

WWF SUNDERBANS CLIMATE CHANGE PROGRAMME: Sunderbans Landscape took the initiative of a Pilot Project in The Sunderbans Tiger Reserve.

In developing a Smart Tiger Cage prototype, the present problems that were addressed were:

1. Presently there are two cages namely Trap cage and Transfer Cage
2. During release a person has to climb on the cage to open the Gate
3. Both the Cages are extremely heavy
4. The animal is shifted from Trap Cage to a comparatively lighter Transfer Cage
5. The Animals are quite often hurt inside the cage due to uneven finish
6. During Gate Collapse the tail of the animal is susceptible to injury
7. Delay in reporting of the Tiger trapped can cause harm to the animal

The Present Trap cages are heavy and thus require a different Transfer cage for transporting the Animal. The design is not safe for the animal. Chances of the nails and teeth getting injured is high ...the animal ends up with deep gashes and wounds.

The Transfer Cage, despite being light in weight suffers from Design Safety for the transporters as well.

More than one person shall have to stand on the top to draw the gate upwards causing risk of toppling for both the Man and Animal.

The new State of the Art Cage is designed with Punched Steel and Hollow Pipes so as to reduce the weight and protect the animal's teeth and claw.

The new cage has a frame on which the gate can slide and a pulley is attached to it so that the gate can be released standing at the rear of the cage. The animal can be released standing at the rear of the cage.

In the new design, the trap cage itself is light and transportable and a separate bait cage is annexed that is dismantled once the tiger is trapped. Engaging the trap or release of the animal is activated from rear or side as the top pulley is swiveling. The bait cage is removed once the tiger is trapped.

The Electrical Control Panel is the heart of the Automated Trap cum Transfer Cage Design. As the Control Panel will be powered by batteries, measures have been taken by state of the art interlocking arrangements so that there is no unnecessary drainage of batteries.

The Proximity Switch is placed at the front gate. As soon as the gate collapses, the Proximity Switch is activated. It is to be noted that avoiding the robust and heavyweight Front Gate to directly fall and create a shearing impact on any Industrial Contact Switch, such as the Proximity Switch, is a must as it can cause breakage.

The proximity switch surface should be at a distance of 4 to 5 mm from the Front Gate bottom. The Proximity Switch powers up the Panel which in turn activates the Load Cell placed below the Bottom Platform on which the tiger traverses in its attempt to catch the bait. After a certain delay, the weight of the animal is automatically generated and sent as a SMS notably, ' Animal Trapped weighing 175 kg.'

Notes: The weight sent through sms is never an actual measurement of the animal trapped. It just indicates the approximate weight of the trapped animal as because unless the animal is stable and the vibration of the platform is reduced, the sensitive load cell shall always give a value full of noise due to jerk and jitters. For getting an accurate measurement, the foresters are requested to allow the animal to be on the platform motionless before pressing the Push switch as shown in Diag, fig.... The DPM (Digital panel Meter) shall display the weight till the Push switch is pressed and sms should be generated once again for book records.

The Electrical Control Panel resides on the top of the Animal Trap. While the trap is engaged, the control panel is fixed by bolts with the mounting angles. The panel is electrically connected with the load cell and limit switch by a simple DB 9 connector as shown in the photograph. While dismantling, simply remove the connector and disengage the panel from the fixing angles.

The mV signal is achieved through this DB 9 connector by a load cell processor card that in turn processes the signal and after a certain period when the animal stabilises inside the cage sends SMS to the authorities whose cell numbers are stored in the SIM card that is resident in a SMS controller inside the Panel.

There is a Digital Display in the front of the panel that shows the Weight of the animal inside the cage by pressing the push button . The push button is used for forcing the SMS once again. This is a rare use and thus it needs a long pressing time about 6 minutes to force the SMS.

The AC supply is connected by the terminal facing left. While the panel is to be used it is advisable to connect the supply to the panel so that the batteries inside are charged. If the batteries are discharged the panel shall not operate in the field. To check and replace the battery , open the front door and do the needful by a trained electrician. There are 4 numbers 12 V 7 AH batteries inside the control panel. The state of the battery can also be checked by the connector at the right marked DC OUTPUT assigned for connecting any DC load such as LED light or camera.

When the trap is engaged the PIR is resident inside the cage facing the trap door. In order to save the battery, Camera 2 would be recording for the next half an hour. It is believed that this half an hour is the most essential in the observation of the animal. Thereafter Camera 2 would be switching on and off intermittently in a duty cycle of 2 and 5 minutes respectively till the battery is drained off.

This is typically a motion sensor and noise immunity software developed in such a way that stray wires cannot trigger this motion sensor. There should be atleast consecutive 5 movements that trigger the sensor. Occasional falling leaves causing noise will hence not activate the sensor and drain the battery. As soon as motion sensor is activated, camera 1 facing the Trap Door will be activated. As soon as the animal enters the cage, the Proximity Switch shall sense the entry and puts off Camera 1 and triggers Camera 2, placed as shown in figure.