

Who moved my trees?

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A recent study found that elephant drives raise stress in elephants, which can have a far-ranging impact upon their physiology and the biodiversity of our forests. A look at what is being done to mitigate human-elephant conflict in and around the state

Elephants in Southern India are stressed out. For one, their habitat is under threat from Lantana, widespread across most of their range here (it might be covering as much as 90 per cent of forest area in some places). Lantana displaces grass and other vegetation which make up the bulk of an elephant's diet. Fires – forest, and those set by cattle herders – exacerbate the problem, depleting native food species and promoting hardier exotics. Villagers make incursions into the forest for fuel wood, causing disturbance and degrading the quality of the forest. Encroachments, mechanisation and development projects further shrink elephants' habitat and water sources. Elephants then seek out nearby crop fields for nutrition, often causing widespread damage and death. And when farmers and villagers drive them out of their lands and back into the forest, stress levels peak, as a study by a team of scientists from institutes including the city-based National Institute of Advanced Studies (NIAS) has found.

The fact that continuous drives/disturbance events can cause stress concentrations to remain high consistently, leading to a state of 'chronic stress', (which can disrupt digestive and reproductive processes and shut down immune responses), is why study author Sreedhar Vijayakrishnan, PhD Scholar, NIAS and Research Affiliate, Nature Conservation Foundation, believes it is essential to factor in behaviour and physiology into the conversation. Given that on average, nearly 35 people have been killed every year by elephants in the state since 2014, it's time to consider these and other big picture factors in any elephant-human conflict mitigation attempt in South India.

Organisations such as Kenneth Anderson Nature Society (KANS) – which has a number of members from the city – are jointly developing with the Hosur Forest Division, a cost-effective and functional barrier based on the Armstrong fence which was very effective in the Addo Elephant National Park in South Africa. They have also carried out extensive design and testing exercises using Kumki elephants and believe it will be a lasting and effective solution. “We have also been trying to understand and define the scale of the other parts of the solutions by conducting dependency surveys etc,” Sanjeev Kumar SR, member, KANS, and Honorary Wildlife Warden of Krishnagiri and Dharmapuri Districts says.

A big deal

But the problem is multifold. Praveen Bhargav, trustee, Wildlife First, says “breaking up of a large block of forests into smaller pieces”, as is happening, impacts gene flow, dispersal movements and normal ranging patterns, which “causes devastating impacts on large species like elephants, that move seasonally over large areas”. He points to “ill-planned development projects such as the Kabini and Harangi dams that have fragmented the Bandipur – Nagarhole – Kodagu landscapes, which is one of the most important habitats for the Asiatic elephants in Karnataka”.

Add to that, the fact that “virtually all forest fires in tropical forests are man-made”. “Fires gradually remove many useful plants and replaces them with thick-barked, inedible species and weeds. This has the potential to gradually degrade forests, affecting availability and quality of forage for elephants and other herbivores.” Kumar details how local people are co-opted into fighting fires, while awareness programmes are conducted to prevent forest fires among villages in the proximity of forests. “But it does not work. There is not enough staff to patrol the forests and there are too many fires in a season to handle.”

Nishant Srinivasaiah at NIAS and Frontier Elephant Programme (a multi-institution initiative), is looking at 200 individual male elephants in Tumkur, Ramanagara, Bangalore Rural and Urban and Krishnagiri Districts of Karnataka and Tamil Nadu, trying to understand how they are coping in an increasingly anthropogenic world. As he explains, “The reduced availability of space and time to forage freely within the forested landscapes means they have very little time to procure nutrition from the forest. Therefore, they may choose to feed from crop fields. More change in land use would mean increased conflict and increased acute stress levels. Increased mitigation measures such as drives would result in animals becoming more aggressive over time and may result in separation and abandonment of calves too.”

Trying everything

Not that measures haven't already been taken to mitigate man-elephant conflict. Elephant-proof trenches, electric fences and railway fences have been erected as barriers between forests and crop fields; SMS-based alert systems have been popularised to warn farmers of approaching elephants; chilli

fences and chilli smoke have been used to dissuade elephants from crossing over, and so on. And yet, almost 10 people are killed by elephants on an average every year, while compensation runs to almost `1crore a year in Hosur Division alone, according to a 2011 study done in Hosur Forest Division.

Kumar explains how in Hosur, crackers and powerful light beams are used to drive elephants back to the forest by a team of experienced anti-poaching watchers and anti-depredation force. "But given the scale of the problem, they cannot be everywhere at once," he says. He believes the solution is "three-pronged" – effective

barriers to cut off elephants' access to crops; improving the condition of the habitat to sustain elephants within the forests, and eliminating human reliance on forests by popularising alternatives to fodder and firewood. But none of this can be accomplished without sustained efforts by authorities.

And that is the problem, experts say. Take the `55,000 crore Compensatory Afforestation Fund Management and Planning Authority (CAMPA) fund. Bhargav explains how a large part must be applied to consolidate scientifically identified high-priority elephant habitats and corridors. This would entail "strategic acquisition of large private estates, leased lands and enclosures within such habitats, diverting development project proposals including highways, railways etc and ensuring relocation of resorts that are blocking free movement of elephants. These measures, along with incentive-driven voluntary resettlement of people marooned deep inside wildlife reserves will help in consolidating habitats and reducing conflicts."

Models that worked

Ajay Desai, consultant with WWF India, cites how Namma Sangha, an NGO in Bandipur, incentivised LPG use over fuel wood in 2003, helping 38,000 families in 220 villages across 200km today. They did this by convincing the people that their deposit amount would be returned if they ever decided to give up the connection; cutting off all overheads; donating gas stoves and burners; ensuring door-to-door delivery of cylinders, and doing all the paperwork for them. "Even people who had been reluctant to use LPG soon realised a few things – they no longer needed to spend a day per week venturing into the forest to collect wood, exposing themselves to animal attacks, and there was no loss of labour and money for four days a month. Today, after about 10-odd years, you can see the result – a complete green cover change along the northern boundary of Bandipur," Desai explains.

Similarly in the Nilgiris North division, once cattle pens were closed in remote areas, tiger poisoning stopped, and as a consequence, in 25 years, the tiger population went from nearly 0 to 50.

So a forest can recover – as can its animal population – in time. "Now the same type of action – cattle pens being closed – is being initiated in the Cauvery Wildlife Sanctuary," Desai adds.

Solutions

We must develop individual-based predictive models to help assess the propensity of elephants across age, classes and sexes, Srinivasaiah says in his paper. He suggests that elephants with high propensity to feed on crops, or those ranging in human-dominated landscapes be radio-collared and tracked at a fine scale to inform people of the proximity of elephant and increase our preparedness to mitigate crop raid. In addition, data needs to be generated – where and when elephants are present across the state, along with how this area is being used and who (which elephant) is using it. And of course, “all development plans should take into due consideration the impact it can have on the lives of non-human species that we live alongside”.

Experts also say there needs to be a clear distinction between areas of human activity and elephant habitat. While the landscape we may have inherited may be fraught with fragmentation and settlements, there is a need for inviolate areas that maintain their integrity. As a first step, “clarity” about the need for such elephant distribution into three zones – one that is untenable for them and which they need to be removed from; one which is human use-free, and forests where there is human use – has been arrived at in a Karnataka Elephant Task Force Report submitted to the High Court in 2012, says Desai. KM Chinnappa, President of Wildlife First, highlights the need for the creation of a biosphere in three states – Karnataka, Kerala and Tamil Nadu, which is free of human habitation. Procedures to streamline compensation for farmers are also essential, adds Chinnappa.