express gratitude toward Shastri Narayan Charandas Swami of Vrajbhoomi International School for the transportation facilities. We likewise thank Mehul B Patel, who not effectively took an interest in the occasion, yet additionally helped the guest travel around.

We also thank the Management of Shree Swaminarayan Mandir-Vadtal, for providing the accommodation facilities to the participants. VNC additionally say thanks to Biren Patel, proprietor of Nisarg Hostel, Changa for facilitating breakfast for the participants during the course of Program.

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. Jeet Suthar, courteously designed the website of the Charotar Crocodile Count, as well as facilitated the process of registration, and lead teams in the field. Prachi Bhatt & Merlina Keith created the content for the website. Gunjan Buch, readily agreed to take on the responsibility of coordinating all the participants during the event. Jaimin Makwana, assisted the program from the beginning to end, and looked over the logistics and management aspects. Shreyash helped us secure many of the resources needed during the event. We thank all the volunteers mentioned/not mentioned for this liberal help. You guys did an excellent job. Congratulation. (See page 21-22 for the group photo and list of the volunteers).

We also recognize the media support from Shubham Parmar, Krutarth Patel, and the group of Cassidix Media Works for documenting and reporting the occasion fabulously. Jay Suthar and Bhaumik Chandra Rajdeep took care of the drone footages. We thank them for the help.

We additionally thank numerous organisations who have been supporting our aim of conserving crocodiles in Charotar. NAJA India ([www.naja.in](http://www.naja.in)), has been our associate on numerous ventures, and an ardent supporter in different activities. 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

Once more, we deferentially recognize and thank all the participants, Volunteers and supporters. This occasion wouldn’t have been a success without your help!

Crocodile Research Team  
Voluntary Nature Conservancy





Photo By: Krutarth Patel

### Thank you everyone who participated!

We heartily thank the participants for the efforts they put in making this event successful. Seeing each of you there and having so much support made the event successful and memorable. Special thanks to Aadit Patel, Abhishek Singh, Aesha Mehta, Afridi Shaikh, Aishwarya Chandra, Ajay Amaria, Akshay Suryavanshi, Alok Singh, Aman Dwivedi, Ankita Ranjan, Anshul Joshi, Archi Mohile, Bhumika Lilhare, Charith R., Chinmay Puranik, Devanshi Trivedi, Dhruvit Vora, Dhruvi Shukla, Dhyani Trivedi, Dipti Chaudhari, Divya Dansena, Dushyant Sahu, Geeta Yadav, Ghanshyam Jaiswal, Gohel Tanvi, Harsh Soni, Hemant Suryabanshi, Jagdish Parmar, Jahnvi Parikh, Jaimin Bhabhor, Jessica Katara, Jigisha Rohit, Kajal Patel, Kuldip Topo, Mayur Gawas, Miti Patel, Mohan Ram Yadav, Nishad Neha, Palak Patel, Pavithra Sundar, Phalguni Sarkar, Pitamber Lal Sahu, Pranav Vaghashiya, Priya Christie, Priyam Mandaliya, Pruthviraj Patel, Rahulratan Chauhan, Rajat Kumar Yadav, Rajuji Odedara, Rakesh Kote, Resham Jain, Reshma Mehra, Rishikesh Dakre, Roshan Khamari, Roshani Pradhan, Sagar Chauhan, Sandhya Tirkey, Shantanu Karandikar, Sheetal Prajapati, Shivam Bhardwaj,

Shivam Chandrakar, Shreya Mishra, Shricharan Desai, Shubhank Sonkar, Siddhant Patel, Surendra Bagada, Swapnil Patel, Swapnil Mehta, Swati Sucharita, Tamanna Chaudhari, Ujjwal Rao, Vivek Kumar Patel, Vrushank Trivedi, Yash Nirmalkar, Yash Maheta, Yashaswi Garg, Yogi Sutariya,



## VNC 'S TEAM WITH DR.A.J.T. JOHNSINGH



**Standing, From left to right:** From left to right Vandan Parekh, Mehul B Patel, Jilesh Patel, Mukesh Dave, Nikhil Parekh, Jay Suthar, Shreyash Patel, Anirudh Vasava, Mehul A Patel, Jay Patel, Dr.A J T Johnsingh, Dhaval Patel, Bhaumik Chandra Rajdeep, Karan Patel, Dr, Raju Vyas, Het Patel, Neel Talati, Diti Dave, Deep Barot, Jeet Suthar, Urvi Dave, Shubham Parmar, Jignesh Patel, Prachi Bhatt, Niyati Patel.

**Volunteers not in the picture:** Girish Patel, Pradhyuman Sindha, Jaimin Makwana, Gunjan Buch, R. Sathya Narayanan, Vishal Mistry, Krutarth Patel,.



## MEET VNC's CROC TEAM



**ANIRUDH VASAVA** works with VNC where he develops and manages research and conservation projects. He has broad interest in large predator ecology and human-wildlife conflicts, and has more than seven years of experience in wildlife research. His current research integrates ecological studies with geospatial analysis and human dimensions to develop models for management purposes. He leads and manages the crocodile research and conservation initiative at VNC, and coordinates all the relevant activities.

([anirudh@vncindia.org](mailto:anirudh@vncindia.org))



**DHAVAL PATEL** is the Founder and Managing Trustee of Voluntary Nature Conservancy. Since 1988, he has been actively involved in environment education, awareness and protection, and has more than 20 years of experience in educating the public. He is an active part the crocodile research team at VNC, and assist in developing educational programs for creating awareness about crocodiles.

([dsp@vncindia.org](mailto:dsp@vncindia.org))



**MEHUL PATEL** coordinates education as well as wildlife rescue and rehabilitation programs of VNC and is actively involved in mitigation of urban Human-Wildlife Conflict since 2009. He has provided nature education to more than a lakh people in both urban and rural region of Charotar. He has also conducted several educational programs for creating awareness about crocodile.

([mehul@vncindia.org](mailto:mehul@vncindia.org))



**SOHAM MUKHERJEE** is a herpetologist and wildlife rehabilitator based in Ahmedabad. He was instrumental in developing the enrichment and behavioral training programs for crocodilians and other reptiles at MCBT. He is the founder of the organization NAJA ([www.naja.in](http://www.naja.in)) which carries out work on human-crocodile conflict mitigation, snakebite mitigation and python ecology in Gujarat.

([soham@naja.in](mailto:soham@naja.in))



**DR. RAJU VYAS** has 30 year's extensive research and field experience in various herpetological projects and has published extensively on the subject. He 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. He has been an active part of all the projects on crocodile that are being carried out at VNC.

([razoovyas@gmail.com](mailto:razoovyas@gmail.com))



**VISHAL MISTRY** has been involved in wildlife rescue and rehabilitation for more than ten years and has broad experience as research assistance in various research projects. He has assisted in surveys of carnivores, herbivores, vultures, flamingoes, sarus crane, odonates in various parts of Gujarat. Vishal is an indispensable part of VNC's Crocodile Research Team, and assist in crocodile monitoring, nest and burrow survey and awareness programs.

([vmistry@vncindia.org](mailto:vmistry@vncindia.org))



## *Voluntary Nature Conservancy*

Vidyanagar Nature Club/Voluntary Nature Conservancy (VNC) is registered as Public Charitable Trust Vides No: E/2659/Anand under Bombay Public Trusts Act 1950 in the year 2003 with the main mission of creating environmentally sensitive society. Located in Vallabh Vidyanagar town of Gujarat, VNC has been working actively since its inception with its primary objectives to inculcate love for the environment, and appreciate sustainable living. Started with the idea of sharing the simple joys of bird watching, cycling in the midst of nature, and enjoying being in nature's lap, VNC has grown into an organisation whose working areas now broadly include (1) Environment Education, (2) Research & Conservation, and (3) Awareness & Advocacy. VNC tries to fill up the prevailing gap that exist in the society and education system for environment education and learning, and conducts extensive educational programs in schools and colleges. VNC's wildlife related projects include India wolf monitoring in Kutch, mugger crocodile conservation in Gujarat, understanding and mitigating crop depredation in Little Rann of Kutch, forest owlet monitoring in south Gujarat, assessing and mitigating snakebite in Gujarat, capacity building to assist wildlife conservation and citizen science initiative to promote crocodile conservation. VNC carries out various campaigns such as the Snakebite Mitigation Program, Save the Sparrow project, Greenathon (annual marathon), Save the Vulture program, and drives to reduce pollution. Besides this, we also deal with ongoing environmental issues that occur around us, such as illegal cutting of trees, water pollution, and waste management. VNC is accredited by GEF, (Global Environment Facility) and is a member of GEA (Global Environmental Action) & SAYEN (South Asia Youth & Environment Network). VNC is also registered Non Profit foundation as Voluntary Nature Conservancy in USA.

### **Address**

101- Radha Darshan, Behind Union Bank of India,  
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Gujarat, India

info@vncindia.org  
www.vncindia.org  
Phone No. - (+91) 9898142170

### **For further information:**

Anirudh Vasava  
Coordinator, Research & Conservation  
anirudh@vncindia.org

Mehul Patel  
Voluntary Nature Conservancy  
mehul@vncindia.org







*Voluntary Nature Conservancy*

101- Radha Darshan, Behind Union Bank  
of India  
Vallabh Vidyanagar- 388120  
Gujarat, India  
[www.vncindia.org](http://www.vncindia.org)