An Elephantine Conundrum

Sreedhar Vijayakrishnan and Mavatur Ananda Kumar

Elephants using remnant riverine vegetation on the Valparai plateau

With increasing interface between humans and wildlife, and forests adjoining agricultural lands, intense conflict between these two forms of life has become a common sight. Farmers waking up in the morning to see their paddy field trampled by an elephant in the wee hours of the morning (more than 90 days of hard labour nullified in a matter of minutes) has become a routine affair in several human-use landscapes occupied by wildlife. The mere movement of the three- to five-ton animal through the field costs the farmer weeks, months, or perhaps years of hard work; episodically, such elephantine visits could also lead to loss of human life or injury. And it is this conundrum that farmers are trying to address, not just across the country, but also across elephant ranges where the species and humans share spaces.

Wildlife authorities, researchers, and conservationists have joined league with farmers to identify potential long-term solutions to mitigate the larger-than-life

Maize plants trampled and destroyed

Bull elephant feeding on new flush of grass

problem of human-elephant conflict (HEC). But often, the solutions suggested and implemented remind one of an old folktale – the one about blind men groping an elephant. One who felt the trunk thought the elephant resembled a snake, another who felt the leg concluded that it was more like a pillar, while yet another who felt the tail believed it resembled a broom, and so on. Never did they comprehend the complete picture of the elephant. And such is the case with several of the conflict mitigation interventions; the missing parts of the jigsaw lead to continuing problems on either side.

Perhaps Palakapya, the sage who wrote the magnum opus, *Gajashastra*, never thought then that the context in which he narrated the whole volume would recur after centuries. King Romapada of the Anga kingdom (present-day Central India) had summoned

Elephant amidst a tea plantation in Valparai

Elephants and vehicles

An elephant drive being conducted using vehicles

his men to capture all elephants that created issues amongst the agrarian populace of the land. Seeing the plight of the elephants post-capture, Sage Palakapya nursed them, and later narrated the *Gajashastra* to the king. He recited verses about the care these complex social beings require, in the absence of which they would perish.

Centuries down, elephants continue to be captured from across India in the name of conflict mitigation measures. Loud outcries are heard everywhere that the problem has intensified, losses have increased, and humans are losing the battle to these quick-learning, well-adapted pachyderms. Media reports throw in ideas of problem individuals, sketch them as dreaded beasts, often comparing them to terrorists or brigands, and worsen the ground situation by affecting local tolerance. The quick fix in

most of these cases is to banish the animal, either to another forest area, often after fixing a collar to track the animal's further settling and movement patterns, or to send it to a forest camp setup where it would be locked up in a large wooden enclosure, called kraal, followed by rigorous training that varies in its techniques based on the communities in that particular region associated with the mahout profession. The latter, though technically the last resort, has in many areas become the immediate step in the wake of a "conflict" event. Even with translocation, if not executed with rigorous planning and awareness of the landscape, it can only worsen the situation.

A recent instance of the tusker Chinnathambi being translocated from Coimbatore to the Anaimalais due to alleged instances of crop raiding, and him wandering kilometres through urban spaces to reach places where elephants have never been before, shows how some unplanned management actions can worsen an existing situation. Despite all these examples within and across the country, these kneejerk reactive measures continue to be implemented and threaten the very existence of the species.

Hassan, in Karnataka, is an example of how large-scale captures have been adopted as conflict-mitigation strategy in a conflict hotbed, the coffee-paddy dominated region of Alur, Sakleshpur, and Yeslur talukas. Following pressure from the public, 2013–14 witnessed the largest capture ever, wherein 22 elephants were caught, five released after collaring, and 17 taken into permanent captivity. Despite more than 50 elephants being removed from the landscape in a span of about two decades, the area continues to witness conflict in the form of crop loss, as well as human casualties and fatalities. Lack of understanding of elephant numbers, movement patterns, and seasonality in elephant-use of habitats, and patterns of conflicts, have led to the conclusion that

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Elephants navigating traffic in the Anaimalais

Elephant feeds from a jackfruit tree inside a residential colony in Valparai

removing existing numbers of elephants would solve the issue. But following every removal, more elephants from neighbouring areas move in to colonize, and the problem continues. Our team's tracking information reveals that the study landscape spread across 205 villages in the aforesaid Alur-Sakleshpur-Yeslur belt currently has about 35 elephants that use the human-use areas quite extensively.

Conflict mitigation is more of a social issue, and the situation in Hassan indicates how the lack of public transportation, absence of street lighting in some critical residential localities, and lack of safety at work are potential causes of loss of human lives, besides surprise encounters with elephants. Recent attempts to aid people in avoiding accidental encounters with elephants in the form of early warning systems seem to have gained acceptance, like in Valparai (Anaimalai Hills of Western Ghats), an initiative was started by our team in the earlier part of this decade. The Valparai model of conflict mitigation, an example of how long-term understanding of the problem has assisted in bringing down the problem significantly, is discussed in greater detail further in this essay.

A broad attempt at identifying the causal factors influencing conflict patterns firstly reveals the pertinent issue of fragmentation and habitat loss, which has escalated existing issues over the years, and continues to do so. Peter Leimgruber and colleagues in 2003, based on an analysis done using satellite data, found that elephants lost more than 50% of their habitats to fragmentation in a span of about three decades. This has resulted in most major elephant habitats becoming small islands in a large ocean of human-use areas.

In the south, the Nilgiris and the Anaimalais of the Western Ghats, spread across 12,600 sq. km and 6,500 sq. km respectively, continue to hold two of the largest contiguous elephant habitats. But with increasing anthropogenic pressures, the focal points of tourism in the Nilgiris (Ooty, Gudalur, Kotagiri, and Wayanad) continue to ecologically deteriorate – besides the historical exploitation of forests for plantations and habitations, which reduced forest availability for elephants. These increasing pressures have led to a gradual increase in human-wildlife conflict in these areas associated with macaques, gaur, large carnivores, and more importantly, elephants. Similar is the case

with several other production landscapes that have witnessed large expanses of forest giving way to monoculture and agriculture.

With tea, coffee, and cardamom plantations being established on the plateau regions of the Anaimalais in the late 1880s and 1890s by pioneer planters like Carver Marsh, A.H. Sharp, and others, parts of the landscape such as Valparai and Munnar evolved into production regions. This meant large-scale transformation of once extensive, contiguous, evergreen forests, and an influx of about 1,00,000 people from the plains as plantation workers. About 130 years of intensive commercial agriculture changed the landscape for its native flora and fauna. In his account of the exploration of the landscape, Carver Marsh writes about encountering elephants on the way uphill, and the species continues to use the landscape despite the transformations. This has led to significant spatial overlap between elephants and humans, sometimes culminating in negative interactions or HEC.

Frequent movement of elephants through tea plantations and habitations in Valparai lead to episodic instances of them breaking into residences, granaries, and warehouses.

These traumatic events often lead to loss of local residents' tolerance for the species. Rare accidental encounters of humans with elephants, leading to death or injury, have aggravated the situation. It was in the early 2000s, at a stage where the problem had intensified, that our team started off understanding spatio-temporal patterns of conflict in the landscape. With clear patterns emerging out of the data collected over the years, on the reasons for loss of human lives and property damage due to elephants, the team identified what could be appropriate mitigation strategies for the issue.

It was evident that 80% of deaths happened as a result of people being unaware of elephant locations and movement patterns. Initiated in the form of manual information sharing exercises, the efforts were later expanded in the form of alert messages on local TV channels, SMS based early warning, and elephant location alert lights. Over time, with increased community participation, the initiatives started gaining acceptance and found expected results in terms of decline in the number of human deaths and property damage. A place that had once witnessed

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Radio-collared bull in a sugarcane field

severe protests and socio-political issues as a result of increasing conflict could now be featured as a conflict-reducing elephant range.

Early warning techniques similar to those in Valparai were tried out in other areas, but the results were dull, mostly owing to blind replication of techniques with a lack of site-specific understanding of the ground situation. This goes back to the problematic initiation of conflict mitigation measures without a comprehension of the location-specific issue. And it also highlights the importance of efforts such as those in Hassan, wherein efforts followed years of assessment of the ground situation.

Among newly promoted techniques are honeybee fences that were tried out in several parts of the country. While the extremely defensive-aggressive African Honeybee *Apis mellifera scutellata* managed to defend croplands from African elephants, their less aggressive, smaller Indian counterparts *Apis florea* or *Apis cerana* failed to keep elephants at bay. Trials were carried out in several parts of the Western Ghats, such as Wayanad and Nilambur. Elephants with their high adaptability and learning skills realized that in the case of use of bee sounds, stings seldom accompany bee noises. Research shows that

with benefits or gain being much higher from croplands, the extent to which elephants take risks to get at the same will also be equally high. One can imagine that elephants would continue their attempts to negotiate novel barriers or preventive measures.

In the longer run, fences are perhaps one mitigation measure that, if installed and well-maintained, could prove effective in saving crops from elephants. In Sri Lanka, for example, seasonal or temporary fences seem to work well in protecting short-term crops such as paddy from elephants, owing to periodic monitoring and maintenance of the units. Government agencies installing such fences may not work the same way, as neither of the stakeholders takes on the responsibility of maintaining them. Other physical barriers such as elephant-proof trenches, concrete walls, and railway fences, besides being expensive, may not work owing to lack of feasibility and local conditions.

The buzzword today in conflict mitigation, especially in southern India, is *kumki*, referring to trained wild-caught or captive-born elephants used for driving and capturing wild elephants in problem locations. Several Indian states are now interested in maintaining a *kumki* force, to

A bull elephant in a paddy field

Capturing a mother and calf as part of conflict mitigation

deploy whenever the need arises. With its increasing stock of captive elephants, the state of Karnataka has provided several other states with *kumki*s that are now being used for drive, capture, and patrol operations. Countries like Myanmar and Indonesia have similar anti-depredation squads that are used for protecting crops. This, again, may not serve as a sustainable solution, considering the costs involved in maintaining the captive stocks, besides high manpower and resource requirements.

Capture, which is supposed to be the final resort but is often employed as an immediate measure, also proves to be inefficient in terms of the costs involved, post-capture management conundrums, and uncertainty in ensuring the absence of future conflict incidents. One also needs to understand that conflict is bi-fold, with crop/property losses on one side, and casualties/mortalities on the other, and any attempt to address the issue should see it as two separate components, rather than as one.

It is a more scientific proactive approach that is required to resolve the issue (not just Valparai or Hassan, but other HEC landscapes), which is extremely dynamic in nature, on a long-term, sustainable basis, rather than to continue pondering, like King Romapada, as to what needs to be done to keep humans and their belongings safe, or like Sage Palakapya, to wonder what will happen to the elephants post-capture.

Sreedhar Vijayakrishnan is an elephant biologist, studying sociality and physiology of wild elephants in human-use landscapes.

Mavatur Ananda Kumar is a primatologist-turned-elephant biologist. He is interested in understanding spatio-temporal aspects of conflict and identifying sustainable mitigation strategies.