



Step by step: Today, only small pockets of old forest cover survive on what was once a majestic hill harbouring over a hundred species of trees and as many shrubs and climbers. But hope grows. Workers of The Forest Way go up the hill with tree saplings to plant. (Below) In this year of drought, a watering hole for animals in the 'forest park' at the foothill. •BY SPECIAL ARRANGEMENT; SHAJU JOHN

Holy hill gets its groves back

An afforestation initiative led by naturalists and locals, with support from forest and revenue department officials, has resulted in the Arunachala hill in Tiruvannamalai, Tamil Nadu, shedding its barren, brown visage. **Lalitha Sridhar** reports on the decade-plus-long turnaround story

Her earliest memories of the holy hill called Arunachala are brown and barren, or swathes of black after a fire burned night and day, dying as mysteriously as it seemed to have started, even as devotees thronged the temple of the *agni lingam*, where Shiva is worshipped as fire, at its foothill. G. Jaya, now 35 years old, can be found these days even before the sun rises at the nursery behind the children's park, the hill looming behind her, right at the heart of the temple town of Tiruvannamalai in Tamil Nadu. Here, she reads rows upon rows of lush green saplings of indigenous tree species, born of seeds collected from the forest to which they will go back, readied in pouches of sieved and proportioned leaf litter compost mixed with cow dung. Jaya, who holds a Master's in Social Work, tends to them lovingly. Water, a scarce commodity, is used judiciously as fear of a harsh, rain-less summer looms. By the time her classmates from school, R. Vijaya, an erstwhile auxiliary nurse midwife at a private hospital, drives up in her hoped to her tidy makeshift site office, its stone steps have been washed clean.

Vijaya is a multi-tasking supervisor with The Forest Way (TFW), a unique afforestation initiative in reserve forest and government revenue land. Led by a team of naturalists and local workers with the support of forest and revenue department officials, the project began informally in 2003 before it was registered as a non-profit trust in 2008. The collaboration has resulted in the greening of a hill denuded for so long that even locals like Jaya found it hard to believe anything could grow here. A sign of how astonishingly successful this ground-up effort has been came when Vijaya, who has studied up to Class XII in the Tamil medium, pointed to one of her favourite trees, a hardy young kumbadiri planted by TFW, the tall (tender leaves) of which are a beautiful red, she said, before leaning over to spell its botanical name for this writer's benefit: S-c-h-i-e-c-h-e-r-a-o-l-e-o-s-a.

Shooshts of recovery

In Tiruvannamalai, a major Hindu pilgrim centre in Tamil Nadu that is home to the 10-hectare Annamalaiyar temple complex, one of the largest in India, the greening story goes back to the mid-90s, with the founding of the Annamalai Reforestation Society, a civil society initiative, followed by the Tiruvannamalai Greening Society (TGS), founded in 2004 by the then district forest officer (DFO) Pasupathy Raj along with several local functionaries, including fellow DFO Mani Iyer, the then collector Dheeraj Kumar and the then district revenue officer and now MP of Tamil Nadu Minerals Ltd. M. Vallalar. Says Raj: "Forest officials can and should take the bold step of encouraging afforestation in land controlled by the government, after correctly assessing the organisation and its plans."

Even as reforestation continues apace, other dangers are posed by the development of residential plots on agricultural land, expansion of roads, and increased pollution.

Lending remarkable momentum to these nascent efforts, TFW countered the damage wrought on a fragile, semi-arid ecosystem by pilgrims who arrive by the thousands, a forest willfully set afire by goat herders so fresh shoots would grow, illegal logging of the little timber that survived, and the occasional bout of lightning in the scorching summers (Arunachala is an inselberg, a relatively isolated hill that rises abruptly from the plains). While the initiative has assumed a life force of its own now, at TFW's heart (and that of the Marudam Farm School on the outskirts of the town) lies the passion of a trio: V. Arun, an engineer by qualification who left a corporate job to focus on alternative education and the environment, dedicated conservationist Akila Balu, and British educator-environmentalist Govinda Bowley, who serves as their consultant.

Since 2008, TFW has deployed a group of 30 permanent and 80-odd casual workers during the planting season, aided by fluctuating numbers of active volunteers. Relying only on individual donors, TFW annually reforests 15,000-18,000 trees, though of the 1.5 lakh trees they have planted so far, only about 50% take root in wet years (the average falls to less than 25% when it does not rain, as in 2016). "If the dice is rolled too early, trees may not catch," says Bowley, 42. "Neither water nor soil can be carried up the hill. Ideally, if the southwest monsoon is expected to be good, we plant ahead of it. If a young plant dies, it dies, and yet, the success rate has surprised us."

TFW's reliance on deep local knowledge has had a lot to do with its success. There's C. Parasuraman, 35, the 'chief seed collector', who has worked on land since he left school after Class X, and now mans the shaded mother bed where seeds germinate – in some species only 5% sprout, others can take months. "I learnt germination tech-



niques for different seeds through trial and error. A dip in boiling water or acid, for example, can mimic what a bird's alimentary canal would do for seed distribution in nature," he says. The TFW team also leans heavily on 51-year-old K. Maasilamani, who has been working on the project since it started. During planting season, he leads a team of up to 50 workers from the village of Adaiyur close by. The Class III dropout knows every fold, gully, valley, ravine and slope of the hill intimately. "We always say he has a built-in GPS and Google Earth map inside him," laughs TFW trustee Arun, 47. Maasilamani's native wisdom is key to balancing the needs of different groups – villagers, forest officials and project coordinators. "I explain to them [other workers] that plants are like our children," says the weather-beaten grandfather for whom greening is a way of a life and not an ideological response to environmental crises.

Flora, fauna and fires

Over time, increased sightings, some more common than others, have been reported of several animal species, in-

cluding small Indian and common palm civets, grey and (the rarer) ruddy mongooses, hares, jungle cats, rusty spotted cats and the elusive pangolin. Spotted deer and porcupine populations have grown so dramatically that TFW is now trying to protect young trees from them with wire mesh. Twenty species of snakes, ten of lizards and freshwater turtles, and seven amphibians, with a profusion of butterflies, countless numbers of beetles, spiders, mantids, dragonflies and other insects (especially when it rains) point to the rapid and thriving regeneration of the hill's ecosystem.

R. Sivakumar, 39, also a local boy, a gifted signboard artist and avid birder with TFW, is currently working on a book to document the 170 bird species he has photographed thus far around Arunachala, an exercise that shows no signs of completion after four years because he keeps spotting something new. Resolving the issue of commonly occurring forest fires, linked inextricably to the sacred role of the site especially for ailments of the stomach, has been the key to the process of reforestation. Vijaya remembers, "When I was a child, when we saw the hill burning, nothing would be done about it because our elders would say someone with stomach pain must have lit camphor as a prayer."

Today, Vijaya coordinates a crew of four fire watchers who constantly scan the hill for signs of trouble and counsel pilgrims making their way up, receives alerts from villagers for whom she remains on call any time of night or day, and leads over 50 volunteers who can make the climb to the location of the fire in less than an hour, sometimes half that time. "We carry only water and sickles because it's a hard climb, and we cut branches from whatever green foliage is handy nearby to put the fire out," says Sivakumar, who has evocatively painted stone information panels on fauna as part of TFW's guided walks

for school groups.

"The more locals participate, the more the perception of a black hill shifts," explains Arun. Over the years since, the number of fires has come down drastically, and those which break out are put out quickly. "The danger from fires will truly pass only when the trees are taller and sturdier, rising above the grass," says Bowley, who first planted trees on Arunachala in July 2003 to celebrate the birth of his daughter. Manjampul, an indigenous grass species, grows up to 67 feet high on the slopes, swaying taller than small trees. When a mixed deciduous forest regenerates, in the shade of larger trees with thicker (fire-resistant) bark, grass grows only 2-3 feet high, allowing the fire to pass through.

Given the rocky terrain and average daytime temperatures of 36 degrees Celsius, the TFW team also lays 10-metre-wide fire lines every year, disturbing soil minimally while removing grass and other incendiary material. Each km of fire line costs approximately ₹25,000 to complete; over 20 km of fire

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GOVINDA BOWLEY
Consultant to The Forest Way

lines criss-cross the hill now.

Other problems persist. The *periyakovil* (big temple), which lies to the east of the nursery, is one of the five major shrines to Shiva, revered here as fire. The annual festival of Kartigai Deepam, when an enormous flame is lit atop the hill, attracted over two million devotees this past December to a town with a population of 145,278 (2011 Census) in a particularly difficult time for TFW's workers and volunteers, who painstakingly haul down about 125 cement sacks full of litter they collect, chiefly plastic bottles, after the event.

The hugely popular 4-acre children's park, entry to which is free, is set upon the main road, a short hop from the famous ashram founded by Ramana Maharishi's followers. This was once an open garbage dump infested with rodents and flies. Behind it is the cooling sprawl of a 20-acre 'forest park', which merges into the scrubby jungle surrounding it.

The past and the future

The Tiruvannamalai region is written about in Tamil Sangam literature (circa 100 B.C. to A.D. 200), and the ruler Chevvainatan (Chevvari, the 'red mountain' or 'coral hill'), is believed to be a reference to the Javadi hills not far from here) finds mention in the *Piruppantruppatai*, a Sangam classic. In geological terms, the basement rocks of Tiruvannamalai (and nearby Gingee and Tirukovilur) are estimated to be around 2.25 billion years old, making them significantly older than the Himalayas.

Different endemic forest types grow on the 2,669-ft.-high Arunachala – scrubby species of southern deciduous thorn forests that are better adapted to the dry interior of the region blend with tropical dry evergreen vegetation of the

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MAASILAMANI
A senior worker with The Forest Way

eastern coastal belt. As the slope of the hill is ascended, the flora turns dominantly mixed deciduous forest of the Eastern Ghats. The upper reaches are cooler and wetter, as are the valleys, which are not as exposed to the sun and wind. The top third of the hill creates its own cloud, often seen shrouding it in the non-rainy season, and plant life draws on this moisture. This is habitat for evergreen species. Moreover, a range of deciduous trees, adapted to cope with the hot summers and fire-hardly when mature, grow even on the exposed slopes.

Today, only small pockets of old forest cover survive on what was once a majestic hill harbouring over a hundred species of trees and as many shrubs and climbers. But hope grows. The increased tree cover has cut down rainwater run-off drastically as the soil absorbs more water now. Seasonal streams flow more slowly and steadily, lasting longer after the monsoon has ended, making it easier for more trees to survive. Apart from siltation of water-collecting ponds at the bottom of the hill, soil erosion also increases fears of landslides – in 1966, casualties could be avoided because boulders fell to the uninhabited southwest of the hill.

Meanwhile, even as reforestation continues apace, other dangers are posed by the development of residential plots on agricultural land, expansion of roads, and increased vehicular, noise and light pollution, all of which isolate the vulnerable young ecosystem on the lone hill, preventing the movement of animals to and from nearby forest areas. As Tiruvannamalai braces for a severe drought this summer – some perennial ponds at the foot of the hill have already gone bone dry – TFW soldiers on with efforts that are finally paying off after over a decade of dogged work.

They don't lack inspiration. Sacred groves of eastern coastal tropical dry evergreen forests have been found as far inland as 60 km – here, short trees grow densely in a dark and mysterious jungle. At Tiruvannamalai, such an extent sacred grove may be found in the hill's now-inaccessible circumnavigational route, part of the reserve woodland. In this ancient forest, scrawny, gnarled liana climbers (like *Pterolobium hexapatulum* and *Capparis zeylanica*) grow up to two storeys high, and very old *iluppai* (Madhuca indica), wild lime, *neer kadamba* (Mitragna parvifolia), tamarind and satinwood trees tower solemnly.

Here, too, a magisterial mottled wood owl takes off with a whoosh, wild hare dart, brown eagle swoop and spotted deer skitter pass while intruding feet scrunch alarmingly loud on the dry undergrowth, full of traffic and humans, less than 300 metres away. It is such a forest that TFW is trying to return to Arunachala.

