



# Fishing cat status Report 2022

sundarban Tiger Reserve



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**Cover photograph:** Dhritiman Mukherjee



# Foreword

The state of West Bengal with its rivers, floodplains and deltaic mangroves, is an important stronghold of Fishing Cat (*Prionailurus viverrinus*) in all of range countries in South and South East Asia. Justifiably, the Fishing Cat (*Baghrol* or *Mechho Biral* in Bengali) occupies a place of pride in West Bengal as it's state animal. They are important bioindicators for the health of many marshlands and wetlands in India as they act as the top predator in the landscape. This wildcat has evolved as a wetland specialist species and has some unique characteristics that allow it to survive in such conditions.

The IUCN lists the Fishing cat as a globally vulnerable species and Indian wildlife (protection) Act, 1972 lists it a Scheduled I animal, both signifying the urgency to take up conservation of the species in India. In this scenario, it becomes very important to protect the existing intact habitats so as to revive the population and to create awareness.

Fishing cat is one of the four cats of Sundarbans, the others being Tiger, Jungle cat and Leopard Cat. Population studies of a species is the first step in conservation of the species as it provides the baseline for management interventions. In this regard, this Fishing Cat Population status report is the first such effort in the Government of West Bengal to estimate the population of Fishing Cats in Sundarban Tiger Reserve.

Fishing Cat Status Report 2022, has yielded valuable data on the current population and the distribution patterns of the species. This report also provides valuable insights to undertake location specific interventions that will help us to sustain and increase the population in the reserve. I appreciate the team of Sundarban Tiger Reserve for their efforts in bringing out the report.



Debal Ray, IFS  
Chief Wildlife Warden  
West Bengal.



# Acknowledgment

**F**irst and foremost, I must say that I am overwhelmed and at the same time humbled by the magnificent variation of aquatic and terrestrial flora and fauna of Sundarbans. I would like to express my deep sense of gratitude towards mother nature, at this point of time.

I would also like to express my sincere gratitude to S. Jones Justin, IFS, Deputy Field Director, Sundarban Tiger Reserve (STR), for his coordination and leadership which enabled the successful completion of this report. I offer my appreciation to the Research Assistant of STR Shri Debojyoty Ghosh for his dedicated efforts in the analysis of the data and preparation of the report. My sincere thanks also goes to Assistant Field Director Shri Soumen Mondal for the overall field coordination of the field officers and staff during the camera trap exercise.

I also extend our warm gratitude to the Odisha Forest Department for sharing their experience and modelling in estimation of the population of fishing cats in Chilika. In addition, I also acknowledge the guidance and inputs from Smt. Tiasa, a member of the Fishing Cat Conservation Alliance.

Completion of this report would not have been possible without the support of the range officers of Sajnekhali Wildlife Sanctuary Range, Basirhat Range, National Park West Range, National Park East Range and HQ Range, who were vital in the implementation of camera trap exercise in the field, as per the established protocols. Finally, any attempt at any level can't be satisfactorily completed without the support of the field staff. I express my sincere thanks to the staff of STR, who have put in immense efforts at the ground level in the collection of data, without which this report would not have been possible.



**Tapas Das, IFS**

CCF & Field Director.  
Sundarban Tiger Reserve.



Photo: Dr. Amitava Mazumder

## About Fishing Cat

Fishing cats are medium-sized meso-carnivores found all along South and SouthEast Asia. They are important bioindicators for many marshlands and wetlands in India as they act as the top predator in the landscape. They are agile, able hunters of fishes and other small animals and their presence ensures that the quality of the wetland is intact. It is noteworthy that the Fishing cat (*Prionailurus viverrinus*) is the state animal of West Bengal.

Sundarbans is considered as a Ramsar Site of international importance. Fishing cats are found in almost all the forested islands of Sundarbans and it acts as an important habitat. With its diurnal tides

and abundance of fishes, Sundarbans ensures a viable habitat for the fishing cats in large numbers. Fishing cats are declared *vulnerable (vu)* by IUCN mainly due to the loss in habitats throughout its range countries. In this case it is important to protect the existing intact habitats so as to revive the species numbers and to create awareness to reduce the destruction of the habitats.



## Population estimation in Sundarbans

Any population estimation is done through scientific estimation methods employing technology and statistics to arrive at an estimate of the population of the individuals. In this regard, the population of the Tigers is established using the Camera Trap exercise which is a capture-recapture

method of population estimation. In Sundarbans, the Camera trap exercise is conducted every year and from the data of the exercise conducted in 2021-22, the Fishing cat population estimation is derived. This reduces the duplication of efforts and resources to derive at an estimation of population.



## General Introduction to Camera trap exercise in Sundarban

Camera trap exercise is one of the important practices in management of any tiger reserve as it gives the base point of the population of a certain species and the trends thereof. In a four year interval, the apex monitoring body NTCA (National Tiger Conservation Authority) organizes a massive exercise to estimate the population of tigers throughout India.

Apart from the tiger census, herbivore, carnivore sign survey and Khal survey were also taken up for the better understanding of predator-prey relationship. Thereby a healthy balance of the ecosystem can be maintained in nature.

### Specialty of the AITE 2021-22

1. In this FY 2021-22, M-STrIPES application was first used in Sundarban landscape with Riparian module in paperless format.
2. A brand new E-patrol android application was also used for patrolling purposes.
3. Moreover, Sign survey was carried out by using Polygon search application.

### Planning and execution of the exercise

As a first step, high resolution maps of different ranges constituting the two tiger bearing divisions namely, Sundarban Tiger Reserve and 24 Parganas (South) division, were procured. The study area was divided into grid cells of 2 sq. km. each, as per system protocol. The division of the study area into grid cells was done to systematically divide the area and allow teams to decide on sites such that maximum possible coverage could be ensured, while maintaining a sufficient minimum distance between camera trap stations

On 23-25<sup>th</sup> of November, 2021 hands-on training programs were organized for the field staff of the Sundarban Tiger Reserve by Wildlife Institute of India, Dehradun. For the staff of the 24 Parganas (South) Forest Division, training was carried out on the 13<sup>th</sup> of January, 2021. These programs helped in brushing up the skills of the experienced forest staff regarding the use of camera traps, GPS devices, and also in planning the execution of the exercise.







Photo: Dr. Amitava Mazumder

## Data Collection

Cameras were installed between the 7th and 14th of December, 2021 and data was retrieved from 16th January onwards. The research range along with the senior officials was constantly in-touch with the WII-Tiger Cell.

### Note:

1. Sundarban is a unique landscape with tigers and hence Boat transect methodology was carried out instead of line transect.
2. No scat/dung/pellet collection was performed in the landscape during 2021-22.
3. At the initial phase of the survey via digital technology M-STrIPES android-based application, was first time installed in STR, it was a little bit challenging for some of the field staff.

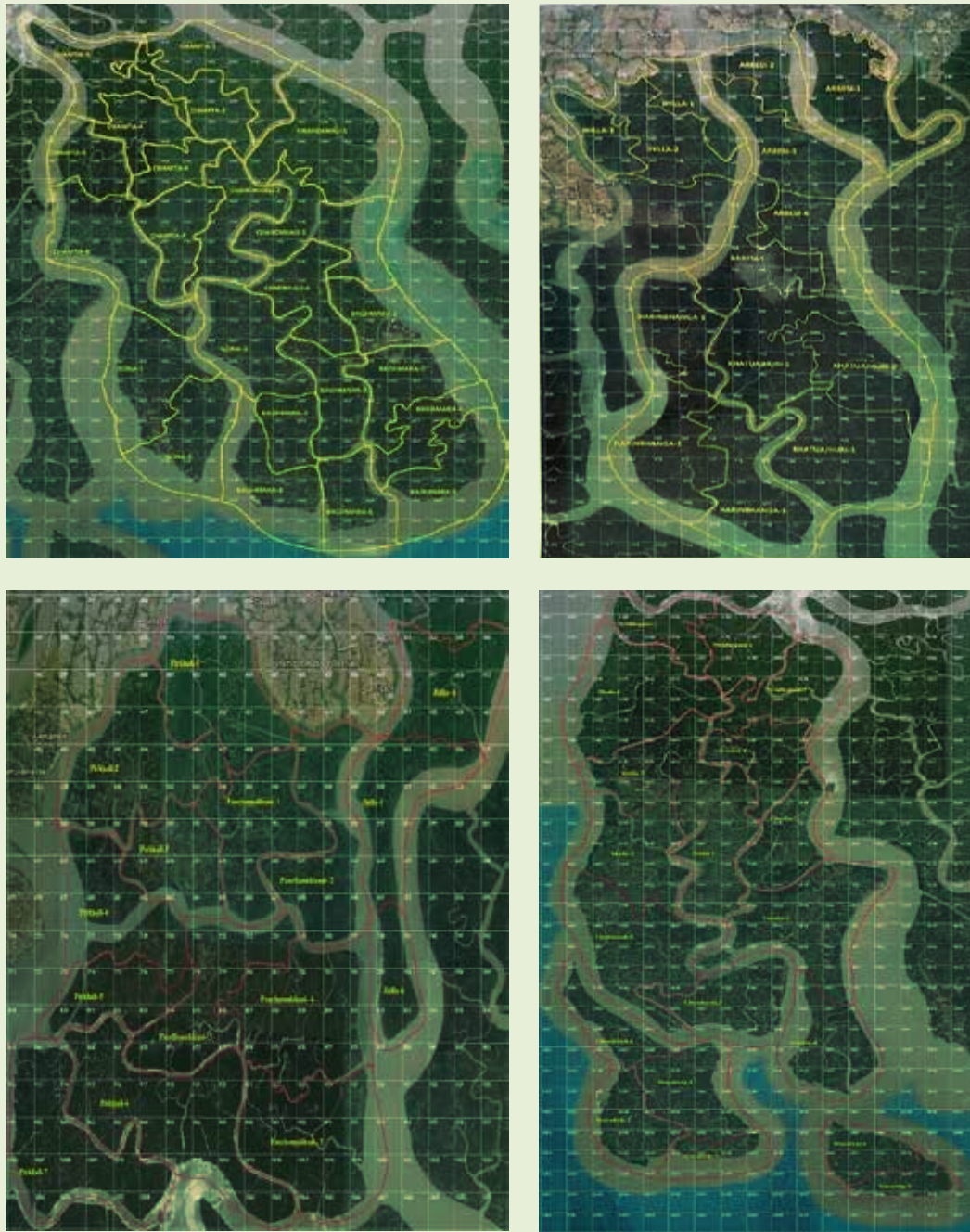
## Monitoring of the Sign Survey and Khal Survey by M-STrIPES and Camera Trapping Exercise

The Research range of the division is well equipped and continuously monitoring the survey done by the field officials.

Since the data was collected over a period of 33 days, the total camera trapping effort for the Sundarban Tiger Reserve therefore comes to 19,173 trap nights.

- The distance between two camera trap stations was kept at a minimum of 1.2-1.4 km to maximize the capture probability. At each station, two camera units were deployed between 40 and 50 cm height from the ground in such a way that both flanks of the animal could be captured.
- The camera delay was minimized to ensure photo captures of tigresses with cubs in case such an event occurred.
- To maximize both tiger and other animals capture as well as recaptures, an olfactory lure was applied. All the camera trap stations at the concerned Ranges were monitored periodically to check the status of camera traps and if required the height of camera trap was changed or comparatively high elevation sites within the same grid were selected.





**Figure 1:** 2 sq. Km. Grid Maps (from left hand top clockwise) (A) National Park East Range, (B) Basirhat Range, (C) National Park West Range, (D) Sajnekhali WLS Range.



In the AITE 2022 several locations are found with a good number of Fishing cats. Presence of these cats is located by general geo-spatial data analysis and a population map is created by the Research range.

## Methodology

Camera trap is generally a capture-recapture methodology. Though it is AITE, the data are analyzed by the WII-Dehradun, but for Fishing cats the Research range and the senior officials have carried out an overall estimation of fishing cat population by ocular estimation method, using high-tech computers. By this process prompt

actions can be taken and the management plans can be implemented further.

By ocular estimation, the fishing cats are identified by spot markings, just like the rosette patterns of leopard or cheetah. Here, a demonstration of the spot matching procedure is shown below :



*A continuous long dark- stripe marking on the forehead portion of the Fishing cat*

**Camera:** C553B | **Date:** 10 December 2021 | **Time:** 11:27 pm



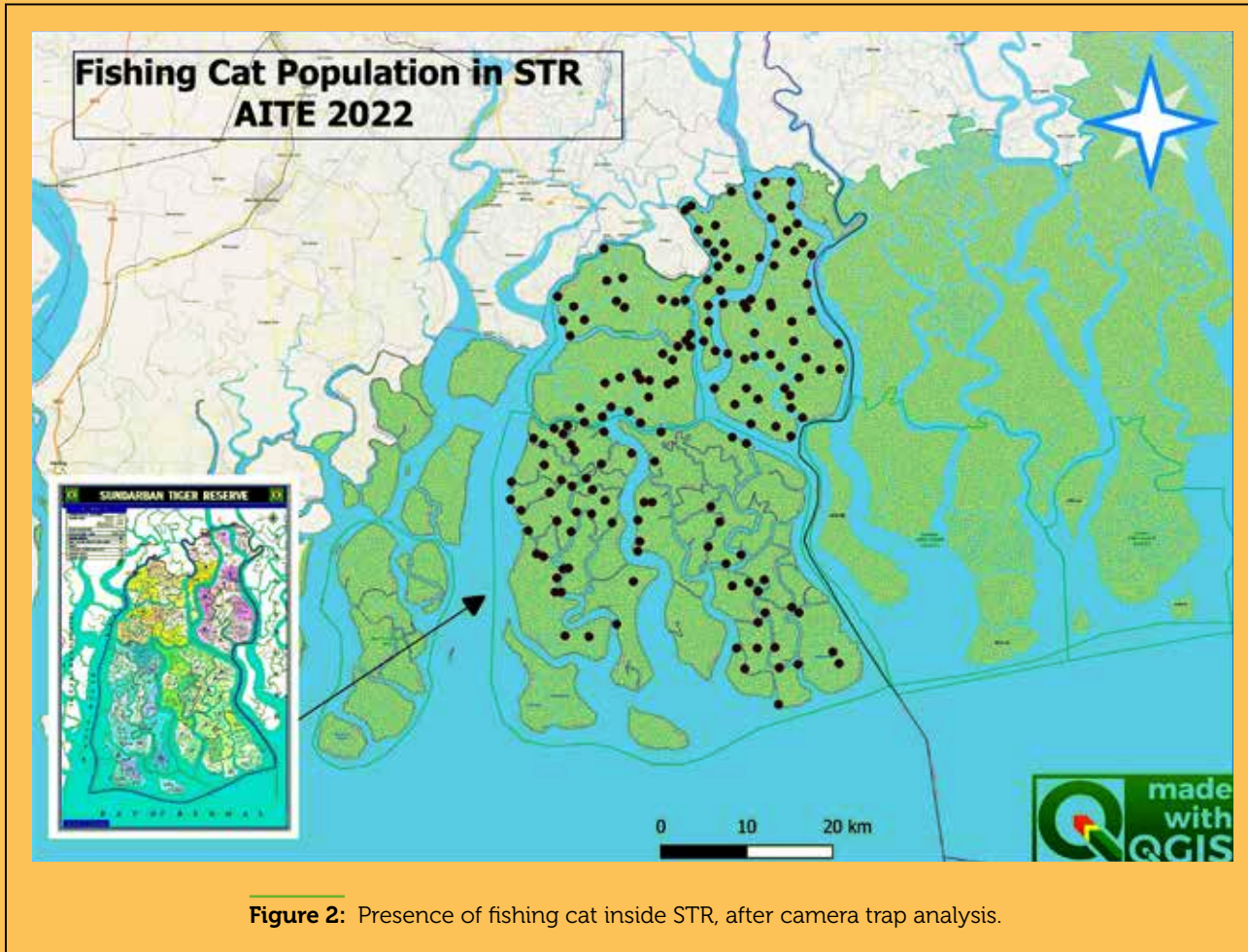
*No continuous long dark- stripe marking on the forehead portion of the Fishing cat*  
**Camera:** C553B | **Date:** 13 December 2021 | **Time:** 3:39 am

From the above given photographs it is observed that the patterns of the stripes of the Fishing Cats are not similar. Hence, the observer can identify the individuals by ocular method of population estimation.

### Prey base of the meso-carnivore



The fishing cats have food in good numbers inside the Tiger Reserve areas, and their prey is majorly fish-based. A demo photograph of fishing of the Fishing cat is shown beside, where it resembles that the predator-prey relationship (i.e. Lotka-Volterra Model with respect to time) is maintaining its equilibrium inside the forests.






**Note:**

Quite a few breeding populations are found in Basirhat and Sajnekhali WLS Range as per the analysis of the Camera Trap Data.

RANGE	TRAP CAMERA ID	FOOTAGE
Basirhat (BHT)	<p><b>C107A</b></p> <p><b>GPS:</b> N 22°03'17.3" E 88°59'31.4"</p> <p><b>Location:</b> Tushkhali Pond Side</p>	 

RANGE	TRAP CAMERA ID	FOOTAGE
<p>Sajnekhali Wildlife Sanctuary (SWLS)</p>	<p><b>C514A</b></p> <p><b>GPS:</b> N 22° 00' 37.0" E 88° 53' 12.8"</p> <p><b>Location:</b> Panchamukhani 4, Kushumkhali dutta-pasur junction</p>	





## Demography of Fishing cats in Sundarban Tiger Reserve 2022:

As per the standards and protocol established to derive the population of fishing cats by ocular estimation taking into account the uniqueness in the distribution pattern of the spots, the size

of the spots when they are wet and dry, the size of individuals along with the spatial distribution (territory occupied), the following estimate is derived.

Range	Area (Sq Km)	No. of Camera (pairs) Installed	No. of Captures of Fishing cats	Probable no of individuals* (based on camera trap)
BHT	452.44	117	144	130 (with kittens)
SWLS	432.86	117	120	97 (with kittens)
NPE	809.56	178	74	60
NPW	890.06	161	120	98
<b>Total</b>				<b>385 ( individuals approx.)</b>

It only indicates the Probable no. of individuals\* - and the management has taken enough precautions to eliminate the human error and statistical deviation in the ocular method of estimation.

### Conclusion

The population estimation of Fishing Cats in Sundarban Tiger Reserve has yielded valuable data on the current population and the distribution patterns of the species. It provides valuable insights to the management to undertake location specific interventions to sustain and increase the population in the reserve. Further Island Biogeography model of meta-population dynamics may describe the present scenario more accurately, and establish the reasons for the distance effect from an inhabited island to the nearby uninhabited island, with various constraints so as to provide necessary management interventions in the maintenance of a sustained population and suitable demography in the long run.





Photo: Dr. Amitava Mazumder



“

“we are a part of your eco-system and live in wetlands, swamps, mangroves and forests. Our population is declining due to your activities. Please help us to survive”

”



DIRECTORATE OF FORESTS  
GOVERNMENT OF WEST BENGAL