

Leaf Litter

Autumn Equinox Issue

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Cover photo: *leaves and flowers of Ardisia solanacae among other leaves. Found the Indian subcontinent, China and peninsular Malaysia. Fruit edible.*

The downside of modernity

The word ‘modern’ came into English from the French word *moderne*, the late Latin *modernus*, from the root word *modo*, meaning ‘just now’. The earliest English sense was close to *con-temporary,* existing now, right now. Until the 19th C the word was used to mean ‘of the same period’, as it is used even now. However, in the 19th C, and very much in the 20th C, ‘modern’ became equivalent to ‘improved’ or ‘satisfactory’, or ‘efficient’.[1] It is with these latter interpretations that I disagree.

On the face of it, modernity is efficient and needed and a welcome change in our lives. Broader roads and faster travel. Instant communication across large distances. Better medical facilities and treatment. One needn’t queue up to get a ticket for the theatre, it can be done online. And no need to bother with the exact change, there is cashless transaction. We have online libraries and so no need to go searching for books. It is now possible to plan a journey to a foreign country and stay in a hotel and return without having to meet anyone: it can all be done virtually! No haggling over prices, no hassle, no need to struggle with another language, all we need is a good time.

But when we look closer at this aspect of modernity – meaning efficient, improved – we begin to see the cracks, as it dominates the field and does not tolerate those who do not, or cannot, cope with the new ‘improved’ manner of living. People today are forced into a digital world, for payments, for booking tickets, for banking and finances, and need to procure smarter and smarter phones to just to keep up with the business of living. A true modernity would allow for choices. Despite highways, catering to fast travel, it should also keep the option open for those who may want to take it easy, not rush anywhere, and just walk. For those who like to wander between bookshelves and let the book reach out to them, or for those who like their travels to be full of conversations with unknown people, in unfamiliar languages, and the wonderful possibility of new friendships and perceptions, let serendipity have it’s way, rather than prevent it.

An improved modernity would be inclusive, allowing an older generation that is at unease with the digital world to function with confidence, rather than make them feel inept with dealing with the world that they have lived in comfortably all their lives. Suddenly, they have lesser options, as hotels and restaurants and banking goes digital, shaking their independence, making them vulnerable, making them uncertain of their ability to cope. A genuine modernity would have kept all options and possibilities open, giving the old and the young, those in a hurry and those who aren’t, an equal space and opportunity to deal with their lives. The new modernity dissuades options, and multiple ways of reaching a goal, implicitly assuming that certain ways of doing things – faster, cashless, contactless – are *better.*

Perhaps this is how any change, the only constant, works. However, we are in the midst of what Alwin Toffler[2] called ‘future shock’, which is something other than culture shock. One does not need to visit other strange cultures to ‘be shocked’: our social and technological changes are happening so fast that one can feel a stranger in one’s own home and society. Too much change in too little time, too many choices and decisions to make, have led to much stress and psychological problems.

Can we continue to cope with modernity?

MR

1 Williams, Raymond: Keywords, 1976
2 Toffler, Alvin: Future Shock, 1970

How the Khadka village community protected its forest: a story from Bastar, Chhattisgarh

Jaya Dhruw and Maneesh Yadav

The village Khadka is located in Bastar district, on the banks of the Kosarteda river, a tributary of the Markhandi that drains into the Godavari basin. The village has a population of 800 people, composed mainly of the Gond community with 11 families of the Banjara community and a Rawat family. The forest in the area is essentially Sal along with Harra (Terminalia chebula), Mahua (*Madhuca longifolia*), Baheda (Terminalia ***belerica*** **), Jamun (***Syzigium sp***.)** and Karra. Animals and birds such as bears, monkeys, hare, deer and peacocks also inhabit these forests.

A dam was constructed on the Kosarteda river in 1980, displacing the people of the village when it was constructed. These people moved and occupied a place above the dam, cleared the forests there and prepared agricultural lands and built houses. The population depends on agriculture and forest produce.





Around 2017 these people above the dam started submitting Individual Forest right (IFR) claims for the occupied forest lands with the help of a Civil Society organisation (CSO). In 2018, learning about the Community Forest Rights (CFR) through the CSO, they provided the necessary information for their CFR. At that time, not only the Khadka community, but most government officers were unaware of CFR. Once all the concerned people – the community as well as the officers – were aware of the procedures, the CFR claimed was filed in 2020. The people of the village came together and prepared a map, supported by the Beat Guard and the Revenue Officer. The claim was submitted to the Sub Divisional Level Committee (SDLC), and moved on to the District Level Committee (DLC). A year later the claim was approved, an area of 799.567 ha now belongs to the Khadka village.

However, in 2021, the government carried out a survey of 350 ha of forest land occupied by the villager to establish a zoo. Legal procedures were initiated, and the officials of the Forest Department (FD), mainly the DFO, the Ranger, and Forest Officer, came with the proposal to the village. They wanted consent from the people for the zoo project.

The people refused to give consent for the project and the officials persisted, tempting the local people with employment opportunities once the zoo was approved. They also said

that the 20 families who were directly affected by the zoo project would be given houses elsewhere.

Village meetings were held every day, and the officials of the FD were not allowed to enter the village. It was decided that the village would pass a resolution under the PESA law denying permission for the zoo project; the resolution was sent to the authorities. The village community formed a monitoring committee to overview any actions that bypassed their resolution. Due to their earlier experience with displacement in 1980, they were strong and refused to go through that again.

After much struggle, the 350 ha of land were saved and the FD retreated, saying that the people should care for their forest. At least the people have kept their forest and their land.

Jaya Dhruw is with Aasra Manch and Maneesh Yadav is with Margdarshak Sewa Sanshan, both based in Chhattisgarh

Palm Memories: a journey in time

Deepak Pani

It was a very common scene, across Odisha, to see large palm trees (*Borassus flabellifer*) on the banks of village tanks and other water bodies. My village was no different during my childhood. All these palms had specific names and I still remember a few of them. The Amlamulia, the tree near the amla plant, the Sankhairi, with the fruit small and a deep saffron colour, the Badkhairi, whose fruit were bigger also a deep saffron, the Badhana, whose fruit ripened towards the end of the season, the Sindri, with fruit that were reddish, the Pita gajadi, whose fruit were bitter, and the Kalahandia, whose fruit were black.

The harvest began in mid-April, when the watery inner portion of the unripe fruits were consumed.
It was a summer delicacy that provided vitamins and minerals and kept the body hydrated. The
harvesting of ripe fruit began from end June-to early July, with the onset of monsoon. Only boys were involved in the collection of ripe fruit, and many of them from the village gathered under a big Peepal tree that was in one corner of the tank. The fall of the matured fruit produced a specific sound. Despite the play and gossip that occupied the youngsters they were very alert to that sound. Often the fruit fell into the water or into the paddy field. The boys who were good at wading and walking in the slush were well rewarded. Some boys hung around the entire day in these spots and returned home only at the end of the day with a head load of a variety of matured fruit. The mood was akin to victorious soldiers returning from the battlefield. Most of these palm fruit were used to make different types of food items, very popular during those days. A few recipes are given below.





Palm fruit and pulp

The first step is to prepare the pulp of the fruit which requires the removal of the tough outer black-purple layer of the matured fruit. Then the fibrous seeds need to be separated, (usually 2-3 seeds per fruit) which are soaked in warm water and squeezed by hand to get

the deep orange-brown extract of the fruit. This mixture is strained to remove any hair or fibre to prepare a smooth concentrate.

Palm Roti

Boil the pulp and slowly add rice powder and stir the mixture until the dough is prepared. Add sweetener as required as the palm is already sweet. Make small balls of the dough and flatten them into a roti, then prepare roti on a hot tawa/pan.

Palm Kakra

Kakra is an Odia term, meaning a small round cake of 3-4 inch diameter. Add a little water to the palm fruit pulp and add required sweetener and start boiling the mixture, slowly mixing rice powder and stirring continuously until the mixture turns into dough. The dough should be non-sticky. Then prepare small balls and use a rolling pin to make flat small rotis. Then boil these flats in hot oil to prepare the Kakra.

Palm Bada

The bada referred to is like a small pakoda. Add a little water to the pulp and mix sweetener as per your choice then mix the rice powder to the mixture until the fluid gets soft and semi solid. Keep this mixture for 3-4 hours and let it ferment, using a large pot as the volume of the mixture will increase while fermenting. Then take small pieces of the mixture and fry these in vegetable oil.



Palm bada



Palm kakra

Palm Chakuli

Make the pulp thin by adding water and boil the pulp for 15-20 minutes. Add sweetener as per your choice. Then allow the mixture to get completely cold without a refrigerator. Then add rice powder to the pulp keeping the consistency a little fluid. Allow the mixture to ferment for 4-5 hours and pour it on a hot oiled pan or tawa. Allow the flat cake to get cooked on both sides and serve it hot or cold.

Palm Podo Pitha

Pitha is an Odia word, close to the word ‘cake’ in English. Add a small quantity of water to the pulp and add sweetener. Cashew nuts, ground nuts, coconut pieces, raisins can be added to enhance the taste. Boil the pulp and add rice powder slowly until the non sticky dough is prepared. Take an earthen or aluminium pot and spread some oil in the inner side of the pot and cover this with a banana leaf. Also spread some oil or ghee over the banana leaf. Then place the dough tightly inside the pot covered by banana leaf and cover the pot with an oiled banana leaf. This is then covered by another upturned pot. Let the dough sit for one hour over a low fire, then turn over the cooked cake to cook for another 15-20 minutes. Test the inner portion of the cake with a fork to check if the cake is done. Serve the pitha either warm or cold.

Additional notes

The raw fruit pulp can be kept in the refrigerator for several days to prepare all the items except the palm chakuli.

After extracting the fibrous pulp of the palm, the dry seeds are thrown into the backyard, which then germinate in two or three months. The kernels of the seeds are delicious and eaten directly or prepared as different cakes by mixing ground nuts and rice flour. The dried and split palm seeds are used as fuel for cooking.

During the palm season every family enjoyed palm-based food. And over time, a very intimate relationship with the palm trees was established. A rich knowledge regarding the diversity associated with palm trees prevailed among the boys. However, girls were deprived of this exposure as in those days they were forbidden to collect palm fruit with the boys.

Recently, I revisited the village. No longer are the boys of the village gathering under the peepal tree. They are not concerned about palm trees, nor are they aware of their names. A few of the elders, who were active in their youth, occasionally collect ripe palm fruit.

The use of palm fruit as a delicacy is not widespread in Odisha. It is limited to a few regions . The biodiversity associated with palm trees, particularly the species that provide nesting spots for birds and bats, are very important. The rising number of deaths due to lightning is a major concern nowadays and it is believed that palm trees, because of their height, work as a lightning deflector.

The dwindling number of palm trees needs to be reversed by re-planting them. Off late, the Government of Odisha has banned the cutting of palms and one hopes that they will be restored to their earlier numbers.

Deepak Pani is with Gram Swaraj, Mayurbhanj, Odisha

NTFPs as a means of sustainable livelihood for forest dependent communities: a story from the Ayyalur forests, Tamil Nadu

Muthusamy Palanivel

The Ayyalur forest region, situated in the Eastern Ghats of Dindigul district, encompasses hundreds of villages and hamlets surrounded by deciduous and scrub forests is a globally recognized habitat for the slender loris. Most local households rely on these scrub forests for their livelihoods, primarily by harvesting Non-Timber Forest Products (NTFPs). Living within and around these forests helps the community to have easy access to a wide variety of medicinal herbs, fruits, and leafy greens.

Previously, unsustainable and haphazard harvesting practices severely threatened the regenerative capacity of these plant species. To save time, harvesters often snapped entire branches, twigs, and buds rather than selectively plucking the required mature fruit and leaves, causing harm to many plants. Furthermore, post-harvest handling and drying methods were often unhygienic.

To address these challenges, SEEDS Trust introduced capacity-building programs on sustainable harvesting and hygienic post-harvest management, training community members to:

- Pick only mature leaves and fruits, leaving buds and young growth undisturbed for natural regeneration.
- Collect only 25% to 30% of the produce to prevent over-exploitation and ensure long-term, sustainable yields.
- Dry produce on clean tarpaulin sheets rather than on bare ground to prevent contamination from dirt, dust, and stones.
- Dry harvested materials under shade to protect their active medicinal compounds and maintain visual appeal.

Following this training, harvesters adopted sustainable collection practices that safeguard the forest ecosystem while securing reliable, year-round seasonal income. Some of these NTFPs are given in the table below.

Name of the NTFP	Useful part	Value
Solanum torvum	Fruits	Edible and has medicinal value
Albizzia amara	Leaves	Used as a herbal shampoo
Cassia auriculata	Flowers	It has medicinal value used for making herbal tea
Tamarindus indica	All parts - mainly fruit	It is edible and a main ingredient in everyday cuisine
Azadrichata indica	All parts	Used as medicine and germicide
Justicia adhatoda	Leaves	Used as a medicine to cure cold and cough
Pithecellobium dulce	Fruits	Edible
Gymnema sylvestre	Leaves	Used as a medicine
Hemidesmus indicus	Root	Root syrup is used for making sharbat – a non-alcoholic, sweet soft drink
Coccinia grandis	Fruits	Used as a vegetable, ripe fruit is edible,
Psidium guajava	All parts –	Fruits are edible and tasty

	mainly fruits	
Cissus quadrangularis	Stem	Used as a vegetable and for making pickles
Cardiospermum halicacabum	Leaves	Used as a green and has medicinal value to cure arthritis

Value Addition and Market Potential

Driven by steady consumer demand for natural, nutrient-rich, and therapeutic products, NTFPs offer a reliable source of sustained income. Processing and value addition significantly elevate profit margins for forest-dwelling families.

A prime example is *Solanum torvum* (Turkey berry), a perennial shrub growing up to 3 meters tall. Known for aiding digestion and detoxification, it holds high commercial value. While fresh berries have a strong market, processing them—such as soaking the dried berries in salted buttermilk (*sundakkai vathal*)—commands a significantly higher market price.

















To help harvesters capitalize on these market opportunities, SEEDS Trust continues providing hands-on training in hygienic processing, value addition, and market linkages, directly improving household incomes and promoting sustainable forest stewardship.

Regrettably, the young generation of this community is losing interest in learning about the NTFPs in their region and the native medicinal practices. Even adults ignore their traditional practice of using NTFPs, both as food and medicine, and do not pay much attention to the gradual decline of forest resources due to natural calamities and man-made disasters. Therefore, SEEDS Trust has been taking efforts to make the community being aware of their tradition and the worth of NTFPs.

Muthusamy Palanivel is with SEEDS Trust based in Dindigul, Tamil Nadu

UPDATES FROM THE FIELD

May 2026: Velugu Association, Srikakulam, Andhra Pradesh

Old Seed Festival – Mana Uru Mana Vithanam

The Old Seed Festival – “Mana Uru Mana Vithanam” was organized by Velugu Association, Kotturu in collaboration with the Adivasi Community of Ippaguda village, Parvathipuram Manyam District on 22nd & 23rd May 2026.

Communities from 11 Panchayats participated and exhibited more than 120 indigenous varieties of food including millets, cereals, pulses, tubers, agroforestry tree species, leafy vegetables, and medicinal plants. The festival promoted traditional seed conservation and biodiversity.





PACDR Training at Dwarabandalu

A two-day PACDR training program was conducted at Dwarabandalu to strengthen community awareness on climate risk assessment, disaster preparedness, and resilience planning.

Business Development Plan Training for FPO Members

A training program on Business Development Planning was conducted for FPO members at Velugu Association office. The training focused on improving business planning, organizational management, value addition, and market-oriented approaches to strengthen Farmer Producer Organizations.

Salem Turmeric Seed Distribution and Plantation Training

Salem turmeric seed was distributed to farmers to promote turmeric cultivation and improve livelihood opportunities. The unit cost for turmeric cultivation was 85000/-per acre out of which ITDA provided 90% (76500/-) subsidy support and the farmer contributed 8500/-.

Farmers received 340 kg of seed for 50 cents and 680 kg for 1 acre of land. Along with seed distribution, *Trichoderma viride*, neem powder, neem oil, and plastic trays were provided as input support. Training programs on turmeric seed plantation and crop management practices were also conducted at village level





Participation in Grievance Program – ROFR Patta Correction
Velugu Association participated in the Grievance Program conducted at Seethampeta ITDA for correction of surnames in ROFR pattas of 18 beneficiaries from Paliskota village. The activity supported beneficiaries in resolving documentation issues and ensuring accurate records under forest rights implementation.



Figure 1: Tumeric planting



Tumeric cultivation operation



Figure 2: Old seed festival



Old Seed Festival





Training on PACDR

Updates from Chhattisgarh, June to August 2026: compiled by Margdarshak Sewa Sansthan

June: Ecosystem Expansion, Institutional Rule-Making, & Nursery Preparation

June marked the onset of pre-monsoon and monsoon preparations. Field teams and community members engaged in monitoring, ecosystem protection, and institutional governance strengthening.

Conservation & Emergency Boundary Response

Field teams conducted systematic resource walks across forest grids to track native flora and identify rare timber and medicinal plants, noting flourishing native species such as koreya (*Holarhenna sp.)* and sal (*Shorea robusta*). Environmental challenges were met with swift community mobilization: when a severe seasonal storm caused a massive sal branch to collapse onto the Manpur reforestation boundary fencing, community protection units cleared the debris and fully restored the perimeter within hours to prevent cattle grazing.



Institutional Advocacy & CFR Governance

Gram Sabha assemblies and forest protection committee sessions were convened to establish strict operational rules (Niyamavali) for local forest resource management. Communities asserted absolute legal authority over their CFR areas, pushing back against unauthorized extraction by external groups in Bakalo, Surajpur.



Livelihoods & Enterprise Development

Women's self-help groups (SHGs) drove NTFP value-chain operations, focusing on collection, drying, and sorting of Mahua, Bahera, and Dori seeds to bypass predatory middlemen. Collaborative evaluations with regional development networks from Jashpur laid the groundwork for a commercial wild mango pickle enterprise. Traditional leaf plate (Dona-Pattal) production was also scaled up to secure better market pricing.

Culture, Health & Traditional Knowledge

Field coordinators documented indigenous recipes, wild vegetables, edible tubers, and mushrooms, passing vital nutritional heritage to younger generations. Safety briefings

were conducted regarding seasonal wildlife movements, including active elephant transit paths and venomous snakes, ensuring zero casualties during monsoon foraging.

July: Peak Reforestation, Nursery Scale-Up Operations, & School Mobilization

July represented the peak of monsoon planting activity. MSS field teams coordinated sapling distribution, reforestation, nursery maintenance, and school-level environmental engagement across multiple districts.

Reforestation & Biodiversity Restoration

Reforestation activities utilized over 30 native species, including Amla, Jamun, Baheda, Jackfruit, Neem, Mahua, Bamboo, Karanj, Tamarind, Semar, Shisham, and Teak. Notable planting milestones included 200 Amla plants in Kawardha CFR forest, 940 saplings in Kanker, 1,500 plants in Mahasamund, over 300 coffee plants across Kataroli and Manpur, and 3,500 fruit and timber saplings supported by the Forest Department in Manpur.





Nursery Development at Mati Resource Centre

Nursery maintenance at the Mati resource centre in Kataroli continued with soil preparation, sand mixing, polybag filling, and seed sowing. Saplings were systematically transported to field locations, allowing youth and community members to gain practical understanding of nursery management and species selection.

School & Community Engagement

MSS actively engaged schools, encouraging students to plant trees in honor of their mothers and establishing school kitchen gardens with Jackfruit, Bamboo, Tamarind, and Karanj. Government department coordination with Forest and Revenue officials streamlined pending CFR claim verification and sapling procurement.

Challenges & Protection Measures

Heavy monsoon rains created logistical hurdles, while wildlife encounters—such as elephants damaging perimeter fencing and Nilgai browsing young coffee saplings—required immediate community repair and reinforcement of boundary posts.

August: Plant Health Maintenance, Animal Protection, & Institutional Reviews

August focused heavily on the maintenance, weeding, and structural upkeep of established plantations, coupled with community training on traditional wild foods and forest governance.



Plantation Maintenance, Weeding, & Civil Maintenance

Teams executed weeding, soil loosening (Mada/Weeding), and 1-meter clearing around growing saplings in Manpur plantations, engaging up to 34 laborers daily. Forest engineering checks verified proper water retention structures and cleaning depths.



Wildlife Encounters & Fencing Restoration

Elephant movement near the Karmakatra forest edge posed challenges, resulting in damaged perimeter posts and wire mesh. Community protection teams and forest guards promptly re-anchored posts and tensioned wire boundaries. Incidents involving wildlife such as Nilgai and snakes were managed through cautious group patrolling protocols.

Traditional Knowledge & Nutritional Security

Field documentation recorded traditional medicinal roots and wild tubers, such as Mahua root decoctions traditionally boiled and administered to nursing mothers to prevent seasonal chills. Women's groups continued manufacturing Dona-Pattal leaf plates while addressing drying challenges during humid weather.





<u>Cumulative Reforestation & Activity Summary (Monsoon 2026)</u>

The table below consolidates the major tree species planted across CFR and community lands during the June–July 2026 monsoon drive, reflecting community-led restoration.

Tree Species (Local & English)	Saplings Planted	Plantation Area / Status

Black Plum (Jamun)	2,430	CFR Land & Village Commons
Tamarind	1,550	Manpur & Kataroli Reforestation
Mango	1,215	Community Grids & Fruit Orchards
Guava	1,025	School Campuses & Kitchen Gardens
Karanja (Pongamia)	1,080	CFR Protected Blocks
White Teak (Khamhar)	850	Restoration Zones
Mahua	700	Native Forest Expansion
Custard Apple	695	Dry deciduous Patches
Neem	660	Village Borders & Pathways
Drumstick (Moringa)	600	Nutritional Security Blocks
Koyalar (Bauhinia variegata)	576	CFR Biodiversity Patches
Harra & Baheda	700	Medicinal Species Restoration
Sheesham & Teak	660	Timber and Shade Zones
Coffee	305	Kataroli & Manpur Agroforestry
Cashew & Amla	554	Upland Slopes & CFR Zones

Conclusion & Future Strategic Outlook

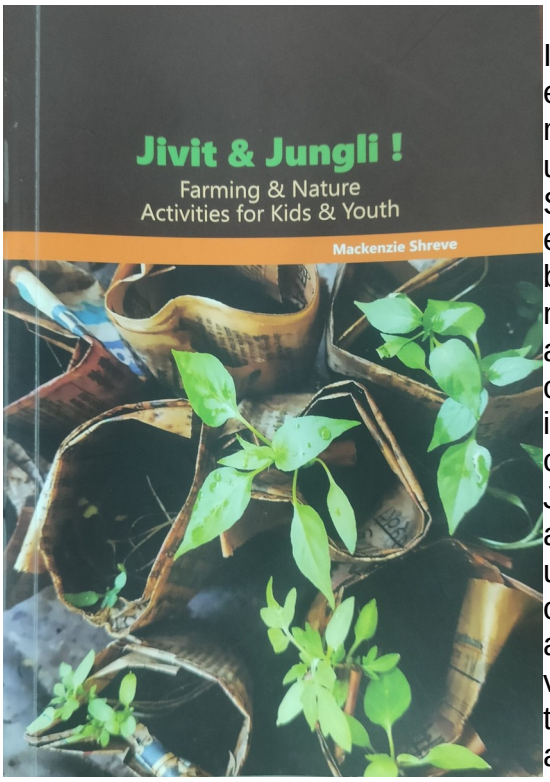
The three-month period from June through August 2026 demonstrated resilience and proactive environmental stewardship by Margdarshak Seva Sansthan and local tribal communities. Despite seasonal challenges such as heavy rainfall, boundary damage from wildlife (elephants and Nilgai), and stray fire incidents, community-led protection units safeguarded thousands of newly planted saplings. Moving forward into the autumn and winter cycles, MSS will prioritize sapling survival rates, systematic CFR claim finalization at the district level, women-led NTFP micro-enterprise expansion (pickle production and Dona-Pattal scaling), and comprehensive leadership training camps at the Kataroli Mati Resource Centre.

Book reviews:

Jivit and Jungli by Mackenzie Shreve, Earthcare Books, 2026

Namita Priyadarshee

“Not every lesson needs to come from a lab. Some of the deepest truths are whispered from the soil.” This is what Mackenzie Shreve aims to convey through her well written and illustrated new book, Jivit and Jungli! (farming & nature activities for kids and youth).
No system of knowledge is complete without understanding nature, its various components and their mutual correlations. Humans are an integral part of nature; their very existence depends on a very delicate balance of various components and forces of nature. This balance has to be maintained for the humans and other species to survive. Or at the very least, it needs to be ensured that no human activity disturbs this balance in any way. For this, it is imperative to develop basic understanding of the workings of nature on part of all humans, particularly, the kids and youth at their impressionable age.



In this background, Mackenzie’s work becomes extremely important. She has evolved a methodology for developing and deepening the understanding of workings of nature systematically. She believes that the best and perhaps most effective way of developing such understanding is by being in the nature and immersing oneself in the natural world. It is also important for us to be actively involved while undertaking certain activities collectively. She has compiled some such activities in her book by designing and choosing them very carefully.
Jivit & Jungli ! is structured by grouping the activities in various units to evolve the understanding of nature from soil to seeds to parts of plants to the Earth as a whole and how human action is impacting it. Each unit comprises of various themes and activities related to those themes. Each activity is described in detail, augmented with photographs of performance of those activities that any group of kids can organise and participate in, on their own with the help of the book. I am particularly impressed with the design of activities as they are likely to arouse curiosity and enthusiasm in the children. I found some of the activities such as the preparation of Jivamrut, preparation of cocopeat and vermicomposting very interesting and hands-on. Moreover, it teaches them that nothing in nature is a waste. Waste created by one life form is beneficial to the other life forms.

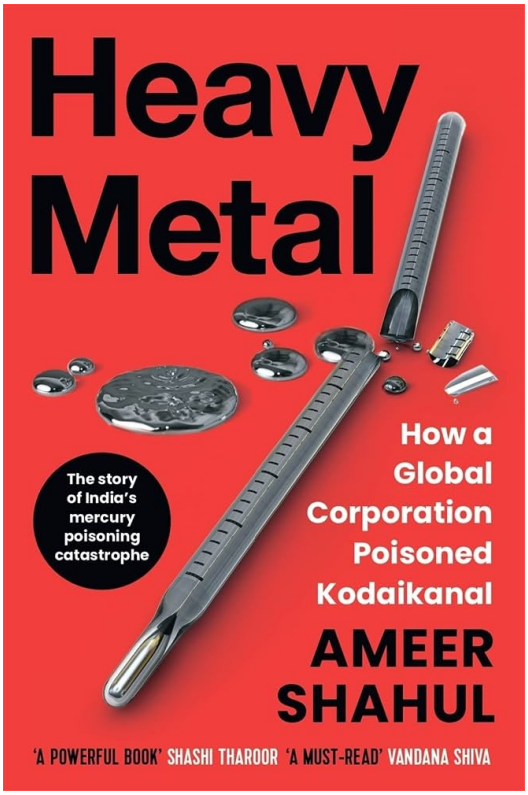
She emphasises on the two of very important regulating services by nature, i.e., pollination and decomposition. Pollination sustains plant reproduction and biodiversity, while decomposition recycles nutrients into the soil that helps in plant growth and sustains other life forms. The chapter on water cycle is also important for the understanding of survival of the ecosystem and, therefore, the human and other species.

I would, however, have personally preferred to have a separate section on theoretical perspective for each of the themes in the book. This would have made it even more understandable and relevant to a larger number of young people.
In my work with various forests in Rajasthan, I was always faced with a challenge caused by lack of awareness on part of a large number of community members, particularly the youth staying at the periphery of reserved forests and national parks. I am, therefore, very happy that such a book has come out. If the schools adopt it as part of their teaching of Environment Sciences as a subject, it will go a long way in protecting our environment and perhaps give us a better chance to survive as a species. This book can act as a handbook to sensitize children towards the natural ecosystem. The schools can take a lead and popularise these activities amongst their students and the youth of their local communities in order to be in harmony with nature from early stages of their lives.

Namita Priyadarshee is a retired IFS officer

Heavy Metal : *How a Global Corporation poisoned Kodaikanal*

by Ameer Shahul, Pan Macmillian, 2023



Kodaikanal is a well-known tourist destination in India that attracts visitors from many countries. Located over 2,000 metres above sea level, the town has a cool climate and pleasant weather, making it a popular escape from the heat of the plains. Yet these same climatic conditions also attracted Unilever, which set up a thermometer factory in the town

in 1983. How the plant was shifted from the USA to Kodaikanal, and how it damaged the fragile ecosystem, is a disturbing story. In *Heavy Metal: How a Global Corporation Poisoned Kodaikanal*, Ameer Shahul presents the full history of this issue.

Shahul writes the book in a multidimensional way, helping readers understand the deeper intrigues behind this disaster. Gathering an impressive amount of data, he not only explains how the thermometer factory polluted the hills, but also examines why the factory came to India. He informs us of the legal battle that ensued when the mercury pollution became public knowledge. To convey the seriousness of mercury poisoning, he also discusses the Minamata disaster in detail.

Shahul describes how Rachel Carson's *Silent Spring* raised public awareness and pressured the US government to take stronger actions against pollution, as well as the role of the Environmental Protection Agency (EPA). He explains why Chesebrough-Pond's shifted the plant from Watertown in the USA to Kodaikanal, tracing the history and evolution of Chesebrough and Pond's, the merger of these companies, and the global reach of their products. In parallel, he discusses policy changes in India, M.G. Ramachandran's victory in the 1977 Tamil Nadu state elections, how his government's policies helped establish the factory, the location and surroundings of the site, including the Pambar Shola and its flora and fauna. Shahul describes where the plant was located and permitted to operate and how production began in 1983. Because elemental mercury evaporates, releasing toxic odorless vapours above 24 degrees Celsius, Kodaikanal's cool climate made it an attractive location for the factory.

Everything appeared proper and organized after the factory was established and began operating. Unfortunately, this perception continued for the next 17 years, until Navroz Mody, an activist with the Palni Hills Conservation Council, discovered piles of broken thermometers containing mercury at a scrap dealer's premises in Moonjikal, Kodaikanal. During this period, there was little awareness of why some workers developed serious health problems or why some had died.
Shahul compellingly narrates how Mody and his friend Nityanand Jayaraman, and some of the PHCC staff, approached the scrap dealer and brought the pollution outbreak to public attention. He recounts the events of 28 March 2001, the first protest against the factory, the immediate consequences of that protest, the involvement of the Tamil Nadu Pollution Control Board (TNPCB), and the formation of the Tamil Nadu Alliance Against Mercury (TAAM). As the news spread across the country and reached the global leadership of Hindustan Lever Limited (HLL), the evidence mounted. HLL admitted its mistake and agreed to clean up the waste at the Moonjikal scrap yard, initially estimated at 5.3 tonnes. However, when the waste was taken back to the factory on 20 June 2001, it weighed about 7.4 tonnes.

Shahul narrates the acquisition of the company by HLL, and how it later became Hindustan Unilever Limited, and the history of Lever Brothers. He lists the workers who suffered from mercury exposure, those who lost their lives because of the pollution, and the health problems they faced. Although the factory was closed, he details how the company conducted its Environmental Impact Assessment (EIA) with the help of Dames & Moore, the deviations in that report, and why Mody approached the Indian People's Tribunal (IPT). Shahul also covers the involvement of Community Health Cell (CHC), Dr. Mohan Isaac from the National Institute of Mental Health and Neurosciences (NIMHANS), Justice S.N. Bhargava from IPT, and the subsequent legal battle.

Shahul's narration continues with the investigation by Dr. Arunachalam and his fellow scientists from the National Centre for Compositional Characterisation of Materials (NCCCM). The account begins in the spices section of a supermarket in Hyderabad, follows contacts through markets in Chennai, Dindigul, Batlagundu, and Kodaikanal, and ends with the discovery of mercury traces on the lichens of a tree near the factory. Another compelling section describes the reverse journey of polluted soil from the factory premises to Tuticorin harbour and then to Bethlehem Apparatus in Pennsylvania, via New York.

The book also documents the involvement of Greenpeace, the Palni Hills Conservation Council (PHCC), and lawyers such as Vaigai Ramamurthy, who drew in the Directorate General Factory Advice Service and Labour Institutes (DGFASLI) under India's Ministry of Labour. Ameer Shahul discusses the roles of ministers such as Jairam Ramesh from the Ministry of Environment and Forests, and Mallikarjun Kharge from the Ministry of Labour, grounding these accounts in data. He writes about how Sofia Ashraf's *Kodaikanal Won't* campaign video went viral, the response from Paul Polman, then CEO of Unilever Plc, and how the fight against the corporation ultimately ended in a settlement.

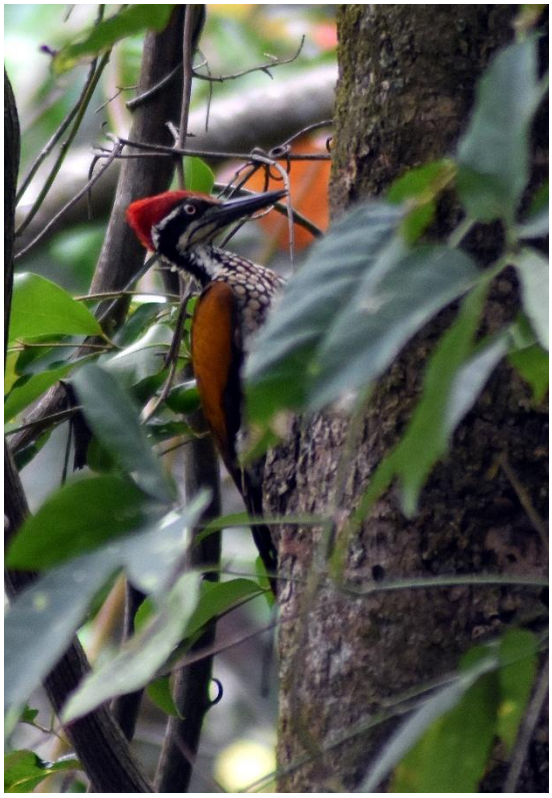
The book is a good read for people who are concerned about the Palani hills and other fragile regions of the western Ghats. It is also must for those who are interested in understanding how corporate greed and politics can come together to sideline environmental and human health concerns, and how they get away!

Satheesh Muthu Gopal is an independent writer and environmentalist

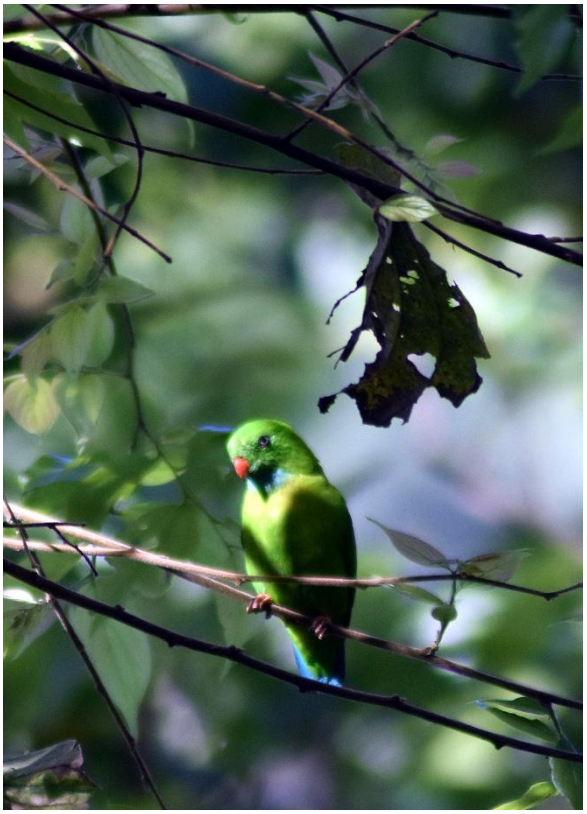
Nature Notes



Jungle Crow: (Corvus macrorhynchos)



Flame-backed Woodpecker (Dinopium sp)



Hanging Parrot (Loriculus vernalis)



Spotted Dove (Spilopelia chinensis)

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