



The hidden watch-guards

Revolutionising the world of conservation, the powerful yet unassuming technology behind camera traps is now helping researchers and forest officials document elusive wildlife, record rarely-observed animal behaviour, identify and catch poachers, as well as validate the crucial data that makes day-to-day protection efforts in our forests viable.

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India's vast network of forests and its resident wildlife are under tremendous pressure from illicit extraction of timber, hunting, and the effects of fragmentation from various activities. Much of the country's forests come under government control and are managed by respective state forest departments as protected areas or otherwise. These forest departments are structured in a hierarchical manner and the ground staff that actually protects the forest comprises forest guards and watchmen. Forests that come under the ambit of protected areas are generally protected for its wildlife; while reserved forests are usually multiple-use landscapes where the local people's right to extract forest produce is recognised.

Most forest areas in India demand that guards and watchmen patrol the area daily on foot as a means of protection. Each forest guard is assigned a specific

'beat', an area which is supposed to be patrolled every day to systematically record observations on wildlife and keep a check on illegal activities. Many such beats make up a 'range'; the number of beats may vary depending on the size of each range, and several such administrative ranges subsequently comprise a protected area or a forest division (for areas outside of parks).

Information gathered systematically across beats on the presence of wildlife can be very valuable to park managers, as it can help them understand, perhaps crudely, the presence or absence of wildlife at the smallest scale of the administrative reserve. However, this information becomes all the more useful when speculations are ruled out, and hard evidence in the form of photographs is obtained on a regular basis on the presence of wildlife.



The presence of nocturnal and shy wildlife in southern Maharashtra, such as the Gaur, leopard and Sloth bear were confirmed by the camera trapping exercises conducted by the author.

THE AGE OF CAMERA TRAPPING

A good example that I observed was in the Ranthambore Tiger Reserve, where in the year 2012, forest guards were allotted remote camera-traps for deployment in their respective beats to obtain photographs of tigers (and other wildlife) that use those areas. *Prima facie*, this seemed to be a better initiative than the archaic 'pugmark guessing' of individual tigers, their sex, number, and age of cubs present, during regular patrolling. This activity appeared to have given the forest guards a sense of heightened responsibility to report on genuine presence of tiger signs in their respective beats.

In case of tigers or leopards, the use of camera-traps in identifying individuals by their photographs rather than pugmarks takes the quality of patrolling one notch higher. It enables managers to regularly keep a check on the presence of these cats and identify individuals present in



EARTH-SPEAK

the reserve by matching them to those identified during annual systematic monitoring of the park, such as intensive monitoring of tiger/leopard source populations as endorsed by the National Tiger Conservation Authority (NTCA). However, one must express deep caution by not regarding such secondary camera-trapping activities as 'monitoring', since they can only be used to validate observations in the respective beats. Such approaches do not provide any truthful estimate of population parameters nor would they be effective in measuring management effectiveness.

A TOOL FOR CONSERVATION

As such, patrolling largely focuses on 'protection', which includes keeping a check on illegal extractive activities of humans. Given that many forest departments are plagued by an inadequacy of staff and funds, more so outside of protected areas, regular patrolling in majority of such forest areas is practically unfeasible. This is where strategically placed remote camera traps can come in handy. Recent technological developments have made camera traps extremely well-suited for the purpose of forest protection. Camera traps are now economical, compact, and have high battery efficiency. Unlike a white flash which immediately attracts attention, many makes now come with infrared modes that can take photos and videos at night and are not visible to the human eye, reducing their chances of getting noticed, and thereby stolen. If well-designed to fit into a camouflage locking case, these cameras would not be visible easily under a dark forest canopy.

In one of my recent experiences with the Maharashtra forest department, we were able to identify poachers using photographs from remote cameras placed in the reserved forest areas of Western Ghats in Sindhudurg



district. The poachers, who had killed a Sambar, passed in front of one of the camera traps not realising that their pictures were being clicked. Three of the poachers stopped right in front of the camera for a momentary break, and the camera traps captured clear shots of their faces, which were useful at a later stage to identify the culprits.

Animals such as the Indian mouse deer, black panther and Stripe-necked mongoose, are rarely recorded by sight. Camera trapping is the easiest way to confirm their presence with proof.



Top and above: During the camera trapping exercises conducted by the author, the presence of poachers was detected in the forests of Sindhudurg district of southern Maharashtra. Thanks to the images, the poachers were soon caught by the forest department.
Right: The author (right) fixing up a camera trap along with an employee of the forest department.

In sum, the use of camera traps in patrolling will help managers validate information collected by beat guards. When placed sensibly, they are an effective tool in forest protection as they help observe illegal activities of humans inside forests. Cameras also enable managers to understand the presence of species, which otherwise being elusive would rarely be reported in daily patrols. Caution should be employed, though, so as to not use this information wrongly for 'estimation' of population parameters, unless done within a scientific framework. Camera-traps are a valuable addition to patrolling, and a definite improvement from outdated guesswork exercises. ○

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NEW AGE CAMERA-TRAPS

Camera traps now come in all shapes, forms and sizes. They can usually be categorised as triggered and non-triggered types. For monitoring purposes, triggered camera traps are the most suitable as they need some form of external activity to trigger them. Non-triggered cameras can record photos at regular or pre-set time intervals. Old triggered camera traps were mechanically triggered (e.g. those used by F.W. Champion to get images of tiger, Sloth bear), i.e. they required the animal to pull the trigger either during walking or by pulling bait or putting weight on it. Given the advances of technology, all triggered camera traps now come with infrared beams which when cut by an object result in a photograph. These new-age camera traps also come in two forms – active and passive. Active cameras, as the name suggests, need some form of activity in front of the camera-trap to trigger them and are quite fast at detecting animals, birds, vehicles, and many times even moving vegetation due to wind or rain. Passive cameras, on the other hand, rely on the difference in ambient temperature, which means that they are useful for warm-blooded animals; however they may have problems when used in very hot climates. Newer features in camera traps now include an MMS, email service, which can directly send photos to a registered phone or email as and when photographs are clicked, making monitoring real-time.

