

# Millennial Male Elephants of the Eastern Ghats

Nishant Srinivasaiah



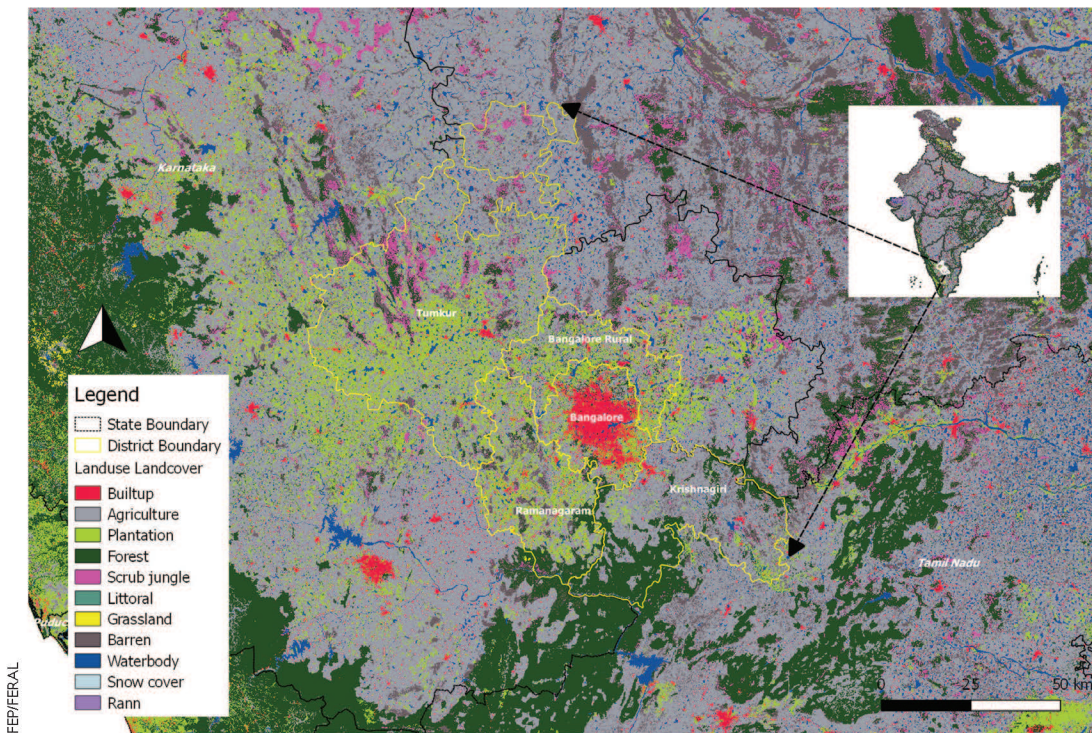
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On being chased by people, TIN, PT, and SAM (L to R) ran towards a banana grove for refuge

On an early morning in February 2010, I rushed towards T. Gollahalli village, south of Bengaluru, on getting to know that elephants were in the vicinity of the Nandi Infrastructure Corridor Enterprises (NICE) Road. I was then studying the behaviour of wild elephants in the nearby Bannerghatta National Park (BNP, 250 sq. km), about 10 km from this site and from where these elephants had come. I noted that all three elephants were

adolescent males in the age group of 10 to 15 years, and I recognized them as TIN, PT, and SAM (code names I had given them) of BNP.

On being chased by people, they took refuge in a nearby banana grove, much to the dismay of the plantation owner. What were these males doing in a human-use area? Where were they heading? Why were they all males? A number of questions popped up in my head that warranted further investigation. Little did I realize then that I would be witness



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Land use/land cover map of the study landscape, showing the districts in which elephants were observed

to some dramatic twists and turns in their lives over the next 10 years.

The three elephants continued their journey northwest of Bengaluru across a highly human-dominated landscape, for another 100 km, to reach Tumkur district in a span of three months. The districts of Bengaluru Urban, Bengaluru Rural, Ramanagara, and Tumkur in Karnataka that they traversed have seen rapid change in land use as a result of urbanization and development (see map) in the last decade. Areas close to urban centres, such as Bengaluru, and Hosur in Krishnagiri district of Tamil Nadu, have witnessed a real estate boom, resulting in either complete cessation of traditional subsistence farming or transformation into farms growing cash crops.

In rural areas identified as industrial corridors, the land value has increased, and farmers are selling their land or growing timber trees such as Acacia and Eucalyptus that require lower maintenance, but do fetch revenue. Regions relatively further away from urban centres, however, continue to be agriculturally viable. With the increasing



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Young male elephant collecting sugarcane to feed on, near Bannerghatta National Park, Karnataka





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SAM and TIN in the agricultural areas of Tumkur district in Karnataka, spending most of their time during the day in large waterbodies, surrounded by human habitations



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A large group of bulls taking refuge in the middle of a waterbody in the human-dominated area of Ramanagara district, Karnataka

use of groundwater-based irrigation through bore wells and improved canal systems, piped water, primarily for drinking and agricultural purposes, has been made available in many parts of the rural areas in Tumkur and Ramanagara districts. Good irrigation facilities have resulted in significant changes in cropping patterns – from rain-fed agriculture to the growing of water-intensive crops such as banana, areca nut, sugarcane, and paddy. Farmers who used to grow just a single crop a year now manage up to

three crops, largely due to the availability of adequate water, which acts as a magnet for elephants.

For elephants such as TIN, AIR, and PT Jr, and the others in my long-term study, conflict had become a norm. Growing up as they have, close to agricultural areas, these elephants have responded to the changes in agricultural practices in a number of ways. They now forage in highly human-dominated, exclusively ‘production landscapes’, with little or no refuge in terms of natural forest patches, such as in Tumkur, for more than five years now. The increasing agroforestry practices in villages were also drawing the elephants closer to human habitations, as they used these forest patches for refuge during their movements, and even to reside in at times. Moreover, the ready availability of highly nutritious crops throughout the year has led to a rapid escalation in the frequency of their visits and duration of stay in these areas. This has typically resulted in high levels of negative interactions between people and elephants, as this conflict is consumptive in nature. That is, negative interactions between elephants and humans, in this case, over a valuable but limited and perishable resource such as forage/crops.

In a few instances, elephants have even become resident in such areas – these are mainly young adult and adolescent male elephants, which I call the millennials. What is even more striking, however, is the appearance of unique behavioural adaptations among such individuals. These may include remaining in deep, large waterbodies close to villages during the day, avoiding feeding during the daytime – occasionally even for 12 to 14 hours duration – and foraging exclusively on crops at night, under the cover of darkness, all presumably in response to human activity in the surrounding areas and the absence of forest patches. These adaptations seem to be extraordinary, as elephants are known



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Social interaction between POI and LTA in Hosur district, Tamil Nadu. A young male elephant displaying affiliative behaviour by mounting another male

to usually feed about 18 hours a day, and require forested areas to reside in.

Between the sexes, females seem to use a risk-averse strategy as they have dependant calves, so they were largely seen within the protected forested habitats of BNP, which has more natural resources and is significantly less disturbed by human activity than the surrounding landscape. In contrast, males ranged across a spectrum of land use and human activities, at times exhibiting risk-prone behavioural strategies. ‘Novel’ but stable all-male groups, with large numbers of young adult and adolescent individuals, have also begun to emerge over the last two decades. They appear to constitute a new form of social organization in the species, especially as a response to highly fragmented habitats with poor inter-patch connectivity and high human density.

It was in this human-use area that I acquainted myself with the most charismatic bull elephant I have ever known. I named him HIR (meaning king in Elvish language), otherwise most fondly called Rowdy Ranga by the locals of Bannerghatta. Like most

other males, HIR too had moved into this ‘production landscape’ as an adolescent. He then grew big and bold, learning the ropes of living in a high-risk environment and very successfully feeding on the nutritious agricultural crops. In the day, he would take refuge in small plantations or large waterbodies, moving out at the first hint of darkness to feed from crop fields. Given his



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Two young males, POI and AMA, in close physical contact while displaying dominance interactions





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HIR in full musth inside Bannerghatta National Park in July 2015, sniffing out females in estrus

experience of navigating this unpredictable and risky landscape, a number of young and older males found it beneficial to associate with him. At the individual level, the observed variation in social strategies and activity profiles prevailing in the study elephants could largely be explained by the idiosyncratic behaviours of certain adult males such as HIR and his close associate, a tuskless male I named MAK, and their influence on the behaviour of associated conspecific, usually younger, individuals such as AIR, TIN, SAM, and PT Jr.

It was the end of March 2015, the summer heat had set in but the region around Tumkur was still flush with crops, thanks to the water diverted into its numerous waterbodies from Hemavathi river in the Western Ghats through an interconnected canal system. HIR was well-fed, he scored four upon five on my Body Condition Index sheet. Young males which were often seen associating with HIR began to maintain a respectable distance from him. There could only be one reason for such behaviour to emerge, HIR was coming into musth, a periodic state of heightened sexual activity in male elephants, characterized by increased testosterone levels with temporal flow of musth fluid and urine dribbling.

Sexually and socially mature adult bulls such as HIR, when in musth, begin to move from their foraging grounds in the Tumkur area towards the protected forests of BNP, synchronizing their arrival with the migratory movements of large herds of female elephants (up to 100) into BNP from the neighbouring forested regions of Hosur in Tamil Nadu. Around October, when musth subsides after nearly six months, and the female elephants too start moving away from BNP, these males begin their arduous journey back into the agricultural areas. Sometimes the dispersing adolescent males of the protected areas associate with these older, now non-musth bulls, on their journey from the forest to the agricultural areas. On these long-distance sojourns, the elephants



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A small group of male elephants led by PMA leaving the safety of the forest to feed on crops in agricultural areas around Bannerghatta National Park and North Cauvery Wildlife Sanctuary

have to negotiate four- and six-lane highways with heavy motor vehicle movement, broad-gauge railway lines, electricity lines, deep irrigation canals, illegal electric fences, and a rapidly urbanizing landscape. As a result, a number of elephants die due to bus or train collisions, electrocution, and death or injury by falling into ditches. Between 2015 and 2018, eight known adolescent and six known adult male wild elephants were lost due to human-related causes, including captures. An equal number of human deaths occurred too, forcing the concerned authorities to take punitive action.

A sudden spurt in deaths of both humans and elephants (three humans and two elephants) in Ramanagara in September–October, 2017, prompted the capture of HIR and his associate AIR. Unfortunately, both of them died in captivity almost a year later, HIR from a heart attack and AIR from being hit by a speeding bus. Capture of male elephants in conflict has multiple

negative consequences, not only for the well-being of the individual captured, but also on the sociality of elephants. For instance, the removal of key individuals such as HIR from a human-dominated area resulted in the scattering of the younger, inexperienced males. The absence of experienced bulls in the group also resulted in the younger males behaving erratically, due to stress brought on by the lack of older bulls to reassure and lead them into safe zones, and due to their inexperience of human-dominated areas.

Crop-raiding elephants are usually managed by driving them away from crop fields into nearby forest patches, using torch lights and firecrackers. With the older and experienced bulls around, this was fairly easier, as they know how to respond to a drive. In their absence, though, such a drive can turn into a potentially explosive situation, posing great risks to the lives of the villagers and forest staff, as inexperienced younger males may respond unfavourably



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A critically injured young male, MAK Jr, being moved for treatment after being hit by a bus on the Bengaluru-Chennai highway



to humans in close proximity. The increasing aggressiveness of elephants in response to negative human interactions over time becomes detrimental to conflict mitigation and for the long-term coexistence of the two species in the region. Drives also result in elephant groups splitting, especially in the absence of lead males such as HIR. The younger individuals are forced to explore new areas during such drives.

On January 5, 2019, four young male elephants came onto the traffic-laden NICE expressway, which now acts as a peripheral expressway for Bengaluru City instead of the proposed six-lane Bengaluru-Mysore expressway. They had come to a stretch of the expressway that was way off the regular route of HIR and others that avoided the NICE road. Were they finding it difficult to get their bearings in the absence of the elder knowledge keepers of their elephant society? To me, the effect of removing key individuals from a human-use area was all too clear. Older bulls were using the 'production landscape' as their foraging grounds, while the protected forested areas with females

were their breeding grounds. The young males were utilizing the production areas for multiple ends, including gaining body mass, coming of age, and also to disperse across a human-dominated landscape in search of a forested habitat with unrelated individuals.

It is also very clear that the millennial elephants, especially males, were making forays into high-density human-use areas to feed on nutritious crops, emboldened by their familiarity with persistent human presence and activities. What is often not recognized is that some of the frequent and intense negative human-elephant interactions, such as drives, could also serve to habituate elephants to humans.

What may have triggered the initial movement of elephants out of the forested habitats of this region could be the extensive degradation, within their home range, of large forest patches south of North Cauvery Wildlife Sanctuary and Bannerghatta National Park because of cattle grazing and other human-induced disturbances. Therefore, our priority should be to provide space, time, and safety to elephants within



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MAK and SAM under a high-tension electric wire in the agricultural landscape of Tumkur district, Karnataka

the forest and to improve their habitats south of these two protected areas. The forest would then be more attractive to elephants in terms of availability of resources and lack of disturbances. This is no doubt a herculean task, very easy for foresters and researchers to talk about, but it is easy to lose focus and target the elephant instead. Immediate 'conflict management' in this highly volatile landscape, where the main issue is crop damage and human and elephant deaths, should not be focused on capture and removal of male elephants, but on landscape-level planning and modifying lifestyles and farm-based practices of humans in and around the conflict areas. Such a strategy would help reduce risks of injuries and deaths for both people and elephants, and also crop loss due to elephants. The key to resolving human-elephant conflict may lie in the behavioural adaptability of both people and elephants to changes that occur in their environment. The age of the millennial bull elephants is finally here!

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**Nishant Srinivasaiah** has been studying the behaviour of wild Asian elephants for more than a decade. He works towards the conservation of elephants, especially those in a human-dominated landscape.



VINOD MOSES

Young male elephants led by POB leave human habitation when chased by people, Hosur, Tamil Nadu