

THE MADRAS CROCODILE BANK TRUST
AND
CENTRE FOR HERPETOLOGY



Annual Report for the year
2023-2024



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REPORT OF THE OFFICER-IN-CHARGE

This has been a good year for Croc Bank. The curatorial, veterinary, and education teams planned and conducted programs and workshops throughout the year. Volunteers and docents helped out with many tasks and executed specific projects assigned to them. The adoption program expanded, thanks to our well-wishers. There were several defining activities at the Croc Bank this year, but the most exciting was the progress made in our snakebite mitigation project: many significant meetings with policy makers at the state and central level, more international linkages, and some steps forward with the development of the venom cooperative.

HISTORY OF THE ZOO

By the mid-20th century hunting crocodiles was a lucrative enterprise throughout the tropics, and by the 1970s, India's croc populations had been exploited to the brink of extinction. Realizing this fact, the Indian government protected all three species of Indian crocodilian under the Wild Life Protection Act of 1972.

Responding to the need of that time, Rom and Zai Whitaker established the Madras Crocodile Bank Trust in 1976 with the specific goal of securing breeding populations of the three species of Indian crocodile: the mugger (*Crocodylus palustris*), the saltwater crocodile (*Crocodylus porosus*) and the rarest of all, the gharial (*Gavialis gangeticus*). The Croc Bank was originally designed to be a living genetic repository of crocodiles for safekeeping, to protect and multiply until such time when they could be returned to restock their original wild habitats. This action was initially met with tremendous success, but today, release into the wild has stopped due to shrinking wilderness areas and the lack of suitable habitat.

As the need for the conservation of reptiles grew, the Croc Bank increased its repertoire to include turtles, lizards and snakes and it came to be known as the Madras Crocodile Bank Trust and Centre for Herpetology. Today, at 48 years of its existence, Croc Bank is home to 15 species of crocodilians, three of which are listed by the IUCN as critically endangered with a further three listed as threatened- the zoo now successfully breeds several species of chelonians, including two listed as critically endangered.

The Croc Bank is far more than a typical zoo and in fact our core operation is as much a field-based conservation outfit as it is a collection of captive animals for safekeeping with two permanent field stations and several projects running concurrently.

VISION, MISSION AND OBJECTIVES OF MCBT

The mission of Madras Crocodile Bank Trust and Centre for Herpetology is to promote the conservation of reptiles and amphibians and their habitats through education, scientific research and captive breeding. Efforts focus on, but are not limited to, Indian species and ecosystems and include both in situ and ex situ components. The vision is to develop and run a world-class reptile zoo with the following objectives:

- Conservation breeding of endangered species in captivity and maintenance of a gene bank for endangered reptiles.
- Facilitate research and scientific studies on reptile behaviour, enrichment of enclosures, feeding, nutrition and reproductive biology.
- Promote visitor education and awareness of the role of reptiles in the natural world and the importance of reptile conservation.
- Ensure comfortable housing for all reptiles with special attention to health care, animal welfare and excellent husbandry.

ABOUT US

Basic Information about the Zoo

1	Name of the Zoo	Madras Crocodile Bank Trust and Centre for Herpetology
2	Year of Establishment	1976
3	Address of the Zoo	Post bag No.4, Vadanemmelli Village, East Coast Road, Mamallapuram- 603104, Tamil Nadu, India
4	State	Tamil Nadu
5	Telephone Number	+91 9677013445
7	E-Mail Address	info@madrascrocodilebank.org
8	Website	www.madrascrocodilebank.org

9	Distance from Nearest	Airport: 39.7km
		Railway Station: 41.6km
		Bus Stand: 0km
11	Category of Zoo	Medium
12	Area (in Hectares)	3.4
13	Number of Visitors (Financial Year)	Adult: 2,52,636
		Children: 74, 008
		Total Indian: 3,26,644
		Total Foreigners: 8,308
		Total Visitors:3,34,952
14	Visitors' Facilities Available in Zoo	<ul style="list-style-type: none"> • Snack Kiosk • Potable Water • Education Centre • All terrain wheelchair • Benches in shady areas
15	Weekly Closure Day of the Zoo	Monday

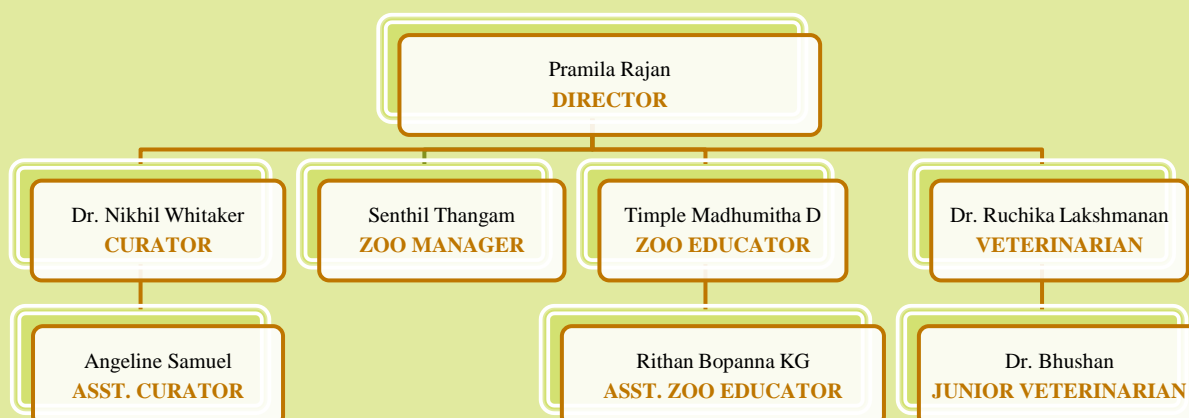
Operator of the Zoo

Name of the Operator	Trust Operator Zai Whitaker, Managing Trustee
Address of the Operator	Madras Crocodile Bank Trust Post bag No.4, Vadanemmelli Village, East Coast Road, Mamallapuram-603 104, Tamil Nadu, India
Contact Details/Phone Number of Operator	+91 9487409737
E-Mail Address of Operator	zai@madrascrocodilebank.org

HUMAN RESOURCES

Management Personnel of MCBT

Name of the Officer In-Charge	Pramila Rajan
Name of The Veterinary Officer	Dr. Ruchika Lakshmanan
Name of the Curator	Dr. Nikhil Whitaker
Name of Zoo Manager	Senthil Thangam
Name of the Education Officer	Timple Madhumitha D
Name of Assistant Curator	Angeline Samuel
Name of Assistant Zoo Educator	Rithan Bopanna KG
Name of the Junior Veterinarian/Compounder/ Lab Assistant	Dr. Vikram Tiruvarur Dr. Bhushan Krishnamoorthy
Name of the Biologist	V. Mohanasundram



Staff members of MCBT

S.NO.	DESIGNATION	NAMES OF STAFF
	<i>Accountant</i>	M. Mohan
	<i>Assistant Accountant</i>	M. Pavithra
	<i>Chief Reptile Keeper</i>	S. Nagarathinam
	<i>Maintenance Supervisor</i>	L. Gunasekaran
	<i>Supervisor, Entrance and Pen watchers</i>	T. Mohan
	<i>Senior Office Assistant</i>	C. Purushothuman
	<i>Ticket checker</i>	N. Selvamani
	<i>Ticket checker</i>	R. Gnanamurthy
	<i>Enclosure Maintenance and Housekeeping</i>	E. Amutha
	<i>Chelonian Keeper</i>	J. Shanthi
	<i>Driver</i>	M. Ramu
	<i>Animal Keeper</i>	S. Janakiraman
	<i>Croc Shop Operator</i>	N. Pushparani
	<i>Chief Cook</i>	G. Ashok Somai Magar
	<i>Cleaning and Maintenance Asst</i>	S. Mohan
	<i>Animal Keeper</i>	G. Gowri Shankar
	<i>Animal Keeper</i>	P. Boobalan
	<i>Security Guard</i>	Tek Bahadur Somai Magar
	<i>Security Guard</i>	Budibal Somai Magar
	<i>Security Guard</i>	Krishna Somai Magar
	<i>Enclosure Maintenance</i>	V. Yuvarani
	<i>Maintenance and Cook</i>	A. Kumari
	<i>Maintenance Assistant</i>	K. Elumalai

Capacity Building of zoo personnel

NAME AND DESIGNATION	SUBJECT MATTER OF TRAINING	PERIOD OF TRAINING	NAME OF THE INSTITUTION
Ruchika Lakshmanan	Capacity Building Workshop for Zoo Veterinarians	16th – 18th October, 2023	Central Zoo Authority and hosted by Vanvihar National Park and Zoo, Bhopal
Zoo Keepers Gowrishankar and Venkatesh	Capacity Building Programme for Zoo Keepers	December 6th to 8th, 2023	Sri Venkateswara Zoological Park, Tirupati, Andhra Pradesh
Rithan Bopanna KG	Capacity Building Workshop for Zoo Educators	6 th to 8 th November 2023	Central Zoo Authority and Nawab Wazid Ali Shah Zoological Park, Lucknow, Uttar Pradesh
Gnaneswar CH	Venom Conference	27 th September-1 st October, 2023	East African Snakebite Conference in Kenya
Gnaneswar Indira Naidu	Conservation	9th-12th October 2023	Student Conference for Conservation Sciences at Bangalore

COMMITTEES

Zoo Advisory Committee

- Date of constitution – 1976
- Members
 - Romulus Whitaker
 - Zai Whitaker
 - Samit Sawhny
 - Ashish Gupta
 - Kamini Sundaram
 - M.M. Venkatachalam
 - Meera Anna Oommen
 - Nikhil Whitaker
- Dates on which Meetings held during the year
08/07/23, 14/10/23, 13/01/24 & 13/04/2024

Health Advisory Committee

- Date of constitution - 01/04/2023
- Members
 - Dr. Ruchika Lakshmanan, Veterinary Officer, MCBT
 - Dr. Vikram Tiruvarur, Junior Vet, MCBT (April-Jun, 2024)
 - Dr. Bhushan Krishnamurthy, Junior Vet, MCBT (August, 2024)
 - Dr. Nikhil Whitaker, Curator, MCBT
 - Angeline Samuel, Assistant Curator, MCBT
 - Pramila Rajan, Director, MCBT
 - Senthil Thangam, Zoo Manager, MCBT
- Dates on which Meetings held during the year
11/04/2023, 13/07/2023, 21/12/2023, 07/02/2024

STATEMENT OF INCOME AND EXPENDITURE OF THE ZOO

Income

Ticket Sales	2,97,21,330
Research Grants	1,76,63,532
Donations & Rent	7,85,828
Environment Education	28,60,051
Adopt an Animal	20,26,411
Bank Interest	57,50,854
Croc Shop sales	14,35,656
Croc Café sales	19,11,723
Other Income	9,44,275
ARRS	39,26,312
<i>Total</i>	6,70,25,972

Expenses

Salary and Wages	1,63,22,218
Reptile Feed Costs	32,80,451
Maintenance and Upkeep	1,13,50,812
Research	1,17,20,491
Environmental Education Expenses	10,61,026
ARRS	31,75,363
Croc Shop Expenses	11,00,604
Croc Café Expenses	16,74,872
Administrative Expenses	12,94,893
Capital Assets	84,07,982
<i>Total</i>	5,93,88,712

FEED SCHEDULE OF ANIMALS

<i>Species</i>	<i>Feed item</i>
Marsh Crocodile	Fish Chicken Buffalo
Morelet's Crocodile	
Saltwater Crocodile	Chicken Buffalo
African Slendersnout crocodile	
Cuban Crocodile	
Siamese Crocodile	
Nile Crocodile	
Tomistoma	
American Alligator	
West African Dwarf Crocodile	
Dwarf Caiman	
Yacare Caiman	
Black Caiman	
Spectacled Caiman	

Gharial	Fish
Northern River Terrapin	Fish Greens
Red Crowned Roof Turtle	
Three-Striped Roofed Turtle	
Indian Roofed Turtle	
Indian Tent Turtle	
Aldabra Giant Tortoise	Greens Fruits Vegetables
Indian Star Tortoise	Greens Fruits Vegetables
Travancore Tortoise	
Leith's Softshell turtle	Fish Chicken
Indian Flapshell turtle	
Gangetic Softshell Turtle	
Asian Water Monitor	Fish Chicken
Green Iguana	Greens Vegetable Fruit
Blue tongue skinks	Vegetables Greens Insects Meat
Basilisk lizard	

Komodo dragon	Meat- Misc
Termite hill gecko	Insects
RAT FEED GIVEN TO:	
Indian rock python, reticulated python, green anaconda, yellow anaconda, rat snake, trinket snake, corn snake, American rat snake, wolf snake, Whitaker's sand boa, Russell's viper, saw scaled viper, common krait, banded krait, spectacled cobra, monocled cobra.	

DEWORMING SCHEDULE OF ANIMALS

#	Species	Drug used	Month	Remarks
1.	Whitaker's sand boa	Pyrantel Palmoate+ Fenbendazole	September	Animals are dewormed when the parasitic load is seen in the fecal samples
2.	Saw-scaled Viper	Fenbendazole	October and January	
3.	Wolf snake	Pyrantel Palmoate+ Fenbendazole	November	
4.	Travancore tortoise	Febantel+ Praziquantel+ Pyrantel Palmoate	November	
5.	Monocled cobra	Fenbendazole	October and January	

DISINFECTION SCHEDULE

<i>Animal group</i>	<i>Type of enclosure</i>	<i>Cleaning method</i>	<i>Frequency</i>
Crocodile adults	Open air- main ponds	Manual Scrubbing and Cleaning	Quarterly
	Open air- isolation ponds		Bimonthly
Crocodile juveniles	Open air	Manual Scrubbing and Cleaning	Quarterly
	Closed enclosures	Savlon disinfection and scrubbing	Weekly
Tortoises	Open air	Manual Scrubbing and Cleaning	Daily
Turtles	Open air	Manual Scrubbing and Cleaning	Quarterly
Chelonian juveniles	Closed enclosures	Savlon disinfection and scrubbing	Weekly
Large lizards	Open air	Manual Scrubbing and Cleaning	Quarterly
Small lizards	Closed enclosures	Savlon disinfection	Weekly
Snakes	Closed enclosures	Savlon disinfection	Daily
	Open air	Manual Scrubbing and Cleaning	Weekly

DEVELOPMENTS AT MCBT, EDUCATION PROGRAMS AND IMPORTANT EVENTS

Curatorial updates

Development

- The biochemical and microbiological parameters of water from various enclosures at MCBT were tested through an external agency; this will now be an established protocol to ensure that our animals are housed in optimal conditions.
- Purchases under the Coromandel grant 23-24:
 - A Hobo-Ware shuttle station was purchased, allowing our (non-Bluetooth connectivity) loggers to be offloaded at the site rather than returned to the office.
 - The UV filter for Turtle Haven was serviced, and the new UV tubes will give a life of 16,000 hrs. versus the older model, which gave 9,000 hrs. A small removable plug allows us to collect water samples for analysis.
 - 5 RCOM ReptiProMax 90 incubators were purchased and used for reptile egg incubation.
 - Grumbach incubators BSR 160 and 300 TD7, specially designed for reptile egg incubation, were purchased; the incubators were upgraded by installing a water tank to maintain the desired humidity. This is the first installation of reptile incubators by a renowned German company in India.
 - A new tool to monitor egg development, “Egg Buddy”, was purchased from a UK-based company. This machine records the foetal heart rate and aids in monitoring embryo development.
 - We have also received an Egg Candler, a concentrated high-intensity light device that helps view the progression of egg development, blood vessels, and the embryo.
 - An Onset HOBO station for continuous temperature and humidity recording has been purchased. The data collected would enable an in-depth understanding of the effect of climatic parameters on animal biology.
 - UVA, B bulbs, and tube lights were purchased from Exoterra and Osram.
 - A 500 litre/-20 0C freezer was purchased for storing feed and biological samples for long periods.

Animals and Enclosures

- The snake room renovation has been completed under the grant from Coromandel 23-24: new snake enclosures are made of water and mould- resistant material with mesh for good ventilation and artificial UV bulbs, set up with plants and logs to mimic natural habitats. The room will also have the facilities of smoke detectors and monitoring CCTV cameras.
- Temperature monitoring and dredging were done for three pens with natural ponds: 8, 10, and 13.
- Diet modification: The diets of herbivores and omnivores were modified to suit growing juveniles and adults, with the inclusion of new varieties of vegetables/fruit.
- On the advice of Adam Radovanovic, our three Komodo dragons were provided enrichment with chicken pieces inside taped cardboard boxes. They were also given frozen blood popsicles in peak summer, fish sludge and snakeskin to stimulate their hunting senses. Thanks to Matthew Shackleton’s advice, mild exercises have been initiated to keep their joints healthy.

Trips and visits

- Mysore Zoo officials visited the Croc Bank in May for a tour and queries for the curator and vet.
- The curator visited Voorhees College, Vellore, and Government Arts College, Nandanam, and presented on the conservation of reptiles in India.
- Range Forest Officer trainees of Karnataka Forests Academy visited the Croc Bank. The curator briefed them about reptile care and management.
- Indira Gandhi National Forest Academy, Dehradun, visited Croc Bank. The curator showed them enclosures and briefed them about conservation and research practices for different reptile species.
- At the request of the Tamil Nadu Forest Department, the curator and veterinarian visited Amaravathi crocodile farm near Coimbatore to advise on husbandry and management.
- The last mugger transfer to GZRRC was conducted on 18 July 2023, and a pair of adult saltwater crocodiles, yellow anacondas, an adult gharial female, and river terrapins were also given.

Veterinary updates

- The vet facilities improved significantly this year, in terms of capacity building, procuring equipment, and expanding the inventory, thanks to funders, other zoos, vet colleges and others.
- Automated Orthopaedic Bone equipment (bone saw/driller) was purchased from Stryker (an internationally renowned surgical equipment company) to facilitate necropsies and reptilian orthopaedic procedures.
- A Nikon DSLR camera D7500 with two lenses, (i.e., telephoto and micro lenses) was purchased to document details of treatments and post-mortems. It has enabled us to gather better evidence regarding disruptions in animal health in situ and get quality photos during necropsies.
- An autoclave machine was purchased to upgrade the sterilization protocol of surgical equipment related to biosecurity, for procedures.
- Animal samples are being screened on a daily basis. Around 300 samples were reviewed each quarter and this helped us to keep a check on the overall health status of our animals.
- Additionally, Olympus Microscope has agreed to give a higher version camera as a replacement to the one we have, for better diagnostic value and research publication.
- Various diagnostic essentials and new kits (differential stains, corticosterone kits) were purchased to achieve the highest standards of field diagnosis. These were standardized.
- We collaborated with Elango and Veterinary Health Diagnostics for molecular diagnosis for parameters like – Chlamydia spp., Mycoplasma spp., Aeromonas spp., Cryptosporidium spp., Citrobacter spp. These diseases are specific to reptiles and these labs allow accurate diagnosis.
- Commercial critical care formulas and diets were added to our inventory to feed critically ill animals. Reptile Critical Care feed formulas like Mazuri and Oxbow from the USA help regulate nourishment for better growth and development of reptiles.
- Nebulizer machines have become an essential component of veterinary medicine and were procured to help animals recover from respiratory diseases.
- New vendors across Tamil Nadu have collaborated for a regular supply of medicines and supplements to keep up with our clinical needs.
- Laparoscopy and endoscopy have been started for our reptiles, along with anaesthesia standardization. A team from Karl Storz Co, which specializes in laparoscopy and endoscopy equipment, visited MCBT to guide us through the procedures.

- Allometric scaling is an advanced procedure for drug dosing especially while medicating the feed and water. This has been incorporated in our practice.

Major treatments and procedures performed during 2023-2024

- Saw- scaled vipers, for pentastomid infections (endoparasites).
- The Komodo dragons were administered joint supplements (Condro Vet) resulting in significant improvement in their gait. Their progress is being constantly monitored, recorded, and assessed with the help of Dr. Matthew Shackleton.
- An Asian water monitor hatchling was born with a retained yolk sac which got infected and was surgically removed. The animal is healthy.
- Dwarf caiman hatchlings had a few mortalities due to pneumonia and were treated with antibiotics, anti-stressors in water, and placement of UV bulbs. No further mortalities were observed.
- A spectacled caiman underwent X-rays for diagnosing osteomyelitis/steatitis as it frequently self-mutilates its tail. With the diagnosis, we concluded it was due to stress and enrichment procedures were advised to counteract it.
- The green anacondas underwent a pregnancy diagnosis using x-rays and ultrasound which revealed presence of enlarged uteri sacs that could indicate pregnancy. Forthcoming tests will confirm this.
- *Batagur kachuga* were diagnosed with shell rot and were treated.



*Blood popsicles for the Komodo dragons
in summer*



*X-ray of a green anaconda
(Follicles and identification PIT seen)*

Maintenance Updates

- Upgrading of maintenance procedures and staff training- staff toilet facilities, pen watchers, electricians, plumbers and support staff.
- Equipment purchase, repair and upgrading- security cameras, fire extinguishers.
- Repair and renovation- Round House, kitchen, damaged pen walls, fencing, outside walls of curator and snakebite rooms painted, park gate repaired, incubation lab wiring, water pumps.
- Construction- snake room, snake boxes, pens 21 and 22 fencing, water tank support
- Signage- touched-up, boards repaired, new selfie wall (vet lab wall), Asian monitor enclosure wall mural, pen 8 signage.
- Visitor facilities- renovation of toilets, new café, new water purifier, new trash bins, donation boxes.
- Tree Cutting- 5 risky trees removed.
- Dredging of pens 8, 10, 13
- Storm/cyclone repairs- Nursery angles and net changed; plus 2-3 days continuous clearing, branch cutting etc
- Waste- Improved systems for disposal and cartage of waste
- Noise mitigation- Meetings with Sheraton and Blue Bay hotels, along with Director.

EDUCATION AND AWARENESS PROGRAMS

World Days

- World Snake Day (16th July, 2023): A snake walk was organized with the Irular. A snake talk was given at the zoo to raise awareness about snakes and their conservation.
- World Lizard Day (14th August, 2023): A quiz competition- Quizard, was organized in partnership with the X Quiz It team. The participants were super enthusiastic!
- Big Cats Campaign (CZA): Information about big cats conservation in India, pledges and photo frames were displayed for CZA's Unite for Big Cats campaign in the first two weeks of September.
- Wildlife Week (2nd October -8th October, 2023): Wildlife Week was celebrated with the following activities.
 - Beach clean-up drive: Volunteers and staff collected plastic waste and other litter from the beach area.
 - Photo contest: Visitors took pictures of the reptiles at MCBT that highlight their peculiar features.
 - Wildlife Week talks: Talks about reptiles and their conservation were given. The importance of Wildlife Week and how one can be a part of conservation activities were discussed.
- Reptile Awareness Day (21st October, 2023): Quiz questions about reptiles were posted on social media pages.
- World Wildlife Day (March 3rd, 2024): A message was posted on social media.



Programs

Programs like Be a Zookeeper, Reptile Encounters, Reptales, Reptile 101, Zoo & Me, snake walks and guided tours were conducted. There were 84 programs, with a total of 2232 participants.



VR Centre

The VR centre continues to operate with 15 VR headsets and 3 movies from Wild Immersion, France. Programs were held on 128 days.

Adoption

There were 84 new adoptions and renewals by individuals and organizations.

Collaborations

MCBT collaborated with X Quiz It and conducted 3 quizzes- Quhissss, Flipper, and Quizard about snakes, chelonians, and lizards respectively. Youtube channels Dad's Life, Katta Erumbu, and Thanthi TV, shot videos and interviews at the Croc Bank.

Social media

The total number of followers on Instagram increased from 18.3k to 21k. There are 79k followers on Facebook. Pictures and videos were posted regularly on social media platforms.

FORD Project 2023-2024

The "Reptile Awareness through VR" project enabled us to conduct awareness programs for 1000+ school students with a funding of Rs.8,00,000 from Ford. A total of 1057 students and accompanying staff participated in the awareness programs for 2023-2024. 90.45% of the

students who filled out the pre-session and post-session surveys showed an improved understanding of reptiles. The remaining funds from the Ford project were used for printing posters for the participating schools, and six banners for MCBT. 50+ Ford employees and their family members volunteered for park cleaning on 11th September for their Global Caring Month activity. They were showed the VR movies for the Fam'tastic event at Ford's office on 17th February, 2024.

Volunteer and Docent Programs

19 volunteers enrolled and did different projects and activities. The docent program resumed in July 2023. The docent group, including the new docents who were recently selected, visited MCBT on weekends and volunteered.



NAME	PROJECT
Tanya Vyas	Basking behaviour of turtles
Aneesha Sreekanth	Obs. of dive duration of gharial
Sampriti Das	Travancore Tortoise obs.
Amaan Lopez	Obs. of dive duration of gharial
Sasthika Maheshwaran	Museum work
Vyaas Shankar	Komodo dragon behaviour
Neradhi Prakash	Travancore tortoise obs.
Raeya Jaggarow	Museum work
Vaishali Balachandran	Observed Veterinary department
Sushmita Prabhu	Museum work
Sharon Preeth	Nest defence in Morelet's crocodile
Mano Lakshmi	Travancore feeding behaviour
Ira Gujjal	Dive duration in gharial
Vrinda Borkar	Basking pattern in turtles
Ruchi Latkar	Dive duration in gharial
Kalyani Ayyagari	Travancore feeding behaviour
Varrsha Sridharan	Dive duration in gharial
Antony Selvakumar	Nest defence in muggers

SNAKE CONSERVATION & SNAKEBITE MITIGATION UPDATES

Work funded by USV Pvt Ltd

Beauty of Snakes- a film about the beauty and sensory abilities of snakes

The filming for this project took place from 26th November 2023 to 9th April 2024. The film aims to portray the ecological significance of snakes, and also addresses common queries about them. Snakes filmed were common species found near human habitats. The film has been produced in English and Hindi, and will be dubbed in several regional languages.

Snake Rescue Training Workshops

We conducted four snake rescuer training workshops targeting local snake rescuers and Forest Department personnel. The workshops were held in three states: Andhra Pradesh, Maharashtra (Alibag and Pune), and Odisha. These two-day workshops covered standard operating protocols, safe handling techniques, and reporting guidelines. We distributed snake rescue kits to 158 beneficiaries across four workshops, made possible by support from local organizations and trainers like Mr. Ajay Giri and Mr. Ajinkya S.

Outreach Program & Pre-Assessment Survey

The nationwide outreach program began with meetings with local partners in Andhra Pradesh and Maharashtra to finalize regions for the programs. The outreach will start with local communities, followed by government schools when they reopen in June-July. A trial pre-assessment survey in Andhra Pradesh helped evaluate participants' knowledge and refine survey questions, building on previous educational efforts in the state.

NAPSE Launch and stakeholder meetings

We attended the endorsement and launch events for the National Action Plan for Prevention and Control of Snakebite organized by the MoHFW, GoI. Ganeswar Ch, Project Leader, presented as an invited speaker at both events. MCBT's work was highlighted in this first-of-its-kind event. In addition to this, Ganeswar was also part of 5 more stakeholder meetings as MCBT is a Core Committee member of the action plan. The team's pictures and information have also been included in material about the Plan.

ISCICS meetings and World Health Organization visits

MCBT and its snakebite team continues to extend its guidance and support to ISCICS (Irula Snake Catchers' Industrial Cooperative Society) on developing a new serpentarium. A few successful discussions led to the Tamil Nadu govt allotting a provision for the development of the cooperative. Moreover, we facilitated visits from WHO International and MoHFW to ISCICS to discuss venom quality regulations. Additionally, team members visited the Premium Serums Antivenom manufacturing unit to learn about their practices. They also discussed addressing the communication gaps between the antivenom manufacturers and ISCICS.

MSF consultation

Medicines Sans Frontiers invited Indira and Ganeswar for a stakeholders meeting about NAPSE. The role of activists and NGOs in this action plan was discussed.

Film for the National Centre for Disease Control

The snakebite team helped the National Centre for Disease Control to film an awareness video that would be circulated to all the health departments of the country. The film focused on prevention, first-aid and identification. It received a lot of attention from the government and was tweeted by the official page of the Ministry of Health & Family Welfare as well.

Art installation and archival digitization

The team worked with researchers from the French Institute of Pondicherry to digitalize MCBT's archives. Some of these pictures were later used for an art installation about the indigenous snake-catching practice of the Irular. This installation showcased a unique perspective on using art for science communication.

Human-Wildlife Conflict

Gnaneswar presented at the HWC conference at Oxford about the need to spotlight human-snake conflict. This and other presentations, helped to encourage the committee to uplist snakes to the priority category.

Ooty Literary Festival

The OLF aimed to raise reptile awareness among students, spanning eight schools and engaging over 500 students. MCBT's snakebite team facilitated the participation of Irular members Kali and Alumalu, who shared inspirational stories to captivate and educate the attending students.

Global Snakebite Initiative, USA

MCBT continues to expand its collaboration with GSI. Rom Whitaker visited California and gave multiple talks at fundraisers, highlighting our snakebite mitigation work. Under the GSI grant, we conducted various initiatives to celebrate International Snakebite Awareness Day on September 19th. These included conducting outreach activities in a few states, a rescuer training workshop for the Andhra Pradesh Forest Department, and painting some public walls with snakebite information.

TVS Co. training

A two-day training workshop was conducted for staff members of TVS, split into batches of 20, totaling 40 participants. The workshop focused on imparting essential snake rescue techniques, including identification, prevention strategies, mock drills for security personnel.

AGUMBE RAINFOREST RESEARCH STATION (ARRS)

(field station in the Western Ghats)

Snake species rescued include king cobra, spectacled cobra, kraits, Russell's vipers, pythons, rat snakes and montane trinket snake. After every rescue or observation of snakes in the conflict area, we interact with the community and collect data from the property owner and spectators. We also conduct onsite awareness (the do's and don'ts in case they come across snakes).

Education and Outreach

- BSc final year students from S.R.Nagappa Shetty Memorial National College of Applied Sciences, Shivamogga
- On the occasion of World Snake Day 2023, ARRS interacted with students of Thirthahalli College at ARRS premises. This was organised by the Megravalli forest department. ARRS was also invited to give a talk to the officers of the Koppa wildlife division.
- Arivu School, Mysore conducted an educational trip for their students. They visited ARRS to explore the monsoon, and understand the wonders of Agumbe's wildlife and our conservation efforts.
- At the Snake Rescuers Conference in Latur, Maharashtra, ARRS was invited to give a talk about the ethical and scientific mitigation of human-snake conflicts. There was a huge audience of state-wide snake rescuers from Maharashtra.
- The Mangalore CCF along with the DCF and RFO visited ARRS, and we detailed ARRS' research and conservation work.
- On the occasion of World Wildlife Week 2023, the Karnataka Forest Department (KFD), Chikmagalur organised workshops in Mutthodi and Kerekatte, and the Anti Naxal Force for the officers and community. ARRS was invited to give talks regarding snake ecology, snake research, snakebite mitigation and precautionary measures. After the program, educational materials were distributed.
- On the occasion of Reptile Awareness Day 2023, KFD - Bhadra Wildlife Division organised a program for MSc and PhD students and the officers in Kuvempu University. ARRS was invited to give a talk regarding snake ecology, snake research, snakebite mitigation and precautionary measures. After the program informative educational materials were distributed.
- The forest department of Agumbe wildlife division conducted a one day workshop for Aradi school students, for which ARRS was invited to give a talk.
- On the occasion of Ganesha chaturthi festival (which also happened to be International Snakebite Awareness Day 2023,) the Keluru grampanchayat conducted a program for the local community and invited ARRS to conduct an awareness program regarding snakes and snakebite mitigation.
- 55 trainees of the Indian Forest Service visited ARRS. We told them about the research and conservation work done by ARRS.
- Forest department officials of Karkala and Kudremukha conducted an awareness program for students of Christ King PU College in Karkala. They invited ARRS to give a talk about our research and conservation work.
- 65 students and staff from the department of Life Sciences, Jain (Deemed to be) University, Bangalore visited ARRS and were given a presentation.

- ARRS conducted two sessions on snakebite mitigation at Jnana Jyothi School, Murnad, which were attended by around 175 students and staff.
- 2-hour session at Maruthi School, Murnad, focusing on snakebite mitigation, for over 200 students and staff.
- The Lions Club, Rotary Club and KFD-Koppa conducted a program where they invited ARRS to speak about snakes and snakebite mitigation, and interact with the local community.
- Forest department recruits visited the ARRS rescue team in the field, to understand human-snake conflict mitigation and onsite awareness.
- ARRS conducted a workshop about plant base sampling for 24 students of St. Aloysius College, Mangalore. They were also told about ARRS research and conservation work.
- Two sessions at SMS School, Arameri, for grades 8 and 9, focused on the topic "Snakes - the Most Neglected Creatures." Over 120 students and staff attended.
- Our team conducted the Campus Bird Count which is a collaborative event of Bird Count India and eBird, which lasted for two days. During the event, we recorded a total of 117 species of birds, with the participation of around 18-20 members. We are eagerly awaiting the announcement of our ranking in India for this event.
- A group of students and staff from the Manipal Academy of Higher Education's Geopolitics and International Relations Department paid a visit to ARRS to learn more about wildlife and ongoing research at ARRS.
- MCBT conducted a Snake Rescuer Training Workshop at Phansad Wildlife Sanctuary in Alibag, Maharashtra. Led by Ajay Giri, Field Director of ARRS and an expert in safe handling, the workshop lasted two days and had 30 participants from the Forest Department, and some snake rescuers.
- ARRS hosted the field visit of students from the department Zoology, Mangalore University. They were at ARRS to explore the biodiversity of the field station and understand its ongoing research.
- Mudigere forest department officials invited ARRS to conduct a capacity building workshop for their staff (50 members) and local snake rescuers in Mudigere.
- ARRS hosted an educational field visit from St. Mary's International School, Chikmagalur. 21 participants and faculty visited.
- Educational materials such as books, pamphlets and posters on snake identification and basic first-aid were distributed with each program.

GHARIAL ECOLOGY PROJECT

The Gharial Ecology Project (GEP) is currently in its 17th field season (2024), having commenced in 2008 in response to the significant mortality event of gharial (*Gavialis gangeticus*) during the winter of 2007-08. Its initiatives are facilitated through collaborations with the State Forest Departments of Uttar Pradesh, Madhya Pradesh, and Rajasthan, as well as the Ministry of Environment, Forests, and Climate Change, Government of India, who provide the necessary permits.

The current objectives of the GEP encompass three key goals:

- To conduct a comprehensive assessment of gharials within the National Chambal Sanctuary (NCS).
- To identify and preserve the critical riverine habitats which is essential for the species' survival.
- To mitigate the threats and challenges that pose risks to the continued existence of the species.

Gharials, classified as Critically Endangered (=CR), possess a global population of approximately 650-700 mature adults, out of which over 550 reside within the confines of the NCS. The execution of project activities is carried out by a compact core team consisting of 3- 4 Indian biologists/naturalists, with additional guidance provided by Professor Jeffrey W. Lang, our Senior Scientific Advisor.

Gharial population survey

In early 2023, our estimation of the total gharial population in the NCS was 1702 individuals, consisting of 172 males, 617 females, 555 subadults, 257 juveniles, and 108 yearlings. The upstream vs. downstream distribution is similar to that observed in previous recent surveys. Roughly 405 gharial inhabit the upstream habitats, with a preponderance of adults and subadults (31 males; 207 females, 114 subadults), vs. smaller size classes (53) consisting of juveniles (39) and yearlings (14). In the downstream, the 1304 gharial counted consist of 141 males, 410 females, 441 subadults, and 218 juveniles and 94 yearlings.

Gharial hatching success

This year, we recorded 451 gharial nests throughout ~425 kms of National Chambal Sanctuary. 385 nests hatched successfully while the remaining were lost to natural predation and temperature changes. We had counted 9554 hatchlings during our post hatch survey.

Monsoon movement

Through our radiotelemetry study, this year monsoon movement revealed the movement of adult gharials not only downstream to Yamuna-Chambal Confluence but also females moved upstream to Chambal-Mej confluence in Rajasthan close to Kota. We kept close monitoring on all our tagged animal's movement through our field trackers and satellite tags. We have calculated the movement of a tagged female from Dangbasai upstream from Dhoplur, Rajasthan to Yamuna-Chambal confluence and moved up in Yamuna, ~380-400kms and returned to Dangbasai after monsoon.

Catch-Tag operation

In October 2023, we have tagged 16 hatchlings that survived after the monsoon flood between Barecha and Shason. We were tracking all 16 until end of January and actively tracking 12 hatchlings till date. About 50% of the hatchlings are showed no movements and the remaining 50% showed an average movement of ~ 4-6 kms.

PAPERS AND MEDIA

- Whitaker, N. 2023. Preliminary observations on home range and temperature selection in the mugger crocodile (*Crocodylus palustris*, Lesson, 1831) in a human- dominated landscape. Crocodile Specialist Group Newsletter 42(3): 9-12.
- Whitaker, N. 2023. Studies on the Marsh (Mugger) crocodile (*Crocodylus palustris*) on the Cauvery River in Tamil Nadu. In: Proceedings of the 2nd Annual Research Conference, (A.Udhayan, Nihar Ranjan, M.G. Ganesan, A. Manimozhi, K. Sankar, A. Pradeep, D. Vasanthakumari, M. Gabriel Paulraj, and T.T. Shameer, Eds.), 16-17 February 2023, hosted by Advanced Institute for Wildlife Conservation (Research, Training, & Education), Tamil Nadu Forest Department, Vandalur, Chennai. 47 – 56
- Short articles were submitted for the CZA Compendium - Notes on False Nesting and Inter-relations of Predation of Eggs by Crows of the Travancore tortoise (*Indotestudo travancorica*) in Captivity at the Madras Crocodile Bank Trust/Centre for Herpetology.
- Desai, Brinky & Bhowmik, Tathagata & Srinivasan, Rohith & Whitaker, Nikhil & Ghosal, Ratna. (2024). Monitoring the stress physiology of free-ranging mugger crocodiles (*Crocodylus palustris*) across diverse habitats within Central Gujarat, India. Conservation physiology. 12. coae035. 10.1093/conphys/coae035.
- GS Bhat, M Nayak, MS Bhat and Ajay V Giri (2023). Drop size and rain rate characteristics of Indian monsoon rainwater. Journal of Earth System Science, Springer. 132, Article number: 24 (2023).
- Joel Correa, Ajay V Giri, Vijay Kumar and Vivek Hasyagar. 2023. First evidential record of predation by an Ornate Flying Snake, *Chrysopelea ornata* (Shaw 1802), on an insectivorous bat in the central Western Ghats, Karnataka, India. Reptiles & Amphibians. Vol. 30 No. 1.

News:

- https://www.researchgate.net/publication/369763464_Trophic_Niche_Partitioning_between_Sympatric_Naja_naja_and_Ptyas_mucosa_Crowdsourced_Data_in_Application_to_Community_Ecology April 2023
- <https://www.hindutamil.in/news/opinion/columns/993530-india-s-future-depends-on-reptiles-wildlife-conservationist-romulus-whittaker-interviewed-4.html>
- <https://journals.ku.edu/reptilesandamphibians/article/view/18626> First evidential record of predation by an Ornate Flying Snake, *Chrysopelea ornata* (Shaw 1802), on an insectivorous bat in the central Western Ghats, Karnataka, India. Joel Correa, Ajay V Giri, Vijay Kumar, and Vivek Hasyagar 25.05.23
- <https://www.thehindu.com/sci-tech/energy-and-environment/walking-with-scorpions-talking-to-termites-zai-whitaker-on-her-new-novel-based-on-irulas/article66873173.ece> 26.05.23

- <https://www.dtnext.in/news/city/explore-the-fascinating-world-of-reptiles-with-mcbts-quizzes-715525> 29.05.23
- https://drive.google.com/drive/folders/1yfSGqZiuVoqsbavitNlvvW5Ss-XLruPj?usp=drive_link
- https://www.natureinfocus.in/environment/remembering-zafar-futehally-1920-2013?fbclid=IwAR3PsqidCWbo9ectmXOciqL2Q5nP1rXey50PVFERR5oLhjR8u_Se9ND60rA 18th Aug 2017
- <https://www.moneycontrol.com/news/environment/world-environment-day-2023-naturalist-zai-whitaker-on-invaluable-ativasi-knowledge-getting-lost-as-india-dithers-10739551.html> June 4th 2023
- <https://scroll.in/article/1050682/fiction-the-wildlife-protection-act-bans-the-irular-peoples-trade-how-will-the-tribe-survive> 13th June 2023
- <https://www.nationalheraldindia.com/book-extract/retweeting-the-story-of-slim-ali-the-birdman-of-india> 2nd July 2023
- <https://thesouthfirst.com/featured/salim-ali-the-birdman-of-india-comes-to-life-in-zai-whitakers-book/> 06.07.23
- <https://scroll.in/article/1052636/termite-fry-confronts-the-reality-of-ativasi-life-and-the-ongoing-struggles-of-the-community> 16th July 2023
- <https://www.thehindubusinessline.com/books/reviews/book-review-the-bird-man-of-india-salim-ali-for-children/article67118409.ece> 25th July 2023
- <https://www.newsclick.in/discrimination-education-and-irula-conversation-zai-whitaker> 31.07.23
- <https://www.asianage.com/books/260823/book-review-salim-ali-an-unlikely-beginning-a-great-end.html> 26th Aug 2023
- <https://www.thehindu.com/news/cities/chennai/madras-crocodile-bank-takes-snakebite-awareness-to-rural-schools/article67315458.ece> 16.09.23
- <https://www.newsclick.in/salim-ali-children> 18th Sept 2023
- <https://synapse.ucsf.edu/articles/2023/09/19/all-it-takes-walk-kali-irular-sunrise-snake-walk-experience>
- <https://www.cntraveller.in/story/the-stories-of-women-wildlife-conservationists-are-very-different-from-those-of-men/19.09.2023>
- <https://www.thehindu.com/sci-tech/energy-and-environment/madras-crocodile-bank-trust-and-its-partner-ngos-in-india-working-to-raise-awareness-on-snakebites/article67329345.ece> 28th September 2023

- <https://www.hindustantimes.com/books/reviewtermite-fry-by-zai-whitaker-101696004635453.html> 29th September 2023
- <https://www.tribuneindia.com/news/book-reviews/women-in-the-wild-by-anita-mani-wildlife-biologists-who-swam-against-tide-549250> 1st October 2023
- <https://www.prnewswire.com/in/news-releases/harpercollins-publishers-india-is-proud-to-announce-the-forthcoming-publication-of-one-of-the-most-intriguing-memoirs-of-2024-romulus-whitaker-with-janaki-lenin-present-snakes-drugs-and-rock-n-roll-my-early-years-301983372.html> 09 Nov, 2023
- <https://www.newindianexpress.com/lifestyle/books/2023/nov/26/inside-the-irular-world-2635594.html> 26th November 2023
- <https://www.indiatoday.in/magazine/leisure/story/20240212-romulus-whitaker-great-snakes-2496642-2024-02-02> Feb 2, 2024
- <https://timesofindia.indiatimes.com/india/how-zai-whitakers-termite-fry-spoke-about-the-struggles-of-tamil-nadus-snake-catchers/articleshow/104178767.cms> Jan 13, 2024
- <https://india.mongabay.com/2024/02/book-review-a-frank-and-fearless-autobiography-of-indias-snakeman/> 13 February 2024
- <https://www.thehindu.com/books/books-reviews/herpetologist-and-wildlife-champion-romulus-whitakers-autobiography-is-a-delightful-read/article67837733.ece> February 16, 2024
- <https://www.theweek.in/theweek/leisure/2024/02/24/herpetologist-rom-whitaker-s-new-memoir-is-a-rollicking-ride-through-his-early-adventures.html> February 25, 2024
- <https://www.mid-day.com/mumbai-guide/things-to-do/article/all-about-hiss-story-23337391> 28 February, 2024
- <https://www.thehindu.com/news/cities/chennai/at-vadanemmeli-a-spot-you-go-to-for-the-crocs-stay-on-for-the-trees/article67860025.ece> February 18, 2024
- <https://www.tribuneindia.com/news/reviews/story/snakes-drugs-and-rock-n-roll-by-romulus-whitaker-with-janaki-lenin-pet-python-and-wild-adventures-599143> Mar 10, 2024
- <https://theprint.in/softcover/romulus-whitakers-colour-blindness-was-an-advantage-it-helped-him-spot-snakes-easily/1996109/> 11 March, 2024
- <https://www.femina.in/trending/achievers/in-love-we-believe-education-officer-at-madras-crocodile-bank-steffi-john-283499.html> Mar 13, 2024
- <https://www.newindianexpress.com/lifestyle/books/2024/Mar/29/snakes-drugs-and-rock-n-roll-book-review-slither-of-a-read> March 31, 2024
- <https://indianexpress.com/article/books-and-literature/conservationist-romulus-whitaker-book-review-9240696/> March 31, 2024

Books

- Conservation through Sustainable Use (one chapter). Routledge. Zai Whitaker
- Women in the Wild (one chapter). Zai Whitaker
- Snakes, Drugs, and Rock and Roll: My Early Years. Harper Collins. Janaki Lenin & Romulus Whitaker
- The Rumbling Island (republished). Puffin Books. ed Zai Whitaker
- Cobra in my Kitchen (republished). Hachette. Zai Whitaker
- Salim Ali for Children. Hachette. Zai Whitaker
- Termite Fry. Bloomsbury. Zai Whitaker
- Scaling Up. Bloomsbury. Zai Whitaker
- The Young Earth Lovers' Book of Nature (contributions). Hachette. Zai Whitaker.

Hamadryad

India's First Herp Journal (hamadryad.org)

We welcomed two new Editors at Hamadryad, Dr. Aniruddha Datta Roy and Dr. Ashwini V Mohan.

Dr. Aniruddha Datta-Roy is a herpetologist and biogeographer specializing in South Asian reptiles and amphibians. He leads the Biogeosys lab at the National Institute of Science Education and Research (NISER) Bhubaneswar, where he studies systematics, biogeography, and evolution of various taxa across the Indian subcontinent, with a strong focus on biodiversity research and conservation in South Asia.

Dr Ashwini V Mohan is a Postdoctoral Fellow at the University of Neuchâtel, Switzerland where she studies karyotype evolution in holocentric species using comparative genomics. She also works on the diversification of day geckos in the Indian Ocean Islands, biogeography of the Andaman and Nicobar Islands, frog diversification in the Western Ghats, and more.

FLORA AND FAUNA OF MCBT

Trees

<u>Botanical Name</u>	<u>Family</u>	<u>Local Name</u>
1. <i>Calophyllum inophyllum</i>	Clusiaceae	Punnai
2. <i>Terminalia bellirica</i>	Combretaceae	Thandri
3. <i>Wrightia tinctoria</i>	Apocynaceae	Veppalai
4. <i>Pterocarpus marsupium</i>	Fabaceae	Vaengai
5. <i>Acacia auriculiformis</i>	Mimosaceae	Seemai kodukapuli
6. <i>Tamarindus indica</i>	Caesalpiniaceae	Puli
7. <i>Albizia lebbek</i>	Mimosaceae	Vaahai
8. <i>Crateva adansonii</i>	Capparidaceae	Maavilingam
9. <i>Leucaena leucocephala</i>	Mimosaceae	Javundili
10. <i>Bassia latifolia</i>	Sapotaceae	Iluppai
11. <i>Crescentia cujete</i>	Bignoniaceae	Thiruvottukkai
12. <i>Polyalthia longifolia</i>	Annonaceae	Nettilingam
13. <i>Ficus religiosa</i>	Moraceae	Arasan
14. <i>Morinda pubescens</i>	Rubiaceae	Nuna
15. <i>Annona squamosa</i>	Annonaceae	Seetha
16. <i>Cordia oblique</i>	Cordiaceae	Naruvuli, Mookuchali
17. <i>Syzygium cumini</i>	Myrtaceae	Naaval
18. <i>Terminalia catappa</i>	Combretaceae	Naattu badam
19. <i>Grevillea robusta</i>	Proteaceae	Silver oak
20. <i>Terminalia arjuna</i>	Combretaceae	Marudhu
21. <i>Delonix regia</i>	Caesalpiniaceae	Neruppu kondrai
22. <i>Azadirachta indica</i>	Meliaceae	Vaambu
23. <i>Mangifera indica</i>	Anacardiaceae	Maa
24. <i>Borassus flabellifer</i>	Arecaceae	Panai
25. <i>Caesalpinia bonduc</i>	Caesalpiniaceae	Kazharchikkai
26. <i>Millingtonia hortensis</i>	Bignoniaceae	Maramalli
27. <i>Ziziphus jujube</i>	Rhamnaceae	Illandai
28. <i>Drypetes roxburghii</i>	Euphorbiaceae	Vellaiazhinjil
29. <i>Mimusops elengi</i>	Sapotaceae	Magudam
30. <i>Erythrina variegata</i>	Fabaceae	Kalyana murakkan
31. <i>Citrus aurantifolia</i>	Rutaceae	Ellumichai
32. <i>Ficus benghalensis</i>	Moraceae	Aalam
33. <i>Carica papaya</i>	Caricaceae	Pappali
34. <i>Peltophorum pterocarpum</i>	Caesalpiniaceae	Ayalvaahai
35. <i>Cycas circinalis</i>	Cycadaceae	NA
36. <i>Caryota urens</i>	Arecaceae	Koondalpanai
37. <i>Anacardium occidentale</i>	Anacardiaceae	Mundiri
38. <i>Holoptelea integrifolia</i>	Ulmaceae	Aavi
39. <i>Thespesia populnea</i>	Malvaceae	Poovarasu
40. <i>Pongamia pinnata</i>	Fabaceae	Pungam
41. <i>Dalbergia lanceolaria</i>	Fabaceae	NA
42. <i>Sterculia foetida</i>	Sterculiaceae	Peenari, Paeyilavam

43. <i>Phoenix sylvestris</i>	Arecaceae	Eecham
44. <i>Albizia amara</i>	Mimosaceae	Usilai
45. <i>Tecoma stans</i>	Bignoniaceae	NA
46. <i>Eucalyptus globules</i>	Myrtaceae	Thailam
47. <i>Murraya exotica</i>	Rutaceae	Kattu karuvaepilai
48. <i>Lepisanthus tetraphylla</i>	Sapindaceae	Thoithan
49. <i>Butea monosperma</i>	Fabaceae	Murakkan
50. <i>Pisonia alba</i>	Nyctaginaceae	Nacchakotti
51. <i>Cassine glauca</i>	Celastraceae	NA
52. <i>Ailanthus excelsa</i>	Simaroubaceae	Peenari
53. <i>Garcinia spicata</i>	Clusiaceae	NA
54. <i>Strychnos nux-vomica</i>	Strychnaceae	Etti
55. <i>Chloroxylon swietenia</i>	Meliaceae	Porasu
56. <i>Gyrocarpus americanus</i>	Euphorbiaceae	Thanakku
57. <i>Samanea saman</i>	Mimosaceae	Thoongu moonchi maram
58. <i>Moringa pterygosperma</i>	Moringaceae	Murungai
59. <i>Casuarina equisetifolia</i>	Casuarinaceae	Savukku
60. <i>Lannea coromandelica</i>	Anacardiaceae	Odiyam
61. <i>Pithecellobium dulce</i>	Caesalpiniaceae	Kodukkapuli
62. <i>Guazuma tomentosa</i>	Sterculiaceae	Thaenpoosani
63. <i>Ceiba pentandra</i>	Bombacaceae	Ilavam panchu
64. <i>Barringtonia speciose</i>	Lecythidaceae	NA
65. <i>Duranta repens</i>	Verbenaceae	NA
66. <i>Hibiscus tiliaceous</i>	Malvaceae	NA

Shrubs

<u>Botanical Name</u>	<u>Family</u>	<u>Local Name</u>
1. <i>Justicia adhatoda</i>	Acanthaceae	Adathoda
2. <i>Calotropis gigantea</i>	Asclepiadaceae	Erukku
3. <i>Jatropha gossypifolia</i>	Euphorbiaceae	Karuppu kattamani
4. <i>Cassia alata</i>	Caesalpiniaceae	Seemai agathi
5. <i>Rauvolfia tetraphylla</i>	Apocynaceae	Paambu kala
6. <i>Memecylon umbellatum</i>	Melastomataceae	Kasan
7. <i>Glycosmis mauritiana</i>	Rutaceae	Konji
8. <i>Hibiscus rosa-sinensis</i>	Malvaceae	Chembaruthi
9. <i>Pedilanthus tithymeloides</i>	Euphorbiaceae	Kannadikalli
10. <i>Lawsonia inermis</i>	Lythraceae	Marudhani
11. <i>Securinega leucopyrus</i>	Euphorbiaceae	Vellaipilianji
12. <i>Manihot esculenta</i>	Euphorbiaceae	Maravalli

Climbers and Creepers

<u>Botanical Name</u>	<u>Family</u>	<u>Local Name</u>
1. <i>Combretum albidum</i>	Combretaceae	Vadathiruppi
2. <i>Canavalia ensiformis</i>	Fabaceae	Thambattankai
3. <i>Abrus precatorius</i>	Fabaceae	Kundumani
4. <i>Bougainvillea glabra</i>	Nyctaginaceae	Kagithapoo
5. <i>Pergularia daemia</i>	Asclepiadaceae	Utthameni
6. <i>Clitoria ternatea</i>	Fabaceae	Sangupoo
7. <i>Cardiospermum halicacabum</i>	Sapindaceae	Mudakkathan
8. <i>Solanum trilobatum</i>	Solanaceae	Thoothuvalai
9. <i>Tiliacora acuminata</i>	Menispermaceae	Kodiyetti, Perum katukodi
10. <i>Tylophora indica</i>	Asclepiadaceae	Nanjaruppan
11. <i>Ipomoea quamoclit</i>	Convolvulaceae	Mayilmanikkam
12. <i>Coccinia grandis</i>	Cucurbitaceae	Kovai
13. <i>Mukia maderaspatana</i>	Cucurbitaceae	Musumusukai

Herbs

<u>Botanical Name</u>	<u>Family</u>	<u>Local Name</u>
1. <i>Waltheria indica</i>	Sterculiaceae	Pavala poondu
2. <i>Tridax procumbens</i>	Asteraceae	Vettu kaya poondu
3. <i>Commelina bengalensis</i>	Commelinaceae	Kanagkozhai
4. <i>Corchorus aestuans</i>	Tiliaceae	Punnakkukeerai
5. <i>Achyranthes aspera</i>	Amaranthaceae	Naayuruvi
6. <i>Hybanthus enneaspermus</i>	Violaceae	Oarithazh thamarai
7. <i>Vernonia cineria</i>	Asteraceae	Neichatti
8. <i>Euphorbia heterophylla</i>	Euphorbiaceae	Paalperukki
9. <i>Sida acuta</i>	Malvaceae	Arivapoondu
10. <i>Indoneesiella echioides</i>	Acanthaceae	Gopuram thangi
11. <i>Merremia tridentata</i>	Convolvulaceae	Avaiyarkoonthal
12. <i>Barleria prionitis</i>	Acanthaceae	Mullu kanakambaram
13. <i>Evolvulus alsinoides</i>	Convolvulaceae	Vishnukranthi
14. <i>Capsicum annum</i>	Solanaceae	Milagai
15. <i>Cymbopogon citratus</i>	Poaceae	Elumichampillu
16. <i>Sansevieria roxburghiana</i>	Agavaceae	Marul
17. <i>Sansevieria trifasciata</i>	Agavaceae	Varikathazhai
18. <i>Talinum triangulare</i>	Portulacaceae	Rajathikeerai
19. <i>Commelina erecta</i>	Commelinaceae	Silanthi kizhangu
20. <i>Acalypha indica</i>	Euphorbiaceae	Kuppai meni
21. <i>Andrographis paniculata</i>	Acanthaceae	Nilavaambu
22. <i>Catharanthus roseus</i>	Apocynaceae	Nithyakalyani
23. <i>Phyllanthus amarus</i>	Euphorbiaceae	Keezhanelli
24. <i>Boerhavia diffusa</i>	Nyctaginaceae	Mookkarattai
25. <i>Sida cordifolia</i>	Malvaceae	NA

26. <i>Solanum nigrum</i>	Solanaceae	Manithakkali
27. <i>Oldenlandia herbacea</i>	Rubiaceae	NA
28. <i>Glinus oppositifolius</i>	Molluginaceae	Thorakeerai
29. <i>Abutilon indicum</i>	Malvaceae	Thutthi
30. <i>Micrococca mercurialis</i>	Euphorbiaceae	NA
31. <i>Dipteracanthus prostratus</i>	Canthaceae	Vedikkai

Arachnids

1. <i>Argiope versicolor</i>	14. <i>Citrophora citricola</i>
2. <i>Argiope aemula</i>	15. <i>Citrophora cicatrosa</i>
3. <i>Argiope anasuja</i>	16. <i>Crossopriza lyoni</i>
4. <i>Argiope pulchella</i>	17. <i>Oxyopes rufisternum</i>
5. <i>Gasteracantha geminata</i>	18. <i>Peucezia viridans</i>
6. <i>Gasteracantha mammosa</i>	19. <i>Oxyopes sp.</i>
7. <i>Cyclosa insulana</i>	20. <i>Pardosa pseudoannulata</i>
8. <i>Parawixia</i>	21. <i>Plexippus petersi</i>
9. <i>Tetragnatha sp.</i>	22. <i>Plexippus paykulli</i>
10. <i>Leucauge decorata</i>	23. <i>Telamonia dimidiata</i>
11. <i>Tetragnatha mandibulata</i>	24. <i>Thomisus pugilus</i>
12. <i>Theridion sp.</i>	25. <i>Olios milleti</i>
13. <i>Hippasa sp.</i>	26. <i>Neosparassus s</i>

Birds

1. <i>Turdoides affinis</i>	White headed babbler
2. <i>Merops orientalis</i>	Small bee-eater
3. <i>Pycnonotus cafer</i>	Red vented bulbul
4. <i>Pycnonotus luteolus</i>	White browed bulbul
5. <i>Pycnonotus jocosus</i>	Red-whiskered bulbul
6. <i>Corvus splendens</i>	House crow
7. <i>Corvus macrorhynchos</i>	Jungle crow
8. <i>Hierococcyx varius</i>	Common hawk cuckoo
9. <i>Cacomantis passerines</i>	Indian plaintive cuckoo
10. <i>Streptopelia chinensis</i>	Spotted dove
11. <i>Dicrurus macrocercus</i>	Black drongo
12. <i>Nycticorax nycticorax</i>	Black crowned night heron
13. <i>Ardeola grayii</i>	Indian pond heron
14. <i>Aegithina tiphia</i>	Common iora
15. <i>Ceryle rudis</i>	Pied kingfisher
16. <i>Alcedo atthis</i>	Small blue kingfisher
17. <i>Halcyon smyrnensis</i>	White throated kingfisher
18. <i>Haliastur Indus</i>	Brahminy kite
19. <i>Milvus migrans</i>	Black kite

20. <i>Haliaeetus leucogaster</i>	White bellied sea eagle
21. <i>Eudynamys scolopacea</i>	Asian koel
22. <i>Vanellus indicus</i>	Red-wattled lapwing
23. <i>Acridotheres tristis</i>	Common myna
24. <i>Oriolus oriolus</i>	Eurasian golden oriole
25. <i>Otus bakkamoena</i>	Collared scops owl
26. <i>Athene brahma</i>	Spotted owlet
27. <i>Psittacula cyanocephala</i>	Blossom headed parakeet
28. <i>Psittacula krameri</i>	Rose ringed parakeet
29. <i>Copsychus saularis</i>	Oriental magpie robin
30. <i>Accipiter badius</i>	Shikra
31. <i>Nectarinia lotenia</i>	Loten's sunbird
32. <i>Nectarinia zeylonica</i>	Purple rumped sunbird
33. <i>Artamus fuscus</i>	Ashy swallow shrike
34. <i>Apus affinis</i>	House swift
35. <i>Cypsiurus balasiensis</i>	Asian palm swift
36. <i>Dendrocitta vagabunda</i>	Indian treepie
37. <i>Amaurornis phoenicurus</i>	White breasted waterhen
38. <i>Dinopium benghalense</i>	Lesser flameback woodpecker
39. <i>Clamator coromandus</i>	Chestnut winged cuckoo
40. <i>Zoothera citrina</i>	Orange headed thrush
41. <i>Ardea alba</i>	Great egret
42. <i>Egretta garzetta</i>	Little egret
43. <i>Bubulcus ibis</i>	Cattle egret
44. <i>Mesophoyx intermedia</i>	Intermediate egret
45. <i>Phalacrocorax niger</i>	Little cormorant
46. <i>Muscicapa dauurica</i>	Asian brown flycatcher
47. <i>Terpsiphone paradisi</i>	Asian paradise flycatcher
48. <i>Dendronanthus indicus</i>	Forest wagtail
49. <i>Motacilla flava</i>	Yellow wagtail
50. <i>Pericrocotus cinnamomeus</i>	Small minivet
51. <i>Tyto alba</i>	Barn owl
52. <i>Pitta brachyura</i>	Indian pitta
53. <i>Ptyonoprogne concolor</i>	Dusky crag martin
54. <i>Centropus sinensis</i>	Greater coucal
55. <i>Otus bakkamoena</i>	Collared scops-owl
56. <i>Upupa epops</i>	Common hoopoe
57. <i>Orthotomus sutorius</i>	Common tailorbird
58. <i>Prinia socialis</i>	Ashy prinia

Lizards

- | | |
|-------------------------------------|------------------------------|
| 1. <i>Calotes versicolor</i> | Common garden lizard |
| 2. <i>Mabuya carinata</i> | Brahminy skink |
| 3. <i>Sitana ponticeriana</i> | Fan-throated lizard |
| 4. <i>Chamaeleo zeylanicus</i> | Indian chameleon *rare |
| 5. <i>Hemidactylus frenatus</i> | Southern house gecko |
| 6. <i>Hemidactylus leshenaultii</i> | Bark gecko |
| 7. <i>Hemidactylus flaviviridis</i> | Common house gecko |
| 8. <i>Hemidactylus brookii</i> | Brook's gecko |
| 9. <i>Varanus bengalensis</i> | Common Indian monitor lizard |
| 10. <i>Lygosoma punctata</i> | Striped skink |

Snakes

- | | |
|--------------------------------|--------------------|
| 1. <i>Ptyas mucosa</i> | Indian rat snake |
| 2. <i>Amphiesma stolata</i> | Striped keelback |
| 3. <i>Fowlea piscator</i> | Checkered keelback |
| 4. <i>Ahaetulla oxyrhyncha</i> | Common vine snake |
| 5. <i>Dendrelaphis tristis</i> | Common Bronzeback |
| 6. <i>Lycodon aulicus</i> | Common wolf snake |
| 7. <i>Lycodon striatus</i> | Barred wolf snake |
| 8. <i>Eryx johnii</i> | Common sand boa |
| 9. <i>Bungarus caeruleus</i> | Common krait |
| 10. <i>Naja naja</i> | Spectacled cobra |

ANIMAL TRANSFERS

A.	<i>Animals arriving in the Zoo</i>				
	H.NO.	Species	Number (M:F)	From which Zoo	Date of arrival in the zoo
	NONE				
B.	<i>Animals going from the zoo</i>				
	#	Species	Number (M:F)	Going to which Zoo	Date of deposition from the zoo
	1	Saltwater crocodile	1:1	GZRRC, Jamnagar	18/07/2023
	2	Gharial	0:1		
	3	Northern river terrapin	0:0:4		
	4	Red crowned roof turtle	0:0:4		
5	Yellow anaconda	0:0:4			

MORTALITY OF ANIMALS

#	Animal Name	Scientific Name	Sex	Date of Death	Reason of Death as per the Post-mortem report
1.	Saw-scaled viper	<i>Echis carinatus</i>	UK	10/05/2023	Anorexia
2.	Saw-scaled viper	<i>Echis carinatus</i>	UK	30/06/2023	Anorexia
3.	Northern river terrapin	<i>Batagur baska</i>	UK	04/06/2023	Metabolic-Skeletal remains (autolysed)
4.	Saw-scaled viper	<i>Echis carinatus</i>	UK	14/07/2023	Undetermined (cannibalized)

5.	Gharial (F29)	<i>Gavialis gangeticus</i>	F	18/07/2023	Undetermined (autolysed)
6.	Saw-scaled viper	<i>Echis carinatus</i>	UK	29/07/2023	Metabolic disorder (autolysed)
7.	Saw-scaled viper	<i>Echis carinatus</i>	UK	03/08/2023	Anorexia
8.	Saw-scaled viper	<i>Echis carinatus</i>	UK	06/08/2023	Inconsistent feeding- Emaciation
9.	Indian flapshell turtle	<i>Lissemys punctata</i>	F	23/08/2023	Anorexia and Emaciation – Hypoglycemia
10.	Three – striped roofed turtle	<i>Batagur dhongoka</i>	M	15/09/2023	Hemorrhagic Enteritis
11.	Saw-scaled viper (#6)	<i>Echis carinatus</i>	F	04/10/2023	Parasitic airway obstruction and asphyxiation
12.	Cuvier’s Dwarf Caiman	<i>Paleosuchus palpebrosus</i>	M	27/10/2023	Congenital
13.	Cuvier’s Dwarf Caiman (#20)	<i>Paleosuchus palpebrosus</i>	M	01/11/2023	Pneumonia
14.	Yellow anaconda (YA 23 #11)	<i>Eunectes notaeus</i>	F	30/10/2023	Pneumonia

15.	Cuvier's Dwarf Caiman	<i>Paleosuchus palpebrosus</i>	UK	02/11/2023	Yolk sacculitis along with hypovolemic shock
16.	Mugger crocodile (#226)	<i>Crocodylus palustris</i>	F	02/11/2023	Infighting trauma and injuries
17.	Cuvier's Dwarf Caiman (#6)	<i>Paleosuchus palpebrosus</i>	UK	19/11/2023	Pneumonia
18.	Cuvier's Dwarf Caiman (#5)	<i>Paleosuchus palpebrosus</i>	M	24/11/2023	Pneumonia
19.	Indian star tortoise	<i>Geochelone elegans</i>	F	07/02/2024	Hepatitis
20.	Trinket snake (#3)	<i>Coelognathus helena</i>	M	18/03/2024	Intestinal obstruction due to abscess
21.	Mugger crocodile (#731)	<i>Crocodylus palustris</i>	M	18/03/2024	Infighting- Possible drowning (autolysed)

MADRAS CROCODILE BANK TRUST- ANNUAL INVENTORY FOR THE YEAR 2023-2024

COMMON NAME	SCIENTIFIC NAME	OPENING STOCK				BIRTH			ACQUISITION			DISPOSAL			DEATH			CLOSING STOCK			
		M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Gharial	<i>Gavialis gangeticus</i>	5	32	1	38			2					9			1		4	7	19	30
Marsh Crocodile	<i>Crocodylus palustris</i>	27	120	4	151			69							1	1		26	119	73	218
Salt-water Crocodile	<i>Crocodylus porosus</i>	10	23	0	33			7				1	10					4	15	10	29
Northern river terrapin	<i>Batagur baska</i>	1	2	64	67			15						4			1	1	2	74	77
Three-striped roofed turtle	<i>Batagur dhongoka</i>	1	4	7	12			7			10				1			3	4	21	28
Indian flapshell turtle	<i>Lissemys punctata</i>	10	28	6	44										1			10	27	6	43
Gangetic softshell turtle	<i>Nilssonina gangetica</i>	0	0	9	9									6				2	1	0	3
Red-crowned roofed turtle	<i>Batagur kachuga</i>	12	3	58	73			4						18				20	35	4	59
Indian Chameleon	<i>Chamaeleo zeylanicus</i>	1	0	0	1													1	0	0	1
Indian rock python	<i>Python molurus</i>	1	11	0	12								8					1	3	0	4
Russell's Viper	<i>Daboia russelii</i>	1	0	0	1													1	0	0	1
Spectacled cobra	<i>Naja naja</i>	0	0	2	2													0	0	2	2
Monocled cobra	<i>Naja kaouthia</i>	2	1	0	3													2	1	0	3
Cuvier's dwarf caiman	<i>Paleosuchus palpebrosus</i>	4	12	0	16			20					5		3		2	4	7	15	26
Spectacled caiman	<i>Caiman crocodilus</i>	0	0	36	36									26				1	9	0	10
Yacare caiman	<i>Caiman yacare</i>	0	3	0	3													0	3	0	3
Black caiman	<i>Melanosuchus niger</i>	0	1	0	1													0	1	0	1

False Gharial	<i>Tomistoma schlegelii</i>	1	1	0	2												1	1	0	2
American Alligator	<i>Alligator mississippiensis</i>	1	1	0	2												1	1	0	2
Morelet's crocodile	<i>Crocodylus moreletii</i>	1	7	0	8							3					1	4	0	5
Nile crocodile	<i>Crocodylus niloticus</i>	1	10	0	11			4				6					2	3	4	9
Siamese crocodile	<i>Crocodylus siamensis</i>	3	10	0	13			4				2					3	8	4	15
African Slender-snouted crocodile	<i>Mecistops cataphractus</i>	0	2	0	2												0	2	0	2
West-African dwarf crocodile	<i>Osteolaemus tetraspis</i>	1	0	0	1												1	0	0	1
Cuban crocodile	<i>Crocodylus rhombifer</i>	1	3	0	4												1	3	0	4
Leith's softshell turtle	<i>Nilssonina leithii</i>	1	0	0	1												0	1	0	1
Aldabra giant tortoise	<i>Aldabrachelys gigantea</i>	2	1	0	3												2	1	0	3
Indian star tortoise	<i>Geochelone elegans</i>	0	6	0	6							2			1		0	1	2	3
Pink ringed tent turtle	<i>Pangshura tentoria circumdata</i>	0	0	14	14								7				0	0	7	7
Indian tent turtle	<i>Pangshura tentoria tentoria</i>	0	0	2	2								1				0	0	1	1
Travancore tortoise	<i>Indotestudo travancorica</i>	5	30	2	37						2	7					3	20	5	28
Indonesian blue tongue skink	<i>Tiliqua gigas</i>	1	1	7	9												1	1	7	9
Plumed green basilisk lizard	<i>Basiliscus plumifrons</i>	1	0	0	1												1	0	0	1
Termite hill gecko	<i>Hemidactylus triedrus</i>	1	1	1	3												1	1	1	3
Asian Water monitor	<i>Varanus salvator</i>	1	1	0	2			1									1	1	1	3
Green iguana	<i>Iguana iguana</i>	1	0	2	3												3	0	0	3
Komodo dragon	<i>Varanus komodoensis</i>	2	1	0	3												2	1	0	3

Reticulated python	<i>Malayopython reticulatus</i>	1	1	0	2													1	1	0	2
Trinket snake	<i>Coelognathus helena</i>	1	2	1	4			2						1				1	2	2	5
Common Krait	<i>Bungarus caeruleus</i>	1	1	0	2						1							1	1	1	3
Saw Scaled Viper	<i>Echis carinatus</i>	1	2	0	3			8							1	6		1	2	1	4
Rat Snake	<i>Ptyas mucosa</i>	1	1	0	2													1	1	0	2
Common Wolf Snake	<i>Lycodon aulicus</i>	1	1	0	2													1	1	0	2
Green anaconda	<i>Eunectes murinus</i>	0	0	8	8								4					2	1	1	4
Yellow anaconda	<i>Eunectes notaeus</i>	0	2	20	22			15					4		1			2	2	28	32
Whitaker's sand boa	<i>Eryx whitakeri</i>	1	1	13	15													1	1	13	15
Corn snake	<i>Pantherophis guttatus</i>	0	0	1	1													0	0	1	1
Banded Krait	<i>Bungarus fasciatus</i>	1	0	0	1													1	0	0	1
Black rat snake	<i>Pantherophis obsoletus</i>	0	0	1	1													0	0	1	1
TOTAL (M:F:U)		107	326	259	692	0	0	158	0	0	11	3	52	70	6	6	9	116	295	304	715
TOTAL NUMBER OF SPECIES- 50		692				158			11			125			21			715			