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VANA PREMI

Nav Se Nawvey Saal Tak Ke Bachhon Ka Saathi

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Global Tiger Day
29 July

Territory marking (Ranthambore)

Photos : Sri. Kola Venkanna
Award winning Wildlife photographer, Kodad

JOURNAL OF THE ASSOCIATION OF RETIRED FOREST OFFICERS, TELANGANA & ANDHRA PRADESH
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- The TGFDC has undertaken the ambitious task of developing Eco-Tourism activities within the State. Existing attractions open to the public include the Botanical Garden, Vruksha Parichaya Kshetram, Virtual Wildlife Safari and Pala Pitta Cycling Park in Kondapur, the Mahavir Nischalvan Eco-Tourism Centre in Vanasthalipuram, Aranya at the Shameerpet Deer Park, and Mrugavani at the Chilkur National Park. These initiatives are proving to be highly appealing, resulting in a growing influx of visitors.
- The TGFDC has also developed urban parks at Lalgadi Malakpet (Vanadrushyam), Thumkunta (Veduru Vanam), Gowdelli (Chandanavanam), and within the Chilkur Reserve Forest (Forestrek Park).
- The TGFDC has introduced new commercial species within the Regional Ring Road region, including Seethaphal, Sandalwood, Red Sandalwood, Rosewood, Teak, and *Casuarina Junghuhniana*, among others.
- Corporate Social Responsibility (CSR) Initiatives 2021–2025: Empowering lives through the distribution of three-wheeler scooters to the differently-abled, support to schools with sports kits and furniture, and establishment of modern pre-fab health sub-centers — driving inclusive growth with care, commitment, and compassion.
- Eco-Tourism projects have been launched at various locations under the brand name of "Deccan Woods & Trails".

Smt. Sunita M. Bhagwat, IFS
Addl. Principal Chief Conservator of Forests
Vice Chairman & Managing Director (FAC)
Telangana Forest Development Corporation Ltd.,
(A Government of Telangana Undertaking)

VANAPREMI

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An English monthly on forestry, wildlife, environmental issues, and topics of general interest that blends in-depth knowledge with engaging content for all age groups.

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Please consult the Associate Editor.

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From the Editor's Desk...

Hello readers,

The July issue of your 'Vanapremi' has many news and views. To start with, the Association of the retired forest officers of Telangana& AP has a 'new Team of office bearers' following the elections held during the General Body meeting held on the 28th June 2026. Vanapremi, on all your behalf, wishes all the best to the new team.

The cover of the issue has a 'rare picture' of a Tiger urinating to mark its territory. It's a great reminder for humans, on the Global Tiger Day (29th July) to mind the Tiger's territory and keep away. World Zoonoses day observed on the 6th of July serves to raise awareness about transmission of diseases from animals (wild-domestic-human) and commemorates the day on which Louis Pasteur successfully administered the first rabies vaccine in 1885.

July 28th is observed as 'World Nature Conservation Day'. In India, the first fortnight of July is a very important period for the annual "VanaMahotsav" (annual tree planting season). Forest departments and others across the country would be coming up with single day plantation drives, the merits of such drives arguable, if not followed up.

Coming to the specific articles, the opening article calls for a paradigm change in the way the FRA Act is implemented. Other articles include: On the wildlife biology side, a scientific analysis of attraction energy allocation among animals, a fresh look at Mangroves conservation for climate adaptation/mitigation, heat stress and missing safeguards, winter is almost over-an effect of climate change, models of afforestation in arid areas in view of El Nino-all deal various aspects of climate change.

The tragic death of a tourist who went too close to a captive Elephant raises the question about safe distances and safeguards. Re-wilding of forest grasslands is of utmost importance to ensure food for the angulates, the prey base of the apex species. Article on the contributions of a Conservator of a bygone era, details the pioneering scientific forestry in Western Ghats. Another article looks at the evolution of forest management comparing it with the evolution of Cricket from Tests to ODIs and T20s.

Pioneering efforts in conservation of Crocodiles in Andhra Pradesh fifty years ago was sketched in the archives of 'The Hindu'. The officers who were part of those efforts were only too happy to write a detailed article on it.The Forest College & Research Institute (FCRI), Mulugu in Telangana celebrated the World Environment Day in June and shared their activities and pictures.

Intellectual Property Rights (IPR) is an important area that the Environment, Forests & Climate Change sectors need to get themselves more educated and organized. Identification and protection of Traditional Knowledge is very vital to prevent its exploitation and commercialization. An article on this subject lays out various issues involved and need to ensure Fair benefit sharing to all stakeholders

Forest land in a sense is a real estate and many old forest blocks still face legal challenges about their ownership. A case in context is the 'Rally forest block'. KBR details out the whole legal process that he was part of and how the case was won for the forest department.

Minutes of the 112th General Body meeting along with details of the newly elected office bearers, would, I am sure, keep the readers upto date. Related pictures are on the center pages.

Sri.J.V.Sharma, a nonagenarian, is a pioneer of the fight against the FRA Act. The association deemed it fit to felicitate him in reverence to this effort and his lifetime contribution to the forestry sector.

Legal Notes and Green Quiz would continue to inform, educate and test the readers and forestry practitioners.

Dr.K.Tirupataiah,IFS (Retd)

Happy Reading……

Editor



From Historical Injustice to Procedural Justice: Rethinking Accountability under the Forest Rights Act

Dr.H.S.Gupta

Abstract

The Forest Rights Act (FRA), 2006 was enacted to correct the historical exclusion of forest-dwelling communities from legal recognition and forest governance. Most debates on FRA have focused on the extent of rights recognition, implementation deficits, and ecological consequences. This article argues that an equally important but under-examined issue is procedural accountability. Many contemporary conflicts surrounding FRA implementation arise not from disagreements over rights themselves but from uncertainty regarding how rights were recognised. Questions relating to Gram Sabha proceedings, participation, mapping, documentation, and decision-making records frequently remain difficult to verify. The article introduces the concept of procedural capture to describe situations in which statutory procedures formally exist but their integrity cannot be independently established. It argues that the next stage of FRA reform should focus on strengthening procedural justice through transparent, auditable, and verifiable decision-making systems.

Correcting One Injustice, Creating Another?

The FRA represents one of the most ambitious attempts in independent India to address historical injustice. By recognising rights over forest land and resources, it sought to reverse a legacy of exclusion associated with colonial forest administration and post-colonial conservation policies.

Nearly two decades later, however, a paradox is becoming visible. While the Act seeks to correct past injustices, implementation processes can sometimes generate new grievances. Many disputes today concern not the objectives of the Act but the procedures through which rights are recognised.

Questions repeatedly arise:

- Were all affected persons informed?
- Were Gram Sabha proceedings properly conducted?
- Were objections recorded?
- Were competing claims examined?
- Were maps accurately verified?
- Can decisions be reconstructed years later?

These are questions of procedural justice rather than substantive rights.

The Missing Dimension in FRA Debates

Academic discussions on FRA have largely focused on three issues:

1. Recognition of historical rights.
2. Administrative failures in implementation.
3. Ecological implications of rights recognition.

Relatively less attention has been paid to the integrity of the decision-making process itself.

Yet the legitimacy of rights recognition depends not only on who receives rights but also on whether the process is transparent, accountable, and verifiable.

This distinction is important because rights recognised today influence future decisions

relating to mining, highways, transmission lines, conservation programmes, and forest diversion proposals.

Procedural Capture

A useful way to understand the problem is through the idea of procedural capture.

Procedural capture occurs when statutory procedures formally exist but independent verification of compliance becomes difficult.

This need not involve corruption. It may arise simply because records are incomplete, dispersed, poorly maintained, or difficult to access.

As a result, formal compliance may be claimed, but procedural legitimacy remains uncertain.

The issue is therefore not merely whether rules exist but whether adherence to those rules can be demonstrated.

Why It Matters

When procedural histories are unclear, conflicts multiply.

Future generations may find it impossible to determine:

- who participated,
- who objected,
- what evidence was considered,
- why decisions were made.

The resulting uncertainty affects not only claimants but also courts, administrators, conservation agencies, and infrastructure authorities.

In such situations, disputes often arise not over law but over facts.

Beyond Digitisation

Digitisation improves efficiency but does not automatically improve accountability.

Digital records can still be altered, overwritten, or incompletely maintained.

The real challenge is preserving a transparent procedural history.

This is where immutable audit systems—including blockchain-based registries—may offer useful possibilities. Their value lies not in replacing democratic institutions but in creating verifiable records of procedural events.

However, technology cannot substitute for fairness, participation, or accountability. It can only make procedural histories easier to verify.

Conclusion

The first phase of FRA discourse focused on recognition of rights. The next phase must focus on recognition of procedures.

A law intended to remedy historical injustice cannot remain indifferent to procedural injustice.

Strengthening transparency, documentation, and accountability in decision-making may therefore be one of the most important unfinished tasks in FRA governance.

The long-term legitimacy of rights recognition depends not only on what decisions are made but on whether future generations can verify that those decisions were made fairly.

Author is a former PCCF of Jharkhand cadre and a former Professor at the Indian Institute of Forest Management (IIFM), Bhopal. M-90310 00118



The Cost of Attraction: Energy Allocation and the Evolution of Sexual Traits

R. Hemanth Kumar

Building on my earlier reflections on energy trade-offs in tigers (LinkedIn article No 140), I have received several requests to write about lekking behaviour in antelopes. Before exploring that topic, it is helpful to provide a brief overview of the broader concepts of energy trade-offs and sexual selection, along with the key theories proposed by evolutionary thinkers, biologists, and geneticists. Hence, the following article is presented.

Introduction:

The relationship between energy trade-offs and sexual selection lies at the heart of evolutionary biology. Organisms possess limited energy reserves that must be allocated among competing needs such as growth, survival, and reproduction. Sexual selection often favors traits that are energetically costly yet enhance reproductive success, creating a paradox where survival costs are tolerated if reproductive benefits outweigh them. This tension shapes species' morphology, physiology, and behavior, from the peacock's extravagant tail to the antlers of deer.

At its core, energy allocation reflects the principle of trade-offs: every organism must invest in maintenance, defense, and survival, yet reproduction demands additional resources. Sexual selection operates through mate choice, where females often select partners based on costly, honest signals of fitness, and competition, where males expend energy in combat or territorial defense. These dynamics influence not only individual fitness but also population structure, ecological interactions, and evolutionary trajectories.



Photo Credit: birdspot.co.uk

This essay traces the intellectual lineage of key thinkers who built the foundations of sexual selection theory:

• **Darwin** introduced sexual selection alongside natural selection.

• **Fisher** proposed runaway selection, explaining how female preferences can drive traits to extremes.

• **Bateman** demonstrated sex differences in reproductive success, forming Bateman's principle.

• **Trivers** developed parental investment theory, linking sex roles to reproductive costs.

• **Zahavi** introduced the handicap principle, showing how costly traits act as honest signals of fitness.

• **Andersson** provided experimental evidence for female choice in widowbirds.

• **Lack** connected ecological constraints, such as food supply, to reproductive strategies.

• **Estes** documented lekking in ungulates, linking theory to African mammal ecology and conservation.

• **Bro-Jørgensen's** advanced understanding of multimodal signalling and conflict resolution in antelopes.

• **Wiley** explained how environmental constraints shape acoustic communication.

• **Charnov** created optimisation models for foraging, sex allocation, and life-history invariants.

• **Stearns** established life-history theory and evolutionary medicine, applying trade-offs to human health.

Together, these contributions illustrate how sexual selection and energy allocation shape the diversity of life, driving the persistence of extravagant ornaments, complex communication systems, and diverse mating strategies. The intellectual progression culminates in the study of lekking behaviour in antelopes, where energy-intensive displays, female choice, and ecological pressures converge in striking evolutionary theatre, an enduring example of how reproductive success, not survival alone, drives evolution.

1. Darwin (1871) – Sexual Selection Origins

Charles Darwin's ***The Descent of Man, and Selection in Relation to Sex (1871)*** marked the birth of sexual selection theory as a distinct evolutionary force. Darwin argued that natural selection alone could not explain extravagant traits such as the peacock's tail or the elaborate songs of birds. **These features often reduce survival by making animals more conspicuous to predators or by consuming energy, yet they persist because they increase reproductive success. Darwin proposed two mechanisms: intrasexual competition, where males battle rivals for access to females, and intersexual choice, where females select mates based on attractive traits. This framework explained why males often evolve ornaments, weapons, or displays, while females remain comparatively cryptic.** Darwin's insight was revolutionary because it acknowledged female agency in evolution, challenging Victorian norms that saw females as passive. His ideas laid the foundation for modern behavioural ecology, though they were initially controversial and underappreciated. **Today, sexual selection is recognised as a central driver of biodiversity, shaping morphology, behaviour, and even speciation.** Darwin's work remains a cornerstone, reminding us that survival is only half the evolutionary equation; reproduction is equally decisive.

2. Malte Andersson: Experimental Architect of Sexual Selection

Malte Andersson is a Swedish evolutionary biologist and Professor Emeritus at the University of Gothenburg. He is internationally recognized for his pioneering research on sexual selection, particularly his empirical and theoretical work explaining mate choice and the evolution of ornamentation in animals.

His best-known work focuses on sexual selection and the evolution of exaggerated male traits. Andersson's studies of widowbirds provided clear experimental evidence for female preference driving the evolution of male ornamentation. His 1994 monograph ***Sexual Selection*** synthesized decades of theory and data, establishing a modern framework that continues to influence behavioral and evolutionary ecology.

Beyond his widowbird research, Andersson has examined topics including brood parasitism, social behavior, and the ecological costs of reproduction. He has also contributed to discussions on population growth and biodiversity conservation. His combination of theoretical rigor and creative field experimentation has made him one of

Sweden's most influential evolutionary biologists.

3. Angus John Bateman: Pioneer of Sexual Selection Theory

Angus John Bateman(1919–1996) was a British geneticist best known for his influential research on sexual selection in fruit flies. His 1948 paper ***(Intra-sexual Selection in Drosophila melanogaster)*** established what became known as ***Bateman's principle***, a foundational idea in evolutionary biology linking reproductive success to sexual selection pressures.

Bateman's principle

In his seminal 1948 study, Bateman examined mating frequency and reproductive success in ***Drosophila melanogaster.*** He concluded that **male reproductive success increases with the number of mates, while female success is relatively limited by egg production.** This became known as ***Bateman's principle***, influencing the understanding of sexual selection, parental investment, and mating behavior across species.

For decades, Bateman's principle shaped theories of sexual dimorphism and behavioral ecology. However, later re-analyses and replication studies have debated his methods and interpretations, suggesting that social and ecological context can modify the observed sex differences. Despite this, the principle remains a key reference point in evolutionary theory and behavioral biology.

4. Robert Ludlow Trivers: Architect of Modern Evolutionary Social Theory

Robert Ludlow Trivers (born February 19, 1943) is an American evolutionary biologist and sociobiologist whose theories profoundly reshaped the study of social behavior in humans and animals. Best known for his analyses of altruism, sexual selection, and self-deception, he has been described by psychologist **Steven Pinker** as **"one of the great thinkers in the history of Western thought."**

In the early 1970s, Trivers published five landmark papers that redefined evolutionary social theory. His model of **reciprocal altruism** explained cooperation among non-relatives as an adaptive exchange of benefits over time. His **parental investment theory** linked sex differences in behavior to unequal reproductive costs, while his concept of **parent–offspring conflict** extended natural-selection logic to family dynamics. These ideas became cornerstones of sociobiology and evolutionary psychology, strongly influencing **E.O. Wilson's Sociobiology and Richard Dawkins's The Selfish Gene.**

Trivers later explored **deceit as a biological strategy.** In The ***Folly of Fools*** (2011), he argued that self-deception evolved to enhance one's ability to mislead others, integrating psychology, anthropology, and evolutionary biology. Earlier, with **Austin Burt,** he co-authored ***Genes in Conflict (2006),*** **establishing the field of intragenomic conflict**. His continuing research spans symmetry, sexual selection, and lizard behaviour. His memoir, ***Wildlife: Adventures of an Evolutionary Biologist (2015),*** intertwines personal narrative with theory, portraying a scientist who sought not only to study life but to live it intensely.

Among his most influential contributions, **Parental Investment and Sexual Selection (1972) reframed sexual selection through the lens of reproductive investment. Trivers argued that the sex investing more resources, time, energy, and protection into offspring becomes choosier in mate selection, while the less-investing sex competes more intensely for access. In most species, females invest heavily through gestation, lactation, and care, making**

them selective about mates. Males, with lower obligatory investment, often compete aggressively. This theory explained sex roles across taxa, from mammals to birds, and clarified the prevalence of sexual dimorphism.

Importantly, Trivers emphasised that parental investment is not fixed. In species where males contribute significantly, such as seahorses or certain birds, sex roles can reverse. **His framework linked ecology, behaviour, and reproductive strategies, influencing studies of mate choice, sexual conflict, and cooperative breeding.** Today, parental investment theory remains foundational in behavioural ecology, shaping conservation strategies and human sociobiology. By focusing on the costs and benefits of reproduction, Trivers provided a universal principle: the balance of investment determines the dynamics of sexual selection.

5. Emlen & Oring (1977) – Ecology and Mating Systems

In their influential paper Ecology, ***Sexual Selection, and theEvolution of Mating Systems (1977)***,**Stephen T. Emlen and Lewis W. Oring linked ecological conditions to mating strategies. They argued that the distribution of resources, predation pressures, and mobility constraints shape whether species evolve monogamy, polygyny, or lekking. For example, when resources are clumped and defendable, males monopolize territories, leading to polygyny. When resources are dispersed and undefendable, males may gather in leks, competing for female choice**. Their ecological model explained variation across species and environments, integrating sexual selection with habitat structure. This work was pivotal because it moved beyond abstract theory to show how ecological context influences mating systems. It shaped decades of research in behavioural ecology, conservation, and ungulate biology, in which lekking and territoriality are influenced by savanna landscapes. Emlen and Oring's framework remains a key reference for understanding the connection between environment and reproductive behavior, emphasizing that sexual selection cannot be separated from ecological realities.

6. Bradbury & Gibson (1990) – Leks and Mate Choice

David Bradbury and Robert Gibson's *Leks and Mate Choice* (1990) **provided the definitive synthesis of lekking behavior. They formalised the concept of leks as communal display arenas where males compete for female attention without offering resources beyond genes.** Their work emphasized **female choiceas the central driver of lek evolution, showing that females consistently prefer dominant or centrally located males**. Bradbury and Gibson analyzed energy trade-offs: **males expend enormous effort in displays, vocalizations, and territory defense, often at the cost of survival. Yet the reproductive payoff for successful males is immense**. Their comparative approach across birds, mammals, and insects demonstrated that **lekking evolves in environments where resources cannot be monopolized, making genetic quality the primary currency of mate choice**. This book cemented lekking as a model system for studying sexual selection, influencing both theoretical biology and field ecology. **By highlighting the universality of lekking across taxa, Bradbury and Gibson showed how sexual selection produces convergent strategies in diverse species.**

to be continued....

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A Fresh look at the Mangrove Conservation Efforts with Focus on India

Dr. D. Nalini Mohan

The International Day for the Conservation of the Mangrove Ecosystem (observed annually on July 26) raises global awareness about the vital role mangroves play in planetary health. Adopted by UNESCO in 2015, this day highlights these vulnerable habitats to promote urgent, sustainable management and restoration efforts.

Introduction

The mangrove ecosystem including littoral and swamp forests,is repository of biodiversity with plenty of plant and animal and microbial species. India's mangrove forests serve as a vital ecological shield along its 7,516-kilometer coastline. Accounting for nearly 3% of the global mangrove cover, these unique intertidal forests span approximately 4,992 km2 across coastal 9 states and 3 Union Territories.

They are primarily distributed along the East Coast (the Bay of Bengal), the West Coast (the Arabian Sea), and the Andaman and Nicobar Islands. West Bengal, Gujarat, Andhra Pradesh states and Andaman & Nicobar Islands (UT) are the major mangrove rich areas. The Sundarbans in West Bengal represents the largest contiguous mangrove forest in the world, while the Bhitarkanika system in Odisha and the Gulf of Khambhat in Gujarat also hold global ecological significance. The Coringa Wildlife Sanctuary in Andhra Pradeshis reputed to encompass approximately 235.7 km2 (about 91 miles2) of marsh vegetation and estuarine backwaters. It harbours the second-largest contiguous mangrove forest in India next to sunderbans, accounting for roughly 40% of the total mangrove cover in Andhra Pradesh.

Mangrove cover in India

India's total mangrove cover reached 4,991.68 km2, which accounts for 0.15% of the country's total geographical area. There is a decrease of 7.43 km2 in the country's Mangrove cover compared to 2021 ISFR. Andhra Pradesh has a notable increase of 13 km2, followed by Maharashtra with an increase of approximately 12 km2(ISFR,2023).

Success Story of Andhra Pradesh:

In Andhra Pradesh, the increase in Mangrove cover is primarily attributed to natural regeneration, plantation initiatives, conservation activities and addition of the left over patches. This increase is particularly noticeable in the Krishna, Bapatla and Kakinada districts of Andhra Pradesh. The Tsunami in 2004 has rung the alarm bells and the then ongoing Andhra Pradesh Community Forest Project was revised to include the Mangrove restoration treatment practice on priority. This exigency has given me personally as the conservator of Forests an opportunity to plan, identify, treat and kickstart a restoration process in the Bapatla area of Krishna sanctuary predominantly and in small patches of mangroves existing in coastal areas of erstwhile Prakasam and Nellore districts as well. That opportunity was also used to evict the big chunks of encroached costal mud flats by the local fishermen and farmers. The restoration was done duly involving them as partners in the CFM concept which ensured their livelihoods and income generation. Fishbone technique of digging channels to facilitate free movement of sea water and mixing with fresh water that contributed largely to the success of the

restoration of about 1150 ha in between 2004 and 2008 (APFD archives). Reinforcement of these restoration efforts was started again after the bifurcation of the State and CAMPA funds were used for this.As the then Chief Wildlife Warden of Andhra Pradesh (2018-2020), I have reviewed the efforts made since 2004 and mangrove restoration plan prepared on saturation basis to restore all potential areas. Efforts were also initiated to bring about >5,500 hectares of non-reserves (revenue land) with mangroves, under protected area category as they areadjoining and around the sanctuary. They are technically under revenue department but covered by the forest department's surveillance as they fall under CZR and 'deemed forest' category also. About 300 Ha.were taken as compensatory land in lieu of diverted land for DRDO project.A large chunk was included in the 1 km ESZ all around the sanctuarynotified in 2019.



(Pics from personal collection)

Species Richness and Diversity:

According to various accepted botanical checklists there are about **42 to 46 "True mangrove species"** recorded in India which is about half of total species globally recorded in mangroves. In addition to these true mangrove trees and shrubs, India supports over 100 **" Mangrove associatespecies."** India harbours two globally threatened mangrove species also viz.,*Heritiera fomes and Sonneratia griffithii*, out of a total of 11 species listed on the IUCN Red List. These two species are on the brink of local extinction due to challenges such as low seed viability and slow growth rates. The Sundarbans region in India derives its name from the splendid-looking 'Sundari' species (H. fomes) which is itself threatened in its native environment.

Threats to Mangrove Ecosystems:

"Studies indicate that the main driver of modern mangrove loss in the coming decades is expected to be the emergence of natural stressors. Additionally, projections suggest that with ambitious protection and restoration efforts, the net global expansion of mangroves could reach approximately 8,006 km2 by 2050. This estimate aligns closely with the total global restorable area of mangroves, which is estimated to be around 8,120 km2 . These findings highlight the potential for mangrove conservation and restoration initiatives to have a significant positive impact on these crucial ecosystems" (Buelow et al., 2022). Rapid coastal development and the consequences of climate change, such as rising sea levels and increasing frequency of natural disasters, have significantly contributed to mangrove degradation.

New Initiatives by Government of India:

Coinciding with the UN Decade of Ecosystem Restoration 2021–2030, Government of India has recently announced MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes) program to restore and expand mangrove ecosystems along the country's 7,516-

km coastline and saltpan lands. It actively links ecological restoration with sustainable livelihood generation for coastal communities. It envisages to comprehensively exploring the possible area for development of Mangroves covering approximately 540 km2 spreading across 11 States and 2 Union Territories during five years commencing FY 2023-24 onwards.

The primary focus of the scheme is the Sundarbans delta, Hooghly estuary in West Bengal, other bay parts, and wetlands in the country. The scheme has the main objective to conserve and restore the mangrove ecosystem, which is critical in mitigating the ill-effects of climate change, preventing coastal erosion, and sustaining local livelihoods. There is a definite role for local communities and NGOs as partners in this programme. It is expected that this scheme will be game changer as far as mangrove conservation strategy is concerned. Resources mobilization is indicated to be through Public Private Partnership and by converging CAMPA Fund, Employment guarantee scheme. (Parliament Questions, PIB, July, 2025)

Mangroves are Blue Carbon Reserves:

Mangroves are essential for building resilience to natural and manmade calamities. Our knowledge about Mangroves which act as highly effective "blue carbon" ecosystems is getting enriched with the advent of new and modern technologies and devices forquick and accurate measurement, methodologies an the Artificial Intelligence. AI is able to collate a multitude of data bases on the carbon sequestration processes and their efficiency far more accurately and the blue carbon estimations are also fine-tuned. Mangroves capture and hold carbon dioxide at rates up to 10 times faster than mature tropical terrestrial forests. Globally, they store up to four times more carbon per hectare than tropical rainforests, holding this carbon securely in their deep, oxygen-poor soils for centuries or millennia.

How Sequestration Works

• **Photosynthesis:** Mangroves pull Co2 from the atmosphere and convert it into plant biomass (leaves, branches, and roots).

• **The "Blue Carbon" Sink:** Unlike terrestrial forests that store most of their carbon in wood and leaves, over 90% of a mangrove's total carbon stock is safely buried in the waterlogged sediment beneath them.

• **The Carbon sequestration power of coastal wetlands:** Intact coastal habitats have soils that range in depth from less than one meter to over ten meters, storing hundreds to thousands of metric tons of carbon per hectare.

• Coastal wetlands store and sequester more carbon than any other coastal ecosystem

• Mangrove soils store more than 6.4 billion tons of carbon globally

• The average hectare of seagrass stores 7 metric tons of carbon in its soil.

• **Zero Decomposition:** The low-oxygen, high-salinity environment of mangrove mud slows decomposition to a crawl. This prevents carbon from being released back into the atmosphere as greenhouse gases.

Reserves & Storage Capacity

• **Storage Density:** Mangroves can store up to 1,000 to 1,700 metric tons of carbon per hectare.

• **Global Impact:** Although mangroves cover less than 1% of the Earth's coastal surface, they store approximately 15% of the global ocean carbon found in marine sediments.

• **Long-Term Protection:** Carbon in mangrove soils is incredibly stable, often remaining trapped

for thousands of years.

The Risks of Degradation

When mangroves are cut down or destroyed for coastal development or aquaculture, this ancient carbon sink is broken. Deforestation releases massive amounts of sequestered carbon back into the atmosphere as CO2, transforming these protective reserves into significant sources of greenhouse gas emissions.

Mangrove Blue Carbon and Climate Mitigation

Protecting and restoring coastal wetlands, like mangroves, provide both climate mitigation and adaptation benefits. Understanding mangrove restoration and conservation potential can contribute to country-level climate mitigation goals, like National Determined Contributions (NDCs). Using globally applicable datasets, The Nature Conservancy's Ocean Wealth Mapping Portal's provides insight to how mangroves can be included into national climate goals. The mangrove potential of any country with mangroves would contribute substantially to conserving and restoring wetlands such as mangroves which represents natural climate solution (NCS) pathways towards meeting NDC targets. This demonstrates the potential role of mangrove NCS in contributing to and enhancing climate mitigation ambition in countries with mangrove habitats.

India's Mangrove Potential

The mangrove potential of India based on contributions from aboveground biomass (from Simard et al., 2019) and soil (Sanderman et al., 2018) are summed to derive the total mangrove carbon storage. The Blue Carbon opportunity from mangroves represents the Blue Carbon that can be gained on an annual basis through restoration efforts plus the Blue Carbon from annual avoided loss. These values are derived from mangrove extent estimates from Global Mangrove Watch. Protected area data are from World Database of Protected Areas (UNEP-WCMC and IUCN 2018) to give a reasonable estimate of NDCs calculations.

Total Mangrove Blue Carbon Opportunity for India

This has been arrived at by calculating and combining two components. The total restoration and avoided loss mitigation potential from mangroves 0.42 MtCO2e/year from restorable areas sequestered annually and 0.59 MtCO2e/ year from annual avoided loss that is equal to 1.01 MtCO2e/year total Mangrove Blue Carbon Opportunity. Total mangrove carbon storage to include in NDCs is 322.98MtCO2e i.e., 13% aboveground and 87% below ground. Total Mitigation Target from most recent NDC is1,281 MtCO2e/year by 2020.

Way Forward

Mangroves are natural protective shields for the coastal areas. Monitoring and assessing the extent and health of mangroves is very important in order to understand how the policies and programmes for their conservation and restoration are working and take corrective actions. Mangroves are essential for climate resilience. Data from different sources like ISFR by FSI every two years and the Global Forest Watch data by International organizations like World resources Institute,The Nature Conservancy. There should be proper coordination and exchange of information between MoEF & CC and the Mangrove statesand UTs. Community participation has to be encouraged with proper incentives.

The author is a retired Principal Chief Conservator of Forest, Andhra Pradesh and can be reached at dnmohanifs87@gmail.com and +91 94408 10003

MINUTES OF THE 112thGENERAL BODY MEETING HELD ON 28.06.2026 in ARANYABHAVAN

The 112th General Body Meeting of The Association of Retired Forest Officers, Telangana and Andhra Pradesh was conducted on 28-06-2026, in ARANYABHAVAN Hyderabad which was chaired by Sri. P.K. Jha IFS (Retd.), ThePresident of the Association.Sri. B.M. Swami Dass delivered the welcome address and briefly furnished the action taken report. Sri. V. Devachary S.F.S (Retd.), who completed 80 years, and Sri.S. Mahadev, SFS, completed 75 years, were felicitated by the President as per the tradition of the association. The treasurer, Sri. M.J. Akbar, presented the audited accounts of 2025–26 before the General Body.The Associate Editor, VANAPREMI Sri. Nagabhushanam, presented the accounts which were recently audited.The audited accounts of the Association as well as the Vanapremiwere unanimously approved by the General Body.

As per the agenda, the item of elections to the office bearers was taken up. The tenure of the present Office bearers and Executive Committee members ended on 28-06-2026. The outgoing President, Sri P.K. Jha, took the initiative and requested Sri S.K. Das, IFS (Retd.), former Principal Chief Conservator of Forests, to conduct the elections.

• Sri S.K. Das, who occupied the chair, called for proposals for the post of President.

• Sri Krishnamurty proposed the name of Sri P.K. Jha, IFS (Retd.), for the post of President, and Sri C. SubbaRao, IFS (Retd.), seconded the proposal. As no further proposals were received, Sri S.K. Das declared Sri P.K. Jha as the newly elected President.

• For the post of Vice President, Sri P.K. Jha,IFS(Retd.) proposed Sri M.J. Akbar, IFS (Retd.), and the proposal was seconded by Sri V.V. Hari Prasad. Consequently, in the absence of any other proposals Sri M.J. Akbar was declared elected as Vice President.

• Later, Sri Raman Gowd proposed the name of Sri.V.V. Hari Prasad as Secretaryand the name was seconded by Sri. K. Pradeep and, in the absence of any other proposal, Sri. V.V. Hari Prasad, Dy. C.F. (Retd.), was declared elected as Secretary of the Association.

• Sri. D.V. Reddy, Dy. C.F. (Retd.), was proposed for the post of Joint Secretary by Sri. G.Ramalingam, IFS (Retd.), and seconded by Smt. R. Sobha, IFS; PCCF (Retd.). Sri. D.V. Reddy was declared elected as the Joint Secretary as no other proposal was forth coming

• Smt. Sobha.R. IFS; PCCF (Retd.) proposed the name of Sri. G.Ramalingam, IFS (Retd.), as the treasurer, and the same was seconded by Dr.K.Tirupataiah, IFS (Retd.). Sri. G.Ramalingam was declared elected as the Treasurer of the association.

• The returning Officer then called for proposals for members of the Executive Committee andon receipt ofrelevant proposals, declared the following retired Forest Officers as members of the Executive Committee.

The elected Executive Committee (E.C.) members are as follows:

Sri S. Srinivas, IFS (Retd.)

Sri P.V.RajaRao, IFS (Retd.)

Sri. CH.Iylaiah, IFS (Retd.)

Sri M.A. Waheed, IFS (Retd.)

Sri M. Purushotham Reddy, SFS (Retd.)

Sri G. RamanGowd, SFS (Retd.)

Sri B.M. Swami Dass, Dy. C.F. (Retd.)

As per the approved Bye-laws, the tenure of all the elected office bearers shall be three years. On completion of the three-year period, their tenure will come to an end on 28.06.2029.

On completion of the entire election process, the

Contd.. on page No.17



Heat stress and missing safeguards:

Climate-informed policy and Enforceable Protections are called for, to tackle Extreme Heat

'Extreme heat at work is no longer a future concern, it's shaping the reality of present-time labour'

Dr B Raghotham Rao Desai

The Background:

I am sad and indeed **compelled to present a darker picture of our climate future ---- a world on the brink of a climate disaster, with all the markings of an irreversible tragedy**, as the indications suggest **after noticing the conditions of a warmest decade** that had just preceded **in history:** key **climate indicators** (such asatmospheric greenhouse gases, surface temperatures, ocean heats & acidifications, sea levels, healths ofglaciers, and extents of ice-caps in the seas) **having consistently underlined the impending fallout. In 2025**,the world was about 1.43°C warmer than pre-industrial average (i.e., of the era roughly spanning before 1750-1850) ---- **the temperatures having been rising over the last many years**, even as efforts remained focused onlimiting it to 1.5°C above pre-industrial levels. All these occurrences indicating that **the planet would continueto get warmer in the coming years, even if the emission of greenhouse gases is stopped now.**

Extreme heat being no longer a future concern: it is shaping the reality of labour today ---- climate change having found momentum independent of actions that are aimed to control it: though **accepting the inevitability risks, weakening of counter-strategies: the crisis warranting strengthening of the global response** (which so far has fallen short at intent and impact). The fight demands changes in the economic policies of governments, personal lifestyles, and the world's collective vision for its future. The results remainuninspiring (though there is a concerted movement that calls for such changes and efforts are on at the international level under the UN auspices), this being a race against time where half-steps won't do!

Dealing with Extreme Heat:

Dealing with **extreme heat requires staying hydrated by drinking water regularly, keeping indoors or shaded areas, and limiting outdoor activity during peak hours** ---- while wearing light, loose-fitting clothing, using fans, taking cool showers, never leaving children or pets in cars: electric fans helping cool the body, while keeping windows closed during the day (& open them at nights) helps to prevent direct sunlight (& letting in cooler air). Schedule strenuous work for early hours of mornings or evenings, while keeping an eye and checking on vulnerable & high-risk individuals, and be acquainted with signs of heat

Watch-out for signs of Heat-related illnesses such as Heat Exhaustion (resulting in Heavy Sweating,dizziness, headache, fast pulse, nausea & cold, or clammy skin), and Heat stroke requiring Medical Emergency (with symptoms of High body temperature of above 103°F, hot/red skin, rapid pulse, and confusion or unconsciousness).

Workplace-specific Advice could be Acclamation (new workers only do 20% of normal work on day one, increasing by 20% on each of the subsequent days), and Work/Rest cycles (ensuring frequent, scheduled rest- break in cool areas). Watch for heat cramps, heat exhaustion, by avoiding high energy activities or outdoor work during midday heat (to the possible extent) ----

wearing a hat (wide enough to protect the face).

Consider pet safety: make sure they have plenty of cool water & access to comfortable shade if they are outside ---- asphalt & dark pavement contributing to very hot conditions to their feet, **As heat waves are likely to cause power-loss, power-outages should be used to stay safe** (by learning the technique). Signs of heatcramps happen to be muscle pains or spasms in the stomach, arms or legs ---- whereas **in cases of suspectedheat stroke:** till the medical aid is provided, the victim be moved into a cool shaded area, removing outer clothing, placing a cold/wet cloth/ice pack on the head/ neck/ armpits/ groin or alternatively the persons'sclothing with cool water (by elevating the feet).

Summary:

The most important thing one can do to stay safe during extreme heat condition is to be aware just how dangerous hot weather can be ---- one should have a mindset that hot weather can impact the health: it being the leading cause of weather-related deaths, and that heat waves are expected to become longer & more intense due to climate change ---- in particular low-income communities are disproportionately impacted, while others at high risk include infants, elders over the age 65, women who are pregnant, athletes, outdoor labourers, as well as patients with chronic illnesses & asthma.

One should avoid alcohol, sugary or caffeinated drinks, should eat easy-to-digest foods (like salads or fruits),avoid wearing dark coloured clothes, and If urine is dark, drink 2-3 glasses of water, use wet towel on skin or spray with water on self while using a fan, and visit a cooling centre nearby. As already emphasized, hats should be worn and sunscreen should be used.

The author is a retired IFS officer of Karnataka cadre and the Chief Editor of 'VanaVikas', a quarterly magazine of the retired forest officers of Karnataka. M-9886157158.

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new body took over and thanked the returning officer for the smooth conduct of the elections.

Dr.Pavan Kumar, Oncologist, S/o Sri J.S.N. Murthy, IFS (Retd.), Chief Guest of the day, madea detailed PowerPoint presentation on different types of cancers, the corresponding symptoms, the reasons for cancerous growth relating to different organs of the human body, and the intricacies involved there in.He nicely compared the human ecosystem to that of the forest ecosystem and the inter-connectedness of the various systems. He further emphasised the importance of keen observation of minute changes in the body organs and taking early action for diagnosis.

On completion of the presentation, number ofretired Forest Officers got their doubts clarified, which were answered by Dr. J. Pavan Kumar with great clarity and patience. Later, in the presence of Sri J.S.N. Murthy, IFS (Retd.), Dr. J. Pavan Kumar was felicitated with a flower bouquet and a shawl.

In this connection, the newly elected President, Sri P.K. Jha, IFS (Retd.), requested the outgoing Secretary, Sri B.M. Swami Dass, and the outgoing treasurer, Sri M.J. Akbar, to hand over all the related records, files of correspondence ,registers, accounts, and other office materials kept in their custody to the newly elected Secretary, Sri V.V. Hari Prasad, and the newly elected treasurer, Sri G.Ramalingam, respectively, as early as possible.

In his winding-up speech, Sri M.J. Akbar,IFS(Retd.) Vice-President, offered a vote of thanks to all the participants of the meeting.

Thereafter, a delicious lunch was hosted bySri K. Praveen Rao, SFS (Retd.) ,Sri M. Purushotham Reddy, SFS (Retd.) and Sri Eswar Reddy, SFS (Retd.) to the guests and other participants of the meeting.

Sri. v.v. Hariprasad, Secretary



WINTER IS ALMOST OVER

Uma Shanker Singh

INTRODUCTION

The IMD classifies a “cold day” as one when the maximum temperature is 4.5°C to 6.4°C below average; a deviation of over 6.4°C is deemed a “severe cold day”. A “cold wave” is declared when the mi nimum temperature falls 4.5°C to 6.4°C below normal, and a “severe cold wave” when the drop exceeds 6.4°C. India did not record a single cold day or cold wave in February,2026. That marks a clear break from recent years. According to a study, February saw six cold-wave days in 2022, one in 2023, seven in 2024 and five in 2025. With the last such event recorded on January 27, February 2026 is the first in five years when a cold wave has not been recorded. The winter of 2026 has ended with 24 cold day or cold wave events across 15 states and UTs, making it the second-lowest seasonal total in five years, after 2023 which recorded 21 days. The figure is well below the spike of 38 days in 2024 and also lower than the 30 recorded in 2022 and 26 in 2025. An analysis by of maximum and minimum temperatures in 34 cities between 2022-26 shows a consistent trend of warmth between January and March. With the exception of Puducherry, for which baseline normal data is unavailable, all cities experienced day and night temperatures predominantly above normal.

MANY COLD PLACES IN INDIA WITNESSED RISE IN TEMPERATURE

In Kashmir, winter is defined by snow. This winter brought little of it across much of the Kashmir Valley. It has been one of Kashmir’s hottest and also the driest winters in recent past. In Srinagar the average maximum temperature reached 15.6°C, surpassing the previous February high of 14.9°C set in 2016, one of the hottest years in the climate history. In the first week of March, temperatures in Gulmarg, famous for skiing and one of coldest places in the Union Territory of Jammu and Kashmir, rose to 17.2°C, nearly 13.7°C above normal and close to an all-time March record. Such widespread warmth during the coldest phase of the year is highly unusual for Kashmir. The scariest thing that took place that it experienced unusually intense heat and an early heatwave in May and early June 2026, shattering several seasonal records. The city also recorded a maximum daytime temperature of 31.5°C, on May 19th,2026 which was 6.1°C above the normal average, leading to severe heatwave conditions across the valley and on 2nd June 2026, the city logged the hottest night of the season so far, with the minimum temperature settling unusually high at 19.2°C. There are many studies which says that long-term observations have shown that the Kashmir Valley’s average temperature rose by about 0.8°C between 1980 and 2016 and found to be increasing at roughly 0.03°C per year. These trends point toward progressively milder winters and declining snowfall. The various studies have consistently shown that every winter since 2019-20 has ended with below-normal precipitation, making 2025-26 the seventh consecutive deficient winter in Jammu and Kashmir. Weather records also indicate a pattern of persistent rainfall deficits. In 2024, Jammu and Kashmir recorded its driest year in nearly five decades, receiving 870.9mm of rainfall against a normal annual average of 1,232.3mm, a deficit of 29%. The effects are already visible in the region’s rivers. In early March, the Jhelum at Sangam fell below the zero-gauge level, reaching –0.86 feet on 5th March, 2026. One emerging

pattern is a shift in the seasonality of precipitation. Winter precipitation is increasingly moving toward the onset of spring. As in Jammu and Kashmir, Ladakh was unusually warm and largely snowless. Leh, Punjab, Haryana, Chandigarh, Delhi, Uttar and Kargil districts recorded some of their warmest winters in years, according to IMD. The winter in 2026 has been unusual in many ways,precipitation has been low while temperatures have remained high. An analysis by of maximum and minimum temperatures in 34 cities between 2022-26 shows a consistent trend of warmth between January and March. With the exception of Puducherry, for which baseline normal data is unavailable, all cities experienced day and night temperatures predominantly above normal. The period 2022–2026 shows that cold wave events are no longer confined to core winter months, as illustrated by the sharp post-monsoon surge in 2025 driven by an early and widespread November. The shifting timing, along with expanding or contracting geographic spread, signals increasing variability in how cold extremes manifest across India. An analysis of maximum and minimum temperatures in 34 cities of the country between 2022-26 shows a consistent trend of warmth between January and March. With the exception of Puducherry, for whichbaseline normal data is unavailable, all cities experienced day and night temperatures predominantly above normal.

GEOGRAPHICAL SHIFTING OF WINTER

Winter severity is also shifting geographically. Between 2022 and 2026, cold waves largely remained concentrated in northern, north western and central India, though their spatial spread varied year to year, both in winter and post monsoon. In 2022, cold waves were recorded on 30 of 59 winter days across 14 states, with no impact in southern or south-eastern India. The footprint widened in 2023 to 17 states, the highest in five yearseven as the number of cold-wave days fell to 21. Two southern states,Telangana and Karnataka, reported such events, on two and four days respectively.In 2024, the number of cold days orcold wave days rose to 38 of 60 winter days, but was confined to 13 states, again excluding the southern and south-eastern regions. The spread narrowed further in 2025 to just nine states and UTs, with Telangana the only southern state recording a cold wave, on a single day. In 2026, the geographical reach of cold waves expanded again to 15 states, the second highest after 2023with Karnataka being the only southern state affected. This reflects intermittent but limited southern penetration in an otherwise north-centric cold wave pattern.Although IMD classifies January and February as winter, cold wave conditions typically begin in November and continue through December, both officially part ofthe post-monsoon season.

STUDIES ALSO SUPPORT THAT WINTER IS FADING

A study was carried out based on Coupled Model Intercomparing Project Phase 6 (CMIP6) data between 1980 and 2020 by Rahul Kumar etal. (2025) reveals that a significant increase in warm days (2–7 days/decade) and warm nights (2–8 days/decade) across India, took place during 1980–2020. Concurrently, cold days (−3 to −1 days/decade) and cold nights (−1 to −5 days/decade) have decreased in the same period. The frequency of warm days (3 ± 0.8 days/dec) has increased at a slightly higher rate than that of warm nights (2 ± 1 days/dec), which is consistent with the decrease in cold days (−1.8 ± 0.8 days/dec) and cold nights (−2±0.8 days/dec) in 1980–2020, and it is three-fold in Northeast (NE) and Peninsular India (IP) (−2 to −7 days/dec) in winter. Future projections under the high emission scenario indicate a five-fold increase in warm days and nights, alongside a four-to six-fold reduction in cold days and nights by 2080–2100. The study also unfolds the severe warming in India and its potential to trigger more

extreme weather events, regional climate change, and associated natural disasters such as frequent heat waves. These changes can have substantial implications for crop yields, heat stress, and energy demand. In another study carried out by AK Jaiswal (2010) over temperature series of 174 stations well distributed over the country and were statistically analysed to document the long-term variations and trends in monthly mean maximum and minimum temperatures for January to March. The study revealed that February month has emerged as the warmer winter month over North India where increase in both maximum (+0.29° C / decade) and minimum (+0.38° C / decade) temperatures is highest with noteworthy increase in maximum temperature at a rate 1.5 times that of the South India averaged increase.

REASONS FOR FADING WINTER

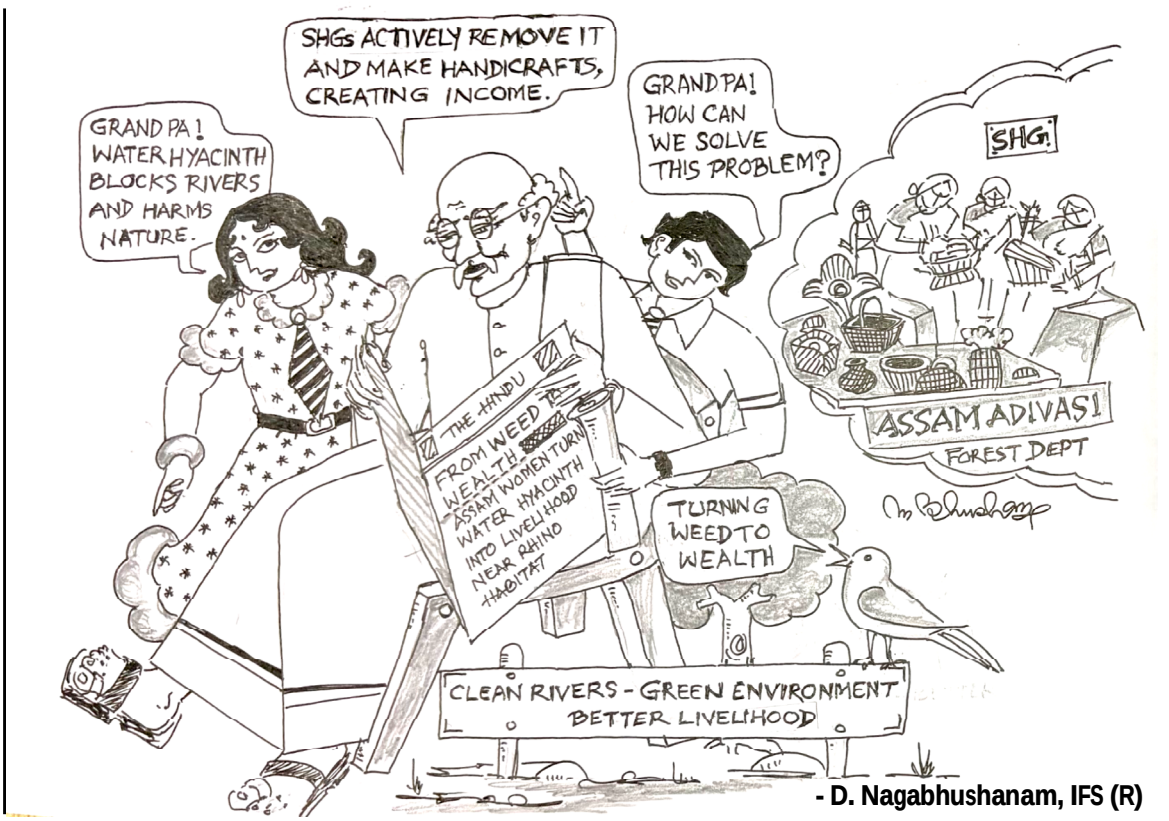
The climate change is at play, the Mediterranean weather systems responsible for most winter snowfall in Kashmir are becoming more erratic on account of rising temperature. While some disturbances appear to intensify toward late winter, overall snowfall during the core winter months has declined. Winter snow plays a critical role in the Himalayan ecosystem. A study was carried out by AbhijitGangane on "falling Trend of Winter Lightning Over Western India and Its Possible Relation with Western Disturbances" in the year 2025 which reveals that during the Indian winter, the southerly propagation of cold air at middle and upper altitudes iscaused by a trough in westerly jet streams due to the effect of Western Disturbances (WDs). Sometimes, thisadvection of cold and dry air above near surface moist and warm air can make the atmosphere conditionallyunstable. Therefore, these WDs are associated with thunderstorm formation and lightning activity over northernIndia (north of 20° north); however, occasionally, the effect of WDs extends up to the entry point of southernIndia. Many researchers have also shown a decreasing trend of WD frequencies and winter precipitation over the Indian region. The study also addresses important aspects of climate change as lightning activity and thunderstorm days decreased steadily over western India, suggesting the falling trend is possibly linked to the weakening and reduced frequency of WDs from 1997 to 2023. While global trends suggest increasing lightning with climate change, this study reveals a decreasing trend in lightning activity, highlighting the uneven regional impacts of climate change. The issue of dwindling snowfall in the Himalayas is graduallyemerging as a serious concern due to the intensifying climate change crisis in the region. Recent research reveals that this decline is not a mere temporary phenomenon but part of a long-term pattern linked to climate change.According to the India Meteorological Department, winters in several parts of the Himalayas have become warmer and drier resulting in reduced snowfall. This is particularly critical because the Himalayan range is vital for ensuring water security for millions of people across Asia.It has been cautioned that the decrease in snowfall in the Himalayas might persist provided that global temperatures continue to rise. According to the India Meteorological Department, even warmer winters might be seen in the coming years, along with unpredictable climatic conditions, which might further contribute to a decrease in snowfall. Such extreme weather patterns would lead to erratic rainfall and the destabilisation of glaciers.

FOREST FIRE ON INCREASE

The forest fires swept the state's hills unusually early in the season. Between November 1,2025 and February 14, 2026, the state forest department recorded 54 fire incidents, affecting roughly 42 hectares of forest, about 60 football fields. As temperatures continued to rise, another 60 fires were reported between February 15 and March 14, affecting a similar area. From a seasonal

perspective, forest fires have not only occurred earlier than usual but also spread more widely across India. Many studies show that forest fires in the winter of 2026 (January-February) rose by more than 80 % in the past decade. Fire activity in forested regions was over 50 % higher than in 2024, the warmest year on record.Northeast India reported the most intense fires. In February, large swathes of Arunachal Pradesh and Nagaland wereengulfed for a week, prompting sustained aerial firefighting by the Indian Air Force (IAF) in high-altitude Himalayan terrain. Helicopters were deployed to spray water at elevations above 2,800 meters. In the Lohit valley of Arunachal Pradesh, over 12,000 liters of water were dropped to contain the flames. The fires in the state reportedly began on February 13,2026 affected multiple areas and prompted evacuations in some localities. Local media reported that Indian Army personnel joined IAF teams to tackle fires in remote parts of Anjaw district, at altitudes of 900 to 1,060 meters. Arunachal Pradesh experienced an unusually warm and dry winter from January to March, 2026. There was reduced rainfall, near-zero soil moisture and shrinking water sources. The winter in 2026 felt hotter than usual. Normally this part of India receives rainfall during September and October from the retreating monsoon, but this year there was very none.

Author is a former PCCF, Uttar Pradesh (M-9415786586)



- D. Nagabhushanam, IFS (R)



SHOULD TOURISTS BE ALLOWED CLOSE TO CAPTIVE ELEPHANTS?

B.K.Singh

Last month's tragedy at Dubare elephant camp in Kodagu district deep inside Karnataka's Western Ghats questions the decision of the authorities to permit tourists to bathe captive elephants in Cauvery river water flowing across. This camp is located deep inside the forests, which are dominated by the movement of the wild elephants. All captive elephants in this camp were not born in captivity; a number of them were captured in wild and tamed in such camps. It is not very fair to conclude that the tamed elephants have shed all wild characters and fully obey the command and control of their masters – mahauts and kavadis. There have been instances in the past that the elephants have killed the masters - mahauts/ kavadis. There have been instances when elephant did not obey the command of the mahaut and run amok, inflicting casualties/ death in the crowd.

Captive elephants are often subjected to torture by the mahauts using iron 'ankush' that can cause bleeding and septicemia. The footpads of the elephants are often injured in walking on paved roads. Though the camps have the facilities of treatment under the supervision of Veterinary doctor, but often bleeding from earlobes and footpads are neglected and the elephants continue to suffer.

Let me examine in this piece as to how far we are justified in taking elephants for processions on special occasions and marriages where enough crowd have gathered, how far we are justified in continuing age old traditions where tourists are permitted to pour water and rub the body standing sideways?On several occasions, I have personally failed to convince Karnataka government not to use captive elephants in Mysurudussehra. The argument advanced was why discontinue the traditions?

The captive elephants have been extensively used in dragging timber logs in hilly terrains in forestry operations in the past. The forest department used to maintain captive elephant camps for such operations. Further, the maintenance of these camps used to be costly affair, which has always come in the way of its expansion. As such,the forestry operations have been scaled down and cutting of trees in hilly terrains have been prohibited in the interest of conservation; these camps have lost their relevance.

Now the bureaucrats and politicians see these camps as permanent place for training wild elephants straying out of forests, damaging crops and properties and threatening the lives of human beings. Olden days Karnataka Forest department used to carry out 'khedda operation' for capturing only a few elephants needed for continuance of logging operations in the forests. However, with the advent of safer tranquilizing technique, more and more wild elephants are captured. The department quite often comes under pressure from public to capture wild elephants straying in the villages. The argument advanced is that the population of elephants in the wild is increasing due to conservation, and the excess population must be brought in captivity. Wild elephants involved in the conflicts, when translocated in another elephant habitat several hundred km. away, have returned to original homes within a few weeks, which strengthens the argument why all such elephants

be brought in captivity.

In an era, when elephant habitats are continuously fragmenting and shrinking owing to the expansion and widening of linear infrastructures, diversion of forests for mining, industries and development projects and unauthorized grabbing of forest lands, the wild animals especially the elephants are clueless to migrate in search of food, shelter and water and thus stray in human areas.

Expansion of invasive species and forest fire have caused degradation of elephant habitats. The palatable species and the bamboo in the forests have been damaged considerably forcing elephants to migrate out of forests on a regular basis. The elephant corridors that provided migratory routes have been occupied by human. The pockets in the forests where human live and cultivate have been expanding, which is in detriment to the conservation.

The captive elephants' camps like Dubare are also the island for human in the forests. As a daily routine the camp elephants are released in the forests during the daytime, where they interact with wild elephants, too. The fight between wild elephants and captives' ones are also reported regularly. There are instances, when a captive elephant has been killed by a wild tusker. Aggression is part of the behavior of elephants, and it cannot be controlled by mahaut'sankush, and sometimes the animals can surprise us.

About a decade ago in Kalaburagi district of Karnataka, an elephant in procession kicked its mahaut in full public view. The kick was mild and mahaut survived the scare. Mahaut felt insulted and came to attack the elephant with an 'ankush'. Certainly the elephant was angrier and this time it kicked so hard that he fell 20 feet away and died. An elephant killing its mahaut is quite common and incidents have been reported from all part of this country.

In a herd, the stronger elephant is also known to target a weaker member. This is what happened at Dubare last month. A tusker attacked a mokhana (another male in the herd), when tourists were permitted to give bath to the entire herd. The enmity was certainly built over period of time and in some mood, the tusker chose to attack the mokhna in full tourists' view on the fateful day. Mokhana fell on the female tourist giving bath to it, crushing her to death. Tusker continued to attack mokhana until mahaut managed to calm it down. Despite best treatment provided in the camp, mokhanaalso died next day.

Dubare camp has tourists' lodges run by state owned corporation known as Jungle Lodges and Resorts (JLR). One of the activities for the tourists is to give bath to the elephants of the camp and another one is the jeep safari in the nearby forests for viewing wild animals. It has also been found that the entire camp and JLR premises is in the corridor used by wild elephants in the past. The blocking of the corridor has disrupted the movement of the elephants that has increased the conflict with human. There are other pockets in the forests of Kodagu granted for coffee estates. All these estates too block the corridors. More than 10,000 acres of coffee estate owned by Tata is in the corridor. The entire estate is fenced and the elephants are diverted in human areas aggravating the conflict. Sometimes the elephants break the fence and enter the coffee estate, threatening the lives of the workers inside. Even the narrow roads inside coffee estates are covered by drooping branches of coffee from either side. Coffee management team must ensure proper visibility.

This is a vicious cycle, as the movement of wild elephants is obstructed, there is a surge in cases of conflict and any death of human brings additional

pressure on Forest department to capture the elephants involved and bring them to captivity. The running of this elephant camp and JLR are not in the interest of conservation.

Such elephant camps should be down sized in a phased manner and the corridors must be restored by removing the fencing in Tata Coffee estates and JLR. Tourists should not be allowed to go near camp elephants and under no circumstances close interactions be permitted. Tourist viewing places should be cordoned off and they be allowed to see the elephants bathing in the river.

B K Singh is a Retired Head of Forest Force Karnataka and teaches Economics at Karnataka Forest Academy, M-94498 63501



Birthday Greetings

We wish the following born on the dates mentioned

"A Very Happy Birth Day"



S.No.	Name of the Member	D.O.B.
	Sarva Sri	
1.	N. Khadar Vali	06-07-1960
2.	K. Buchiram Reddy	07-07-1932
3.	Prashanth Kumar Jha	07-07-1959
4.	N. Pratheep Kumar	07-07-1963
5.	M. Prasada Rao	10-07-1947
6.	C. Ramakrishna Reddy	11-07-1931
7.	M. Padmanabha Reddy	14-07-1941
8.	M.K. Prasad	14-07-1945
9.	D. Nalini Mohan	15-07-1962
10.	Swargam Srinivas	15-07-1962
11.	N. Shyam Prasad	16-07-1955
12.	A. Shankaran	16-07-1956
13.	Dr. G. Chandra Sekhar Reddy	18-07-1965
14.	K. Santokh Singh	21-07-1937
15.	Dr. K. Gopinath	21-07-1963
16.	G. Prakash	22-07-1952
17.	Rajesh Mittal	25-07-1955
18.	B. Janaki Rao	26-07-1961
19.	Omkar Singh	27-07-1953
20.	S.M. Selvaraj	01-08-1953
21.	L.Ch. Tirupaelu Reddy	01-08-1956
22.	V. Parthasarathy	02-08-1944
23.	Hitesh Malhotra	03-08-1952
24.	P. Adivappa	03-08-1953
25.	Jagarapu Ganesh	04-08-1963
26.	A.V. Joseph	05-08-1956

S.No.	Name of the Serving Officers	D.O.B.
	Sarvasri	
1.	C. Dharma Rakshit	07-07-1978
2.	P. Prem Kumar	10-07-1983
3.	Rahul Pandey	14-07-1974
4.	Smt. Arpana	15-07-1985
5.	S. Ravi Shankar	16-07-1964
6.	Smt. S. Sujatha	18-07-1975
8.	Dr. Sunil S. Hiremath	20-07-1980
7.	Smt. T. Jyothi	23-07-1975
8.	Mrs. G. Krishna Priya	24-07-1982
9.	V. Anjaneyulu	24-07-1966
10.	Smt. I. Padmaja Rani	26-07-1976
11.	Ms. M. Babita	26-07-1972
12.	P. Maruthi Prasad	26-07-1978
13.	P. Dhanraj	28-07-1963
14.	A.V. Ramana Murthy	28-07-1969
15.	Smt. M. Hima Sailaja	29-07-1980
16.	Y. Srinivas	01-08-1975
17.	S.V. Pradeep Kumar Setty	01-08-1986
18.	Ratnakar Jauhari	02-08-1970
19.	Ajay Kumar Naik	03-08-1965

- Secretary

Any Omissions and Commissions in the Names / Dates may kindly be informed to the Editor over WhatsApp or Email.



Models for Afforestation in Arid Zone during EL Nino (OCCT&M- A Best Model)

B M T Rajeev

Introduction:

El Niño and La Niña are the two opposite phases of the **El Niño-Southern Oscillation (ENSO)**, a natural climate cycle in the tropical Pacific Ocean that significantly influences global weather patterns.

El Niño (named as "Little Boy" in Spanish) is a warmer wind than average temperature in central/ eastern Pacific Ocean that weaken or reverse the trade winds pushing warm surface water eastwards (towards South America) usually for 9-12 months causing for increase in global average temperature-more common and occurs irregularly 2-7 years cycle triggering severe weather events such as droughts, floods & storms- it affects India more with erratic rains, droughts & hot weathers.

La Niña (named as "Little Girl" in Spanish) is a cooler wind than average temperature in central/ eastern Pacific Ocean that strengthens the trade winds pushing warm surface water westwards (towards Asia/Australia) usually for 1-3 years (often longer) causing to decrease in global average temperature-less common- it positively affects India with good rains & cooler weather.

What Triggers These Changes?

The **exact initial triggers** are not fully understood and can vary. They often involve:

• Random atmospheric fluctuations (e.g., westerly wind bursts).

• Pre-existing subsurface ocean heat content (e.g., buildup of cooler water before La Niña).

• Interactions with other climate patterns (e.g., Indian Ocean temperatures can influence Pacific winds).

Once a small change in winds or temperatures begins, the **Bjerknes feedback** amplifies it into a full event. Events typically last 9–12 months and occur irregularly every 2–7 years. This natural phenomenon is universal and every nation has to face them. It is universal and it happens in cycles.

Bjerknes feedback is a key mechanism of ENSO (named after the Jacob Bjerknes in 1969) in which the atmospheric changes alter the sea temperatures that in turn alter the atmospheric winds in a positive feedback.

India is worried about El Nino effects of drought, floods & storms and the Foresters are worried about afforestation in the arid zones in India and Karnataka too has more arid zones.

Afforestation in the arid zone:

The art of raising trees in arid zones during an El Niño period is a daunting task for the foresters and also to the public. Making trees planting success in the arid zones even during good rains ie La Nina is a tough job because of its ecological unfavourable conditions in soil depth/ type/fertility/ water retention, late rains and other biotic factors. So, making afforestation successful during El Nino during which the rainfall is less than the normal and erratic with increased temperature above the normal is a challenge. It requires a special focus on drought resilience, efficient water use, and soil moisture conservation etc. El Niño often brings drier, hotter conditions to many arid and semi-arid regions (e.g., Southeast Asia), increasing drought stress on young trees. Success relies on selecting hardy species, capturing every drop of

rain water, minimizing evaporation, and supporting establishment during variable/erratic rainfall.

1. Choose Highly Drought-Tolerant, Native or Adapted Species

This is an important aspect for afforestation in which to prioritize deep-rooted, low-water demand species that survive on minimal rainfall once established. Native or regionally adapted trees perform best as they match local conditions and not browsed by the cattle is very important.

Recommended species examples (varies by exact location—consult local extension services): **For Karnataka**- *Acacia nilotica, Acacia ferruginea, Acacia leucophloea, Albiziaamara, Anogeisus latiflolia,Ananussquamosa,Hardwickiabinata, Eugenia jambolana, Terminaliabelerica, Ailanthus excelsa, Bauhinia racemosa, Wrightiatinctoria, Gliricidiasepium, Pongamiapinnata,Holopteleain tigrifolia, Terminaliacatappa, Terminalia belerica, Mahagoni , Alstoniascholarisetc*

Why it works: These trees use strategies like deep roots for groundwater access; shed leaf during summer to limit transpiration, and dormancy during extreme drought. Most of them are non-palatable

2. Water Harvesting Techniques (Critical in Arid Zones)

Capture and direct scarce rainfall/ runoff to tree roots of the trees: This is one of the most effective low-tech approaches to make the trees establish and grow fast.

• **Micro-catchments** (e.g. semi-circular or V-shaped bunds): Small earthen basins or ridges around trees to collect runoff. Effective with as little as 150–300 mm annual rain.

• **Pit method**: Digging pits of (1.00m)3 or (0.75m)3 or (0.5m)3 pits at a given espacement, ¾ refilling of the pit and planting sapling in the centre. Then formation of a crescent shaped or open armed or V shaped arms mound with sunken saucer around the plant to collect water from the uphill side.

• **Trench & mound (T&M)**: Dig continuous contour trenches (CCT) of standard size of 4 m x 0.5m x 0.5m= 1.00 m3 with a berm of or septa of 0.3m in between trenches with an espacement of 3 m or 4 m and putting excavated stuff as continuous mound towards downhill side of the slope in the open areas or CCT&M wherever gaps are available in the open forests along contour. Then half refilling the trenches with the excavated stuff by cutting the uphill side edge of the trench & formation of continuous mound to have moisture link with the half-filled trench and planting trees inside the trenches. Then dibble seeds of Pongamia, Sandal, Gliricidia, Acacia nilotica, grasses etc of local spp so that more root stock will develop like Miyawaki forest-the preset craze in afforestation.

• **Zai pits or stone barriers**: Traditional methods (e.g., in Africa) that improve infiltration and reduce erosion.

• **Larger systems**: Check dams, sand dams, or gully checks directing water to planting areas.

Plant trees during or just before the expected rains or immediately after rains for best establishment. In El Niño dryness, supplemental initial watering (if possible) or water-saving devices like saucer burrow / semicircular burrow to capture the runoff to the plant can boost survival.

3. Planting and Soil Preparation Techniques

• **Plant in pits:** Dig wide, deep holes (wider than deep) to encourage root spread. Add organic matter, Mycorrhizal inoculants, or hydro gels (water-retaining gels) at the base.

• **Timing:** Late afternoon planting to reduce heat stress. Plant in the cooler/wetter season if possible.

• **Mulching:** Apply 3–6 inches of organic mulch

(wood chips, straw, leaves) around the base (keep away from trunk) to retain moisture, cool soil, and suppress weeds.

• **Basin/bowl shaping:** Create a depression around the tree for water pooling (effective in deserts where crown rot is less of a risk).

Establishment watering: Deep, infrequent watering in the first 1–3 years promotes deep roots. Drip irrigation or targeted methods are most efficient.

4. Additional Best Practices for El Niño Arid Conditions

• **Protect young trees:** Use tree guards against wind, sun, and animals. Shade cloth or windbreaks initially.

• **Soil improvement:** Build organic matter over time with cover crops, green manures (e.g., alfalfa), or companion planting to enhance water retention.

• **Density and diversity:** Plant in clusters or agro-forestry systems rather than monocultures for mutual protection and microclimate benefits. Combine with shrubs/grasses.

• **Farmer-managed natural regeneration (FMNR):** Protect and prune existing seedlings rather than (or in addition to) planting new ones—proven cost-effective in dry lands.

• **Monitor and adapt:** El Niño can worsen drought, so prioritize hardy pioneers first, then add more species as conditions improve.

Expected Challenges and Realistic Outlook

Survival rates can be low without water harvesting (sometimes <50% in severe drought), but techniques like micro-catchments and mulching can raise them significantly (80–90%+ in trials). Large-scale projects (e.g., Green Wall initiatives) show mixed results—smaller, community-led efforts with local species and water management succeed more often.

Location matters greatly - arid zones differ (e.g.,Thar Desert). Test small-scale first and seek advice from local forestry/agriculture departments or organizations like FAO for region-specific guidance.

These methods emphasize working with arid conditions rather than against them, building resilience for long-term success even in variable El Niño/La Niña cycles. Start small, focus on water, and choose tough species for the highest chance of thriving.

Watershed treatment-practiced in Karnataka/ elsewhere:

First select the Mini Watersheds within the plantation area/block and plan treatment for it from ridge to the valley. Then plan for plugging the rills with planting agave or creating Catch Water Pits of 1.00 cmtr and plant with Bamboo orPongamia/ Jamun/ Jatropha saplings, Gully checks with boulders down below the rills across water courses at regular intervals to check soil erosion and to improve moisture with tree planting along nullahs/stream. Build one or 2 nala bunds or earthen bunds of 50-75 cmtr water holding capacity to impound water for supplementing watering to weak seedlings and for wildlife with planting of Ficusspp near water bodies.

NB: The best practice for the arid zone afforestation during El Nano in Karnataka is selection of non-browsablespp of trees and planting in open contour Trench &Mound method



Pic: CCT&M model for afforestation in the arid zone

Continuous Contour Trenches & Mounds (CCT & M) model: The CCT&M model is one of the best and successful afforestation practices in the world with modifications to suit the locality factors and the climate to achieve success except in high rainfall areas. CCTs are refilled and planting done in better rainfall areas. CCTs are half refilled, Mounds formed and planting done inside the trenches in dry zones with good rains.

Open CCT&M model: In this model continuous mounds formed and planting done inside the pits after cutting the uphill edge of the trenches to a 30cms width X (30 cms+0.0 cms)/2 in a rectangle shape into the CCTs:

Dig continuous contour trenches of 4 m x 0.5m x 0.5m with a berm or septa of 0.3m in between trenches with an espacement of 3 m or 4 m by putting excavated stuff as bund towards the downhill side of the slope. Do not half refill the trenches as in the usual practice, but down the uphill side edge of the trench to a 0.3m rectangle shape i.e. (0.3m width x (depth 0.3m +0.0m)/2 in to the trench and plant saplings @ 2 to 4 saplings/ trench in the centre of the trench so that the trench will retain its capacity of 1.00 cmtr/more

This OCCT&M model will intercept all the runoff from its catchment of 4m x 3m or 4mx4m based on its espacement between CCTs and collect up to 1.00 cmtr or more of water in all the rains with trapping of the silt and provide more moisture to plants for development & recharge the underground water table of the area and enhances the capacity of the ecosystem to encourage the root stock of tree spp& grasses in it in between the trenches to pickup & grow- this Soil Moisture Conservation (SMC) will continue for years say 30-50 years till the open trenches filled up by only silt- which will boost the fertility of the forest land for better tree growths in to forests. Further use the continuous mound to sow grass/tree spp seeds to develop more trees to meet the Miyawaki concept of greening the forests to suit the trend Gen Z to beat the Global Warming (GM)& Climate Change (CC).

One of the slogans of the World Environment Day 2026 is intercept the runoff and recharge the underground water table. This OCCT&M model not only make afforestation successful but also intercept the runoff and recharge the underground water table for 30-50 years till OCCTs are silted up in addition to other benefits. Why this model should not be a best model to be adopted in the arid zones especially in the state of Karnataka or elsewhere in the country?

For sowing on the mounds *Sandalwood tree, Gliricidia, Pongamia, Hardwickiabinata, T. balerica* etcseeds are more welcome since they are drought resistant and non browsable except SW tree/H. binata.

To quote: This OCCT&M model is not a recognized model in the afforestation models but it is tried by many Foresters in the field and found successful in the arid zones.

i.It was tried in 1990-92 by me (Author) in the World Bank Aided Watershed Project in Bengaluru at Kalyankere-Mavathurkere Watershed. About 200 ha of Advance CCT &Ms weredone in advance with nursery for 1990 rains plantation in the new project. I was posted as ACF-Forest Head in the WS in May, 1990. The work was shabby. The Project Director- a young IFS officer was against planting in the undersized trenches with argument- that the plantation will fail with shallow trenches & it is better to abandon and recover the cost from the officers who did such shabby work. With this decision- nursery raised will go waste & trenches too will go waste and the plantation program of 1990 will be lost. It appeared to me impracticable. I asked him to give order to the effect or allow

Contd.. on page No.33

Forest College and Research Institute Celebrates World Environment Day 2026 through Praja Palana – Pragathi Pranalika Programme









Article at Page no:39

FROM TEST CRICKET TO T20 CRICKET: THE EVOLUTION OF FOREST MANAGEMENT

Changing times, changing tools, changing mindsets – same goal: Sustainable forests for a resilient future

	CLASSIC FOREST MANAGEMENT – THE TEST MATCH APPROACH	CONTEMPORARY FOREST MANAGEMENT – THE T20 APPROACH
ROTATION	Long rotation 60–120+ years	Like a Test match – played over 5 days, patient and long term	Mid to short rotation 5–25 years	Like a T20 match – fast paced, adaptive and result oriented
FOCUS	Timber production from natural forests	Defensive play, protect what we have	Wood, ecosystem services, livelihoods & resilience	Balanced play, multiple benefits
APPROACH	Forests managed in isolation	Closed pavilion, limited engagement	Integrated landscape management	Open stadium, connected approach
PUBLIC ROLE	Minimal public participation	Selected few in the team	Active people participation	Whole team and fans involved
SCRUTINY & MONITORING	Low public scrutiny; limited data	Score known at the end of the day	High scrutiny; real-time monitoring with GIS, satellite & drones	DRS, Hawk-Eye, every ball tracked
TOOLS	Ground surveys, paper maps	Traditional gear, experience based	GIS, Remote sensing, drones. AI & data analytics	Modern tech, data driven decisions
URGENCY	Iota of urgency; business as usual	Time on our side, slow and steady	High urgency; climate change, biodiversity, livelihoods	Every over counts, act fast, act smart

GLOBALIZATION & STRONG EXTERNALITIES – THE WORLD IS WATCHING

- **GLOBAL MARKETS** – Demand for timber, fiber, bioenergy and green products
- **CLIMATE CHANGE** – Carbon storage, extreme events, adaptation need
- **BIODIVERSITY** – Habitat protection, conservation obligations
- **SOCIAL EXPECTATIONS** – Transparency, rights, inclusion and equity
- **TRADE & POLICIES** – Certification, due diligence, ESG compliance
- **GLOBAL SCRUTINY** – Media, civil society, investors and citizens holding us accountable

FORESTRY HAS MOVED FROM MANAGING FORESTS FOR TIMBER TO MANAGING FORESTS FOR PEOPLE AND THE PLANET.

From patience and protection to performance and participation – the game has changed, but the goal remains the same.

General Body Meeting on 28th June 2026







Participants at GB meeting



Felicitating Sri. Devachary, SFS (Retd)



Felicitating Sri S.Mahadev, SFS(Retd)



Outgoing Office bearers



Sri.S.K.Das, IFS (Retd), former PCCF(HoFF) & former President of the Association acted as Returning Officer



New Office bearers



Welcoming New Members/First time participants to GB meeting



Felicitating hosts for lunch





Dr. Pavan Kumar making a presentation on Cancers & their treatment





Felicitating Dr.Pavan Kumar

Photographs of Article on Page No: 42



Photographs of the Seed Ball Treatment Area, 2010 January 28th (left), March 18th (center), and April 20th (right) (Photo Credit : Sri B . Vijaya Kumar, IFS)

పర్యావరణహితం

సింగరేణి అభిమతం



డోర్లి ఓసీ డంపుపై పెరిగిన ప్లాంటేషన్



బ్లాక్ ప్లాంటేషన్



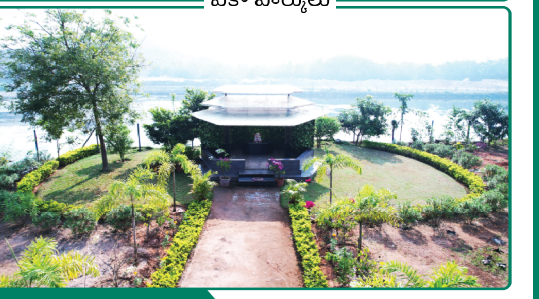
సింగరేణి ఆధ్వర్యంలో నిర్మించిన చెరువులు



అవెన్యూ ప్లాంటేషన్



ఎకో పార్కులు



SCCL

సింగరేణి

కాలరీస్ కంపెనీ లిమిటెడ్

(ప్రభుత్వ రంగ సంస్థ)

Continuation from page No. 28

me to do the work without refilling the trenches, if he wants to proceed to recover the cost, he can proceed since trenches are not disturbed… he agreed to go with planting.

I did planting with pits of (30cms)3 inside the trenches without half refilling and sown seeds on the mounds with all the package of practices in 1990 rains. The plantations came up well and everything went well. In the 1991 rains too I followed the same technique without refilling the trenches but by cutting in the 30cm triangle of uphill edge of the CCTs with formation of mounds and sowing of seeds of grasses, tree spp shown on the mounds… there was timely rains- all plantations came up well.

This model suited the model of V-ditches & mounds-proposed & pushed by the World Bank team of experts. (V-Ditch model was digging continuous contour trenches with mound towards downhill side of size 4.00m x 1.00m wide X (50 cms+ 0 cms)/2 deep for rectangle triangle shaped V-ditch = 1.00 m3 trench of earth work for 4 m length equal to 1.00 cmtr of standard CCT&M with planting by digging pits inside the V ditch…a cumbersome work in the field and not suitable for mechanical execution.).

The above 2 year's plantations of my period in the KK & MK watersheds in Bengaluru dist got national awards for best watershed implantation for the years.

ii.Earlier I implemented this CCT&M model with half refilling trenches in Sorab Range for School plantations of 1000 trees for Rs 2000/only in 1983 i.e. the cost of pits & planting and made them successful.

iii.I implemented this model of CCT&M with half refilling in the Sagar Sub Dvn as ACF with the cost of pit plantation over 20 ha and it came successful during 1989 rains.

iv.I followed this OCCT&M in the Social Forestry division of Tumkur District-an arid zone during 2005 & 2006 rains in the Hariyali Project for WS treatment and even to Avenue plantations and achieved wonderful success.

Opinion with Inventory on the Pit Plantations: The Tumkuru district is famous for afforestation in the state and all the external aided projects of the forestry right from 1985 have been implemented in this district. During my period there were no project for SF division-when I conducted the inventory of the old Plantations raised in govt waste lands to hand over them to the GramaPanchayats- PRI institution for protection and to share 50% of the Revenue obtained from such plantations with SF dvn for raising plantations in such GP's jurisdiction. I found that the CCT&M plantations of exotic Eucalyptus & Acacia trees were success and the Plantations raised in 1.00 m3 pits with tall saplings of fruit yielding trees of local spps with provision for fence of CPT with agave with 5 years maintenance were a failure after removal of the watch & ward men throughout the district except a few plantations raised over big area like in Chikkanayakanahalli Range-more with Ficus/ Kamara spp. I felt disillusioned with the final result of the model of this fruit yielding trees with huge cost. I was worried about saving the govt lands from the encroachments without trees, but in vain as there was no scheme to try other models to cover the areas with trees-plantations-a true story.

Suggestions/ Plea to thee KFD: The CCT&M plantation model is discouraged in Karnataka state after the ban of planting exotic trees species - Eucalyptus and Acacia auriculiformis in 2017 but, it has been stayed by the Hon'ble High Court, Karnataka in 2019. Still,since 2017, the Karnataka Forest Department (KFD) has not raised these two trees. Foresters are forced to love local species and some exotics like Mahogany in plantations

and Tabebuia in the cities…. and they are attracted with the model of pit plantations specially with 1.00 m3 pits with planting of tall saplings and maintenance for 5 years in the forests, encroached forest resumption blocks, open lands taken up under CAMPA. It has already been a decade that these Pit plantations of 1.00 m3 or 0.125 m3 pits are in vogue. An inquest by the authorities after 7 to 8 years of these plantations only can give clear story about the success of these plantations to continue pit plantation model or to go for the CCT&M or OCCT&M with Myasaky dense tree planting with seeds sowing on mounds to beat the GW &CC for better results over the forced belief on pits plantations.

Request: In view of production of more pulp wood, sink CO2, to raise successful soft wood & poles in the forest under threat of encroachments…the **GoK may please reconsider and revoke the ban imposed without solid Scientific reasons against the exotics- Eucalyptus & Acacia soft wood tree species which are grown in all over India/world in larg e scale and permit the KFD to raise Eucalyptus & Acacia trees as they are not the root cause for depletion of the underground water table in the state.** These trees use more water for fast growth but the rate of water consumption per production of a unit wood by these trees is less than other trees for production of a unit wood.. Both the trees are xerophytes which adapt well for dry conditions. Acacia is a good timber and a leguminous tree which improves the soil wherever it grows. More over these trees are made shallow rooted by developing saplings with cloning to achieve uniform/fast growth and generally they will not have tap roots any more in the plantations

The reasons for depletion of the underground water tables in Karnataka are the uncontrolled irrigation bore wells with free electricity which are bailing out the underground water from 1000 feet down below the ground level; and the erratic rains due to EL Nino and faulty farming practices which are affecting the recharging of underground water table in the state and not the Eucalyptus or the Acacia trees.

A policy to adopt OCCT&M model for afforestation in the arid zones is need of the hour to increase the recharging of the underground water table/SMC and to raise successfulplantations in Karnataka.

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It is the law of love that rules mankind. Had violence i.e hate ruled us, we should have become extinct long ago. Mankind has to get out of violence. Hatred can be overcome only by love

- Mahatma Gandhi.

Contribution of Thomas Fulton Bourdillon, Conservator of Forests Travancore(modern-day Kerala) in Southern Western Ghats of India.

Dr. Uday Veer Singh

Thomas Fulton Bourdillon (1 May1849, Madras to 19 December1930 Bexhil-on-Sea) a British Forester, left an indelible mark on the landscape of southern India, successfully transitioning from a private planter into one of the most effective and scientifically rigorous foresters of the era. His work bridged the gap between raw resource extraction and systematic, long-term ecology.

Administrative History as Conservator: Bour -dillon's official engagement with the forestry of Travancore began in June 1886, when he was appointed as a Special Forest Officer. Shortly he was appointed as Deputy Conservator of Forests at Malayattur in 1888 and officially stepped into the role of **"Conservator of Forests for Travancore",** serving dynamically from 1891 until 1909. His mandate from the princely state's government was massive: conduct a thorough exploration of the uncharted interior forests, identify and mark permanent forest reserves, map the terrains, and catalogue the heavily exploited timber resources—particularly teak.

Key administrative highlights from his ten -ure: Massive Forest Reservation- Bourdillon spearheaded the legal and physical demarcation of massive tracts of wildlands. Under his administration, he mapped and established over "3,885 square kilometres of reserved forests", successfully protecting them from unregulated felling and shifting hill cultivation.

The 1892 Report on the Forests of Travancore: He synthesized years of gruelling field exploration, often traveling through wet hazardous terrains previously unvisited by Europeans into his landmark. This document detailed the courses of major rivers, such as the Periyar, Achankovil, and Karamana and mapped forest compositions. His major contribution to forestry was work known as the "Bourdillon" Teak Breakthrough. Prior to his tenure, systematic artificial regeneration of timber was highly volatile. Bourdillon dramatically transformed the timber economy by evolving a new propagation technique for Teak (*Tectonagrandis*) using moderately hard stem cuttings. During his conservatorship, roughly 6,793 hectares of organized teak plantations were successfully raised. The historic "Bourdillon Teak Forest" in Aryankavu (Kollam district) stands as a monument to this milestone.

Major Botanical Discoveries & Legacy: Bourdillon was not just an administrator; he was a highly capable field taxonomist who spent decades collecting specimens across the southern Western Ghats. His comprehensive field collections and botanical keys culminated in his famous 1908 book, *The Forest Trees of Travancore*. He actively discovered and described species endemic to the dense, wet evergreen forests of the region, and collaborated extensively with prominent colonial botanists like James Sykes Gamble. One of his distinct personal discoveries was describing *Syzygiumoccidentale* (originally *"Eugenia occidentalis"*), a specialized Myrtaceae tree species he encountered growing along the rocky banks of the Periyar River in North Travancore.

Taxonomy Named in His Honour: Because his extensive collection of herbarium specimens formed the backbone of southern Indian systematic botany, with many duplicates sent to the Royal Botanic Gardens Kew; several endemic and rare

species were named after him by contemporary taxonomists: A Multi-Faceted Naturalist Bourdillon's scientific curiosity wasn't restricted to plants. In 1904, alongside Harold S. Ferguson, he published a foundational paper on the avifauna of the region “The Birds of Travancore”, noting the distribution and nesting habits of rare local species.

Thomas Fulton Bourdillon (1849 -1930) was a British botanist, who worked as a Conservator of Forests in the princely state of Travancore in British India. He came to Travancore (at present Southern Kerala) as a planter in 1871 and was appointed by the Travancore Durbar in 1886 as a special forest officer to explore the forests and to report on their resources. In 1891 he was appointed

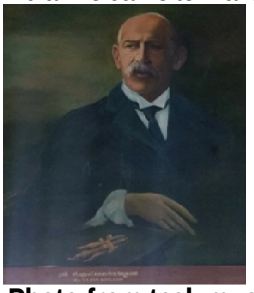

Photo from teak museum Nilambur

as Conservator of Forests, a position he retained till his retirement in June 1908. He was a keen botanist and an all-round forest officer. During his period, he brought the Department to a high state of efficiency.

In 1908, he authored the first book on the trees of the region The Forest Trees of Travancore. In 1901 he was admitted a Fellow of the Linnean Society. [3] He also wrote about bird life to Allan Octavian Hume and contributed many articles on forestry to the Indian Forester. He worked in close association with other naturalists of his time including Colonel R H Beddome, a military officer turn to Chief Conservator of Forest of Madras Presidency and Harold S Ferguson-a military naturalist,zoologist and good birder.

Today there exists in Arienkavu, on the northern side of Shendurney valley, a place called Bourdillon's Plot which was the location of the first plot where teak was planted using stumps in 1891. [4] This technique was developed to grow teak sustainably for the needs of the navy. This attempt to grow teak for the needs of the Royal Navy was started by Mr. H. V. Conolly, the then Collector of Malabar.

Several highly endemic, rare, and threatened tree species discovered by or named after him carry this name. When people refer to "Bourdiloni" in this region, they are almost always speaking of these magnificent, specialized canopy and understory trees. It will be tribute to one of pioneer of Teak cultivator- Thomas Fulton Bourdillon to discuss about the Tree and bird species named after him.

(i). *Madhucabourdillonii* : The history of *M.bourdillonii* is one of the most fascinating "lost and found" chronicles in Indian botanical history. Belonging to the family Sapotaceae, this majestic, critically endangered tree is endemic to the Western Ghats. Its history spans a journey from its first discovery by Thomas Fulton Bourdillon, a long period where it was feared extinct, to a dramatic botanical rediscovery hundreds of kilometres away from its first reported in Kerala State by a pioneering British forest officerThomas Fulton Bourdillonin 1894–1895.

During botanical explorations between 1894 and 1895, Bourdillon collected specimens of a distinct, medium-to-large evergreen tree in the Ariankavu and Shenduruny valleys of the southern Western Ghats. He remarked that it was a "rare tree... not seen elsewhere."In the context of the flora of the Western Ghats, the specific epithet "bourdillonii" honours ThomasFultonBourdillon (1849–1930), a legendary British forester who served as the Conservator of Forests in the princely state of Travancore

For a long time, it was feared to be extinct or a lost species until botanical surveys in the late 20th and early 21st centuries rediscovered relic populations

in Kerala and parts of Southern Karnataka of the Mysuru/Kodagudistrict's border forests. This is a large canopy tree (exceeding 30 meters) characterized by a greyish-brown, flaky bark and the presence of milky latex when bruised. It can be Identified by the young shoots, twigs, and leaf undersides are covered in a dense, distinctive coat of brownish-orange, woolly hairs. It bears dense clusters of flowers from the axils of older or fallen leaves and produces perfectly globose spherical berries.

The famous British botanist J.S. Gamble formally described the plant using Bourdillon's collections during 1921-1927. In 1921, Gamble published it under the name Bassiabourdillonii in the Kew Bulletin, naming the species in honour of its discoverer. Later, in 1927, Dutch botanist H.J. Lam revised the genus and transferred the species to Madhuca, giving it the currently accepted scientific name: *Madhucabourdillonii* (Gamble) H.J. Lam.

The"Missing"Century&FearedExtinction:Following Bourdillon's initial observations, the tree seemingly vanished from the scientific record. For nearly a century, subsequent botanical surveys across Kerala failed to locate a single living specimen. The Red Data Book of Indian Plants eventually classified the species as "possibly extinct." The main cause it was told by the historians and botanists attribute this sharp decline to the post-World War era. Heavy industrialization, agricultural expansion, and selective felling (owing to the high value of Madhuca timber and its oil-yielding seeds) drastically fragmented its native low-altitude evergreen habitats.

Relocation and the Stunning Northern Extension (2000s): After decades of silence, researchers from the Kerala Forest Research Institute (KFRI), including botanist N. Sasidharan, managed to relocate a few scattered individuals in the Thrissur district and its original type-localities in Kerala, confirming it wasn't entirely extinct.

However, the real historical plot twist came in 2007–2008. Scientists from the Indian Institute of Science (IISc), including Dr. M.D. SubashChandran and others, made a breakthrough discovery over 700 kilometres north of its known habitat. They identified a small, relic population of *Madhucabourdillonii* in the Ankolataluk of Uttara Kannada, Karnataka. This discovery was highly significant because it proved the tree existed north of the Palghat Gap—a major geographical barrier in the Western Ghats that typically stops the migration of sensitive endemic flora. Today, the history of *Madhucabourdillonii* is deeply intertwined with the survival of relic primeval forests and Myristica swamps (ancient, waterlogged tree systems). During one of my field visits in April 2017, I have seen medium sized tree of *Madhucabourdillonii* in AnkolaTaluka of Uttar Kannada district Karnataka.

The few remaining mature trees found in Karnataka were shielded from historical logging because they grew within ancient Kans (sacred groves), protected for generations by local community traditions. It stands today as a living museum piece, showing us what the contiguous, untouched low-altitude forests of the Western Ghats looked like thousands of years ago.

(ii). *Dipterocarpusbourdillonii*: This is perhaps the most famous tree species bearing his name. It is a massive, majestic emergent tree belonging to the family, Dipterocarpaceae. It is classified as Critically Endangered (IUCN). The global population is exceptionally small, with very few mature individuals left in the wild. It is a giant evergreen tree that can soar up to 45 to 50 meters (nearly 160 feet) in height. It develops a straight, clean trunk (bole) with distinctive dome-like crowns that punch through the forest canopy. It is locally known as Dhuma in Kannada and Karanjili,

Kalpayin, or Chiratta-anjili in Malayalam. It heavily resembles its close relative *Dipterocarpusindicus* (the common Dhuma), but it can easily be differentiated from D. *bourdillonii* apart by its hairy shoot tips/leaf buds and its distinctly ribbed calyx tube (the flower base). D. *indicus* is smooth and hairless in these areas. It is restricted to low-to-mid elevation tropical wet evergreen rainforests, typically growing along river valleys and river streams where moisture is constant. While primarily found on the western slopes of Kerala, scattered populations exist in the evergreen patches of Karnataka, like Uttara Kannada and Tamil Nadu in Anamalai Tiger Reserve. Today, seeing a mature Dipterocarpusbourdillonii or Madhucabourdillonii standing in a forest valley is a rare glimpse into the ancient, primary rainforest architecture of the Western Ghats.

(iii). *Humboldtiabourdillonii*: An understory legume tree belonging to the family Fabaceae, classified as Endangered. It is known for its striking bright crimson calyx and white petals.It has a highly localized, fragmented distribution. This tree is unique because it exhibits cauliflory—meaning its striking, beautiful pinkish-white flowers and deep reddish seed pods bloom and grow directly out of the main tree trunk and older wooden branches rather than just the green twigs. It also exhibits symbiosis with ants, which often live in its hollowed leaf joints.

(iv).*Dialiumbourdillonii* (Malabar Tamarind): A massive, endangered canopy tree endemic to the Western Ghats. *Ochlandrabourdillonii*: A distinct, clump-forming reed bamboo found specifically in the moist, evergreen river valleys of Kerala. ***Glochidionbourdillonii***: A vulnerable shrub/small tree found in wet, high-rainfall ravines across Karnataka, Kerala, and Tamil Nadu formally published by JS Gamble based on bourdillon's field collections.

(v).*Cynometrabourdillonii* (Endangered). It is another evergreen tree in the legume family, found primarily in low-elevation wet forests of Kerala and South Kanara, Karnataka.

(vi).*Aporosabourdillonii* (Endangered). A small, dioecious understory tree belonging to the Phyllanthaceae family, endemic to the southern Western Ghats.

(vii). *Palaquiumbourdillonii*.An evergreen forest tree also belonging to the Sapotaceae family, native to Southern India.

(viii). *Diospyrosbourdillonii*.A species of ebony tree (family Ebenaceae) native to the Southern Western Ghats, wet tropical biomes of India.

(ix). *Actinodaphnebourdillonii & Litseabourdillonii*. Two distinct, endemic evergreen tree species belonging to the laurel family (Lauraceae). Some other tree species like *Aglaiabourdillonii*, bird sub species like great eared nightjar *Eurostopodusmacrotisbourdillonii* and the black bird *Turdusmerulabourdillonii* are also named after him.

All or most of the "Bourdillonii" species share a common traitiethey are climax species of pristine, undisturbed rainforests. They have low tolerance for sudden canopy openings, slow regeneration rates, and are highly susceptible to habitat fragmentation caused by historical logging, dams, and land conversion. All these destructive factors are otherwise the primary enemies of forests of this country.

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From Forests to Forest Landscapes: An Evolving Paradigm

Dr. Padam Parkash Bhojvaid

The traditional colonial concept of forests viewed them as discrete blocks of land primarily managed for timber production and revenue generation. Forests were demarcated, legally notified, and administered as separate entities, largely isolated from the surrounding human and ecological systems. This perspective served the objectives of state control, extraction of timber, and regulation of access. Over time, however, it became evident that forests do not exist in isolation. They are embedded within a broader mosaic of farms, villages, rivers, infrastructure, wildlife habitats, and economic activities. Consequently, the classical notion of forests has gradually evolved into the more comprehensive concept of forest landscapes.

A forest landscape encompasses not only forests but also the diverse land uses and communities that interact with them. It is shaped by ecological processes, economic forces, political institutions, and social relationships. Within a forest landscape, forests provide biodiversity conservation, climate regulation, watershed protection, carbon sequestration, and cultural values. At the same time, they support livelihoods through provision of food, fuel wood, fodder, timber, non-timber forest products, employment, and income. The landscape is therefore a dynamic arena where conservation objectives, livelihood needs, economic development, and governance mechanisms continuously interact.

Because forest landscapes support multiple functions, they attract a wide range of stakeholders with differing interests. Forest departments seek to conserve and regulate forest resources. Local communities depend on forests for livelihoods and subsistence needs. Farmers view land as a productive asset for agriculture and agroforestry. Industries require timber, minerals, energy, and infrastructure corridors. Conservation organizations prioritize biodiversity and ecosystem protection. Urban society increasingly values forests for water security, climate regulation, recreation, and aesthetic benefits. Governments seek to balance economic growth, social welfare, environmental sustainability, and political priorities.

The coexistence of these diverse interests often leads to competition and conflict. Biodiversity conservation may clash with mining or industrial development. Watershed protection objectives may conflict with infrastructure expansion. Carbon sequestration goals may compete with rising demands for energy and land. Wildlife conservation can generate tensions with local communities facing crop damage or livestock depredation. Similarly, agricultural expansion, urbanization, and linear infrastructure projects frequently create pressures on forests and wildlife habitats. Forest landscapes thus become negotiated spaces where outcomes are determined by power relations, institutions, policies, and societal choices.

Recognizing these competing demands has led to a more nuanced approach to landscape management. Contemporary thinking increasingly organizes forest landscapes into three broad and complementary categories. Conservation landscapes prioritize biodiversity, ecosystem integrity, and protection of critical habitats. Production landscapes focus on the sustainable generation of timber, non-timber products, agricultural outputs, and economic benefits. Restoration landscapes seek to recover degraded ecosystems, enhance ecological connectivity,

improve carbon stocks, and revive ecosystem services. Together, these landscape categories provide a framework for balancing ecological sustainability, economic development, and human well-being in an increasingly complex and interconnected world.

The emergence of the forest landscape paradigm has implications that extend far beyond changes in policy and planning frameworks. It fundamentally alters the role of the forest manager. Managing a forest for timber production within clearly demarcated boundaries required one set of skills; managing a landscape characterized by multiple land uses, diverse stakeholders, competing interests, rapid environmental change, and intense public scrutiny requires another. As forests have evolved from relatively isolated administrative units into complex socio-ecological systems, the forester's role has similarly evolved from that of a custodian of trees to a manager of landscapes, institutions, partnerships, and knowledge systems. The transition from classical forestry to landscape stewardship therefore demands not only new tools and technologies but also a profound shift in professional attitudes, competencies, and styles of leadership. In many ways, the transformation of forestry can be understood through a simple sporting metaphor: the game itself has changed. What was once a patient Test match played over decades has increasingly become a fast-paced Twenty20 contest demanding agility, teamwork, real-time information, and continuous adaptation.

From Test Cricket to T20: The New Playbook for Forest Managers

The transition from managing forests to managing forest landscapes has fundamentally reshaped the role of the forest manager. As the objectives of forestry have expanded from timber production to encompass biodiversity conservation, climate resilience, ecosystem services, livelihoods, and landscape restoration, the skills, attitudes, and decision-making approaches required of forest professionals have undergone an equally profound transformation.

The forester of the twentieth century operated in a world that closely resembled a Test cricket match. The pace was deliberate, the objectives relatively clear, and success was measured over decades rather than seasons. Forests were managed as discrete administrative units, largely insulated from external influences. Long rotations of sixty to over one hundred years were common, and management decisions were guided by working plans, periodic field inspections, and accumulated professional experience. Forest officers functioned with considerable autonomy, facing limited public scrutiny and relatively few unexpected disruptions.

Like a Test batsman occupying the crease for days, the classical forester relied on patience, caution, and long-term vision. The principal challenge was to protect the resource, regulate harvesting, and ensure sustained yields. Information moved slowly, public participation was minimal, and management outcomes often became visible only after many years. Time was largely on the forester's side.

Today's forest manager inhabits an entirely different arena—one that increasingly resembles a Twenty20 cricket match. The pace is faster, the stakes are higher, and the margin for error is far smaller. Climate change, catastrophic forest fires, biodiversity loss, invasive species, human-wildlife conflict, infrastructure expansion, and competing land-use demands create a dynamic and often unpredictable operating environment. Decisions that once unfolded over decades must now frequently be taken within days, hours, or even minutes.

Success in this new environment requires a different skill set. Contemporary forest managers must combine ecological understanding with

technological competence, strategic thinking, communication skills, and institutional agility. Remote sensing, GIS platforms, drones, artificial intelligence, mobile applications, and real-time monitoring systems have become as important to modern forestry as maps, compasses, and inventory records were to earlier generations. Like a T20 captain adjusting tactics ball by ball, today's forest manager must continuously interpret evolving situations, anticipate risks, and make informed decisions under conditions of uncertainty.

Equally transformative has been the rise of transparency and public accountability. Forest management now operates under intense scrutiny from citizens, local communities, media, courts, researchers, civil society organizations, and international institutions. Every major intervention—whether related to conservation, diversion, restoration, wildlife management, or community engagement—is subject to public examination. Much like modern cricket, where every decision is reviewed through television replays, Hawk-Eye technology, and the Decision Review System, forestry today functions in an environment where actions are visible, measurable, and open to challenge. Public trust depends not only on sound decisions but also on the ability to explain and justify them.

This changing landscape has also transformed the role of leadership within the forestry hierarchy. Senior officers can no longer function merely as periodic reviewers of reports and inspections. Advances in communication technology now allow Conservators, Chief Conservators, and Principal Chief Conservators to monitor developments across vast landscapes in near real time. Like coaches and analysts seated in a cricket team's dugout, they can observe unfolding situations, interpret incoming information, anticipate emerging challenges, and provide timely policy guidance and operational direction to field formations. The modern forestry organization increasingly resembles a high-performance sports team, where information flows continuously between the field and the leadership bench, enabling coordinated responses to rapidly changing circumstances. Effective forest governance depends upon this seamless integration of field intelligence, technological tools, strategic oversight, and timely decision-making.

The forest manager of the twenty-first century must therefore blend the patience, discipline, and ecological wisdom of the Test cricketer with the agility, situational awareness, technological proficiency, and teamwork of the T20 professional. The game has changed, the rules of engagement have evolved, and the spectators have multiplied. Yet the ultimate objective remains unchanged: safeguarding forests and forest landscapes so that they continue to sustain biodiversity, livelihoods, climate security, and human well-being for generations to come.

In essence, forestry's journey from forests to forest landscapes mirrors the evolution of cricket itself—from a game defined primarily by endurance and patience to one that demands speed, adaptability, teamwork, and constant innovation. The challenge before today's forest managers is not to abandon the wisdom of classical forestry but to enrich it with the capabilities required by a rapidly changing world. Those who successfully combine the enduring values of stewardship with the dynamism of modern management will be best positioned to guide forest landscapes through the environmental, social, and economic challenges of the twenty-first century.

Cricket and forest managmenet table on Page No : 29

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Rewilding Grasses through Seed Ball Technique: A Practical Approach for Andhra Pradesh

B.Vijaya Kumar

Tree species have vanished from many forest tracts in Andhra Pradesh due to loss of soil fertility and depleted soil moisture. This degradation stems from barren forest lands left without any vegetative cover on the surface, exposing soil to erosion, heat, and runoff.

In such a scenario, dibbling or broadcasting grass seed balls in prepared soil blanks, trenches, along water bodies, and rivulets is a viable and practical approach.

Why Grass Seed Balls Work:

Embedding seeds or rhizomes of species like Cenchrus ciliaris, Cynodon dactylon, Saccharum spontaneum, Heteropogon contortus, and even bamboo in moist, fertile earth balls protects them from desiccation, birds, and ants. Once rains arrive, the clay breaks down, compost provides initial nutrition, and roots quickly bind the soil. This enhances soil fertility and improves moisture retention.

Ecological Value:

Grasslands are ecologically as critical as forests. They absorb atmospheric carbon, reduce surface runoff, and recharge groundwater far faster than plantation models on degraded hardpans. When compared to other greening techniques for barren lands, grass rewilding offers better visibility, higher success rates, and quicker eco-restoration in terms of soil and water outcomes.

Indian Precedents:

1. Bandipur-Karnataka: Forest Department and NGOs used Cenchrus and Heteropogon seed balls to restore degraded patches, improving forage for elephants and chital.

2. Aravalli Rewilding, Haryana: Community-led broadcasting of native grass seed balls on mine dumps reduced dust and revived seasonal streams.

3. Pune Hills, Maharashtra: Volunteers restored slopes with Cynodon and Saccharum seed balls, checking erosion within one monsoon.

Monitoring Matters:

The area selected for grass seed ball application should be inventoried before and after to document change in species diversity, biomass, and soil moisture. This data validates success and guides scaling.

Beyond Greening:

Our degraded ecosystems need a grassy cover not just for groundwater recharge and carbon sequestration, but also as primary producers. Grasslands form the base of the food pyramid for herbivores and serve as vital ecotones for avifauna.

We hope our policy makers and administrators recognize this ecological requirement for rewilding nature. By connecting forest dwellers and local communities through active involvement, right from preparation of grass seed balls at village committee level in convergence mode, we can restore landscapes at scale.

Let us not ignore the humble grass. What we cannot create from scratch, we can still help nature regenerate.

Photographs on Page No: 31

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Forest College and Research Institute Celebrates World Environment Day 2026 through Praja Palana – Pragathi Pranalika Programme

Dr. Srinidhi

The Forest College and Research Institute (FCRI), Mulugu, Siddipet, Telangana, successfully organized a twelve-day series of environmental awareness and conservation activities from 01 to 12 June 2026 under the PrajaPalana – Pragathi Pranalika Programme of the Government of Telangana. The celebrations were conducted in alignment with the World Environment Day 2026 theme, "Inspired by Nature. For Climate. For Our Future.", with the objective of promoting environmental stewardship, community participation, and sustainable living practices.

Day 1: Launch of Environmental Protection Programmes (01 June 2026)

The celebrations commenced with the unveiling of the World Environment Day 2026 poster by the Dean, FCRI. Students, faculty, and staff were briefed on the significance of PrajaPalana – Pragathi Pranalika and the need for collective action in addressing environmental challenges. The schedule of activities planned for the next twelve days was also presented.

Day 2: Environmental Awareness Competitions (02 June 2026)

To encourage environmental learning among students, Essay Writing, Quiz, and Puzzle Solving Competitions were organized on the theme "Inspired by Nature. For Climate.For Our Future." The competitions provided a platform for participants to express their understanding of environmental issues and sustainable solutions.

Day 3: Village Outreach and Plastic Awareness Campaign (03 June 2026)

FCRI organized an outreach programme in its adopted village, Achaiapally. More than 100 students participated in an awareness rally against single-use plastics, carrying placards and interacting with villagers on the importance of reducing plastic consumption. A village clean-up drive was also conducted, during which students collected plastic waste from public areas. To engage younger participants, a drawing competition was organized for village school children, who enthusiastically depicted their ideas for a cleaner and greener environment.

Day 4: Swachh Bharat Cleanliness Drive (04 June 2026)

As part of the Swachh Bharat initiative, a large-scale cleanliness drive was undertaken along the National Highway adjoining the FCRI campus. Around 150 students, faculty members, and staff actively participated in removing litter and plastic waste. The activity highlighted the importance of civic responsibility and community participation in maintaining clean surroundings.

Day 5: World Environment Day Celebration and Plantation Programme (05 June 2026)

World Environment Day was celebrated with great enthusiasm. In collaboration with the Telangana Forest Development Corporation (TGFDC), a plantation programme was conducted at Mazjeedpur Village, Shamirpet, where 100 saplings were planted. The programme symbolized a collective commitment towards increasing green cover and mitigating climate change.

The programme in FCRI was graced by **Sri Vinay Kumar IFS, Principal Chief Conservator of Forests (HoFF), PCCF (Wildlife) and Chief**

Wildlife Warden, Telangana, who participated as the Chief Guest. Addressing the gathering, he stressed the urgent need to conserve forests, wildlife, and natural ecosystems in the face of increasing environmental challenges. He called upon students to serve as ambassadors of environmental conservation and contribute towards building a greener Telangana.

Dr. Priyankaa Varghese IFS, Chief Conservator of Forests and Director, Telangana State Forest Academy, highlighted the significance of environmental education, capacity building, and citizen participation in achieving long-term sustainability goals.

The day was further enriched by expert lectures delivered by eminent forestry professionals, academicians, and environmental experts. The speakers emphasized the importance of forest conservation, biodiversity protection, climate change mitigation, sustainable natural resource management, and community involvement in environmental protection.

Day 6: Plastic-Free Campus Initiative (06 June 2026)

To promote sustainable lifestyles and reduce plastic usage, FCRI organized a Digital Poster Competition on the theme **"Plastic-Free Campus: Our Responsibility, Our Future."** Students showcased innovative ideas and awareness messages advocating eco-friendly alternatives and responsible environmental behaviour.

Day 7: Bird Walk and Nature Trail (08 June 2026)

Students participated in a Bird Walk around Shamirpet Lake, where they observed and identified a variety of bird species and learned about their ecological significance. This was followed by a Nature Trail at Shamirpet Deer Park, where participants gained firsthand exposure to local biodiversity, wildlife habitats, and ecosystem conservation practices. The field visit provided valuable experiential learning opportunities for future forestry professionals.

Day 8: Open Day Programme (09 June 2026)

An Open Day Programme was organized at FCRI to showcase the institute's academic, research, extension, and outreach activities. A total of 120 students and 10 faculty members from Hamsa Homeopathy College visited the campus and explored various facilities. The programme provided visitors with insights into forestry education, biodiversity conservation, and sustainable natural resource management.

Day 9: Environmental Competitions in Collaboration with TGFDC (10 June 2026)

In association with TGFDC, FCRI conducted Drawing, Painting, and Elocution Competitions focusing on environmental protection, biodiversity conservation, sustainable forestry, and climate change. Students enthusiastically participated and creatively expressed their thoughts on environmental issues through art and speech.

Day 10: Reptile Awareness and Snakebite Management Programme (11 June 2026)

A Reptile Awareness Show and Snakebite Management Programme was organized in collaboration with the Friends of Snakes Society. The session educated participants on the ecological importance of reptiles, identification of snakes, snakebite prevention measures, and appropriate first-aid responses. The programme also helped dispel common myths associated with snakes and promoted wildlife conservation awareness.

Day 11: Valedictory Function and Prize Distribution (12 June 2026)

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Pioneering of Crocodile Conservation efforts in AP (United AP)

K.Varaparsad, Qamar Mohamed Khan &A.V.Joseph

Introduction

An interesting news clip under column fifty years ago appeared in 'The Hindu' newspaper dated 18th June 2026 with the caption 'Scheme for crocodile sanctuaries. It caught my attention and it contained a brief account of the efforts made by Dr H.R. Bustard, FAO Expert, Mr T.V. SubbaRao, Addl PCCF, Mr Pusphkumar, Director Nehru Zoological Park,Hyderabad (NZP), Mr Bhoomarajam,Conservator of Forests, LP, Circle for conservation of crocodiles in Andhra Pradesh (AP).

Crocodiles belong to the group reptiles. There are 26 species of crocodiles (Crocodylidae family) found in the world of which three species viz, mugger Crocodylus *palustris*(marsh crocodile), estuarine crocodile *Crocodylusporosus*(salt water crocodile) and gharial Gavialis gangeticus (fish eating crocodile) are found in India. In AP only mugger crocodile is found while the estuarine crocodile has been exterminated and gharial never existed.

Crocodiles were on the verge of extinction in the 1970's. DrH.R.Bustard, an FAO expert and Government of India, together studied the prospects of crocodile rehabilitation in India and subsequently the'Crocodile Conservation Project'was launched in 1975. It was implemented in AP, in the year 1978 and'Central Crocodile Breeding and Management Institute' was established atHyderabad for training range officers from all over India in wildlife and sanctuary management. The project was funded by GOI with the assistance of FAO and UNDP.

Status of crocodiles in AP

In AP mugger crocodiles were found distributed in river Krishna and river Godavari and their tributaries. When a survey of mugger crocodiles was undertaken by a special wildlife divisionunder the supervision of Mr Pusphkumar,I.F.S, CF and to their horror only a few breeding pairs were found in Manjeera, Sivaram,Srisailam and Godavari riverine belt. During the survey potential sites and habitats for release and rehabilitation of mugger crocodiles were identified along with their future notification as sanctuary. After due identification and investigation, sanctuaries were declared.

A crocodile conservation and breeding center was established at NZP, Hydand at Nagarjuna Sagarunder central scheme and mugger crocodile eggs were carefully collected from nests from wild population from Krishna, Manjira and Godavari riverine areas and hatched. Also, eggs were obtained from other places from Andamans, Gujarat- SasanGir,Kataranighat-Nepal for genetic diversity and preservation of the race. Six female crocodiles were brought from Tadoba sanctuary to balance the over populated male stock. Suitable breeding pools were constructed at NZP, Hyd and Nagarjuna Sagar for breeding of mugger crocodiles. Mr B.C.Choudhary was appointed as research scholar under the conservation project, who subsequently joined wildlife institute of Deha dun as faculty. The marking of baby/ sub-adult crocodile and scientific records were meticulously maintained for successful release and rehabilitation of young mugger crocodiles.

Simultaneously, Government of India established a 'Crocodile Breeding and Training Institute' at Hyderabad, rented accommodation with its first

director Mr.Pushpkumar,I.F.S. CF.A number of batches of forest range officers from all over India were trained in the institute and diplomas awarded in wildlife conservation. The government of AP allotted 40 acres of land at Attapur, Hyderabad for establishing a permanent wildlife training institute. However, the institute was shifted to Dehradun and merged with the present Wildlife Institute of India, D Dun.

The breeding of mugger crocodiles and its rehabilitation was successful and Government of India subsequently dis-mantled the central scheme. The mugger crocodiles in NZP,Hyd bred prolifically and later the surplus eggs were utilized by CCMB,Hyd in their genetic study(sex determination with regard to temperature).

Present distribution in AP

Mugger crocodiles are at present found in Manjeera WLS, Sivaram WLS, Alisagar dam, Kinnerasani dam, Musi river, Ethipotala water falls, Srisailam and Nagrajun Sagar dam in Krishna river, a part of Amarabad Tiger Reserve, Velgode reservoir etc.

The story of the presence of mugger crocodiles in Velugode reservoir is interesting. MrAdinaryana, then DFO,Atmakur rescued a wild mugger crocodile that had strayed into human habitation and inadvertently released it in Velugode reservoir that was newly constructed under Telugu ganga project for supply of drinking water from Krishna river to Chennai city. Velgode reservoir did not support any mugger crocodile but it was an excellent habitat for mugger crocodile. The DFO did not know the sex of the animal and the forest department took a decision to supplement the lone individual with release a group of two males and five female mugger crocodiles in Velugode reservoir and now a thriving population of muggers reside in the reservoir.

With regard to estuarine crocodile, hatchlings were brought from Andamansand attempt was made to release and rehabilitate them in Coringa mangrove area. The local fishermen of that area resisted the project and it was dropped. However, the mangrove forests of Coringa(Godavri estuary) and Krishna mangroves were notified as Wildlife sanctuary and they support a good population of wetland fauna. It is hoped someday the Coringa wildlife sanctuary will support estuarine crocodile as apex predator of the habitat.

To breed gharial hatchlings were procured from Narayani river near Nepal but not much progress was made.

Credit to the pioneers in the conservation efforts

All credit goes to the foresight of early forest officers and scientists of AP who took a bold decision to save the fast-dwindling population of mugger crocodiles in AP. At present many water bodies in AP are populated with a thriving population of mugger crocodiles and their progeny are dispersing into many new un-inhabited water bodies thereby playing a very important role in wetland ecology.

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Humanism is the only-I would go so far as saying the final-resistance we have against inhuman practices and injustices that disfigure human history- Edward W Said



Intellectual property rights - A perspective

V.V.Hariprasad

Intellectual Property Rights (IPR) are legal protections granted to individuals and businesses for their creations, inventions, and brand assets. These rights give creators exclusive control over how their intangible assets are used, commercialized, and distributed, ultimately allowing them to earn financial benefits and recognition.

Why IPR Matters

v **Promotes Innovation:** By ensuring that inventors and creators can secure their time and research investments, IPR encourages continuous technological and cultural development.

Core Types of Intellectual Property Rights

✓ **Patents:** Protect new inventions, processes, or technological improvements. They grant the inventor a time-limited monopoly—typically 20 years from the filing date—to prevent others from making, using, or selling the invention.

✓ **Copyrights:** Protect original artistic, literary, and musical works. In many jurisdictions, this right is automatic upon creation and lasts for the author's lifetime plus a minimum of 50 to 60 years.

✓ **Trademarks:** Safeguard brand identity, such as symbols, logos, phrases, and business names. Unlike patents and copyrights, trademarks can be renewed indefinitely as long as they remain in active commercial use.

✓ **Geographical Indications (GIs):** Identify products that originate from a specific region and possess qualities or a reputation linked to that location (e.g., Darjeeling Tea, TirupatiLaddu, Hyderabad Haleem, Champagne, etc).

✓ **Trade Secrets:** Protect confidential, proprietary business information—like recipes or algorithms—that provide a competitive advantage. They are protected indefinitely as long as the owner keeps the information secret.

What is biopiracy?

Biopiracy is the unethical or unlawful commercial exploitation of biological resources and traditional indigenous knowledge by individuals or corporations. It occurs when outsiders take naturally occurring resources **(like medicinal plants or agricultural seeds)** or local healing practices, secure patents, and profit without providing fair compensation/sharing or credit to the native communities.

Notable Examples of Copyrights:

S.P. Balasubrahmanyam VS Ilaiyaraja In 2017, legendary music composer Ilaiyaraaja sent a legal notice to his long-time collaborator, playback singer S.P. Balasubrahmanyam, demanding that the singer stop performing his copyrighted compositions during global concert tours without prior permission or paying royalties.

The Dispute Breakdown: The Legal Notice: Ilaiyaraaja's team sent notices to SPB and event organizers, stating that singing Ilaiyaraaja's compositions at ticketed, commercial events without his consent violated the Indian Copyright Act and threatened legal action.

v **SPB's Response:** The late singer posted a video on Facebook explaining he was unaware of these strict legalities and expressed his willingness to comply with the law, choosing to stop singing Ilaiyaraaja's songs for the remainder of his tour to avoid inconvenience to his friend.

v Copyright Under Indian Law: Under the Copyright Act of 1957, the composer is generally recognized as the first owner of the musical work/composition. This grants the composer the exclusive right to authorize or prohibit the commercial public performance of their music. While singers hold a separate "performer's right" for the audio recording, legal experts noted that performing the underlying composition live for profit requires the composer's permission.

Geographical Indications

Geographical Indications (GIs) are intellectual property rights used to identify products originating from a specific geographic territory with qualities or reputations attributable to that origin. Landmark cases define how GIs are demarcated, protected from infringement, and balanced internationally.

Landmark Indian & International Cases

u **The Basmati Case** (***Madhya Kshetra Basmati Growers Association Samiti v. IPAB***)

o **The Issue:** The Supreme Court of India ruled on the demarcation of regions permitted to label rice as 'Basmati' under the GI Act.

o **The Impact:** It set the precedent that GIs are strictly territorially bounded, settling disputes over which specific districts qualify for authentic regional branding.

u **Champagne Case (*ComiteInter profession -nel Du Vin De Champagne v. P.K. Sen*)**

o **The Issue:** The Delhi High Court examined the use of "Champagne" on non-alcoholic, non-originating products.

o **The Impact:** It established that using a protected regional name on unrelated or non-originating products amounts to infringement and dilution of the GI.

u **Scotch Whisky Case (*Scotch Whisky Association v. Golden Bottling Limited*)**

o **The Issue:** Indian manufacturers were using the word "Scotch" on domestically produced whisky.

o **The Impact:** Courts heavily restricted this practice, preventing consumer deception and upholding the global reputation of a foreign-origin GI.

TRADE MARKS:

u Trademark case law defines how brands are legally protected, primarily covering infringement, deceptive similarity, trans-border reputation, and priority of use. Key judicial precedents establish that the first user of a mark supersedes the first registrant, and that brand names can be protected even across unrelated goods or borders.

Landmark trademark cases establish the legal doctrines used by Indian courts to resolve branding disputes under **Landmark Precedents**

✓ **Amritdhara Pharmacy v. Satyadeo Gupta (Supreme Court)**: Established the foundational test for "deceptive similarity." The court ruled that marks should be judged by the overall impression they leave on a consumer with an average memory, rather than a side-by-side comparison.

✓ **Whirlpool Corporation v. N.R. Dongre (Supreme Court)**: A critical case for international brands. The court recognized "trans-border reputation," ruling that a foreign trademark can be protected in India based on its international fame and advertising, even if the goods were not yet physically sold in the Indian market.

✓ **Cadila Health Care Ltd. v. Cadila Pharmaceuticals Ltd. (Supreme Court):** Set specific criteria for passing off in the pharmaceutical industry. The court emphasized that the likelihood of consumer confusion is the primary test, especially for sound-alike medicine names where confusion poses a public health risk.

✓ **Tata Sons Ltd. v. Ramnivas Gupta (Delhi**

High Court): Extended traditional trademark protections into the digital age. The court held that registering domain names similar to well-known trademarks constitutes infringement and misleads the public.

✓ **Dhodha House v. S.K. Maingi (Supreme Court):** Served as the leading authority on territorial jurisdiction, clarifying where a trademark owner can file an infringement suit based on where they reside or carryon business.

Common Doctrines & Applications

u **Prior User Rights:** Courts consistently rule that the rights of an individual or company who used the trademark first are superior to someone who merely registered it first.

u **Well-Known Trademarks:** Recognized well-known marks are protected across all classes of goods and services, meaning another party cannot use the name even for completely unrelated products.

u **Turmeric & Neem (India):** Ancient know -ledge of using turmeric for wound healing and neem as a natural pesticide was patented by Western institutions. Both patents were eventually overturned after legal challenges proved the traditional knowledge was pre-existing in India.

u **Basmati Rice (India):** An American company was granted a US patent to grow a strain of Basmati rice, sparking international outcry over the misappropriation of a staple crop originating in South Asia.

u **Stevia (Brazil & Paraguay):** The Guarani people traditionally used the Stevia plant as a natural sweetener, but multinational corporations later patented the plant's extracts and commercialized them for global food and beverage products.

Key Details of the Turmeric Patent Dispute

✓ **Patent Number:** US 5,401,504

✓ **Subject:** "Use of Turmeric in Wound Healing" (administered both orally and topically)

✓ **Inventors:** Dr. Suman K. Das and Dr. Hari Har P. Cohly (two Indian-American scientists)

✓ **Assignee:** University of Mississippi Medical Center

✓ **Filing Date:** December 28, 1993

✓ **Date Granted:** March 28, 1995

v The United States issued a landmark patent (No. 5,401,504) for turmeric to the University of Mississippi Medical Center in 1995. It claimed the use of turmeric powder for wound healing. However, the patent was completely revoked in 1997 after India successfully proved the healing properties were existing prior art

The Revocation (1997)

The granting of the patent sparked global controversy and was widely criticized as "biopiracy". India's Council of Scientific and Industrial Research (CSIR) officially challenged the patent. They provided ancient Sanskrit texts and traditional Ayurvedic treatises demonstrating that the use of turmeric for healing cuts, wounds, and ulcers had been known and practiced in India for centuries.

Patenting of BtBrinjal

The U.S. doesn't hold a singular patent on Btbrinjal. Instead, U.S. agribusiness **Monsanto** (through its affiliate Mahyco) holds the intellectual property rights (IPR) to the *Cry1Ac* gene modification technology inserted into the crop, while U.S.-based **Cornell University** managed the USAID-funded partnerships to introduce the crop in South Asia.

Key Aspects of the BtBrinjal IP and U.S. Involvement:

u **Technology Origin:** The defining feature of BtBrinjal is the insertion of a gene from the soil

bacterium *Bacillus thuringiensis* (Bt). The synthetic genes and methods of creating this pest-resistant trait were developed and patented by Monsanto in the U.S..





u **Biopiracy Controversy:** In India, the National Biodiversity Authority took legal action against Monsanto and its collaborators for alleged biopiracy. Activists claimed the companies used indigenous Indian local brinjal varieties to create the transgenic plant without authorization.

u **USAID and Cornell University:** U.S. institutions heavily supported the proliferation of the technology. USAID, in partnership with Cornell University, managed the *Agricultural Biotechnology Support Project II* (ABSPII). This program facilitated the transfer of Monsanto's technology to public agricultural institutions in countries like Bangladesh and India.

The Indian **Biological Diversity Act, 2002** prevents biopiracy by requiring individuals and corporations to obtain prior approval before accessing local biological resources or traditional knowledge for research or commercial use. It mandates **fair benefit-sharing** with indigenous and local communities to protect their intellectual property rights. **How the Act Works to Prevent Biopiracy is described below.**

v **Prior Approval Requirements:** Foreign individuals, Non-Resident Indians (NRIs), and corporate entities must seek prior approval from the **National Biodiversity Authority (NBA)** before accessing biological resources or traditional knowledge found in India.

v **Prior Informed Consent:** Access is only granted on Mutually Agreed Terms (MAT), which ensures that the country and local communities are compensated for their genetic resources.

v **Protection of Traditional Knowledge:** The Act recognizes local people as conservers of resources and holders of traditional knowledge. It prevents individuals from claiming patents on traditionally known properties (like the medicinal uses of Neem or Turmeric) without legal authorization.

Conclusion: Biopiracy has been a curse to developing countries. *Biopiracy as defined is the unauthorized appropriation of biological resources and traditional knowledge from indigenous communities by multinational corporations for commercial profit. It has cost India economically, ecologically, and culturally. Indigenous communities and local farmers are denied royalties and fair compensation for crops and medicinal plants they have nurtured for generations. When foreign entities monopolize indigenous knowledge through patents, it undermines local cultural heritage and disrupts the intergenerational transfer of ecological wisdom. The patenting of native seeds (e.g., Basmati) and medicinal plants (e.g., Neem, Turmeric) forces local populations to pay high prices for products derived from their own ecosystems. Commercial exploitation can lead to the overharvesting of resources and the promotion of monocultures, threatening the natural ecosystem resilience and genetic diversity of the region.*

(The author is a Deputy conservator of Forests (Retd.) and a practicing Advocatewho worked as consultant in AP Forest Biodiversity Board and Institute of Forest Bio-diversity,Govt.of India.He is a PG Diploma holder in intellectual property rights from Central university Hyd.He can be accessed at vvhp53@gmail.com or 7893673767)



RALLY FOREST – A PRESTIEGIOUS AWARD

(STRENUOUS EFFORT TO SAVE FOREST)

K. Buchi Ram Reddy I.F.S (Rtd)

Rally reserved forest is an old forest block in Mancherial district.This block included lands of Rally village as well as 46 other villages. It was proposed to be constituted a reserved forest way back in 1348 Fasli (1939 A.D). The proposal of the Government was notified and Forest Settlement Officer (F.S.O) was appointed to enquire into claims over the land. All claims in all the villages were settled except the claim in respect of Rally village lands.

One Sri V. SrinivasaRao made a claim in respect of lands of Rally village which were proposed to be constituted reserved forest. The claim of ownership was of lands of an extent of Acs. 654-23 gts included in Rally forest block. He wanted the lands to be excluded from the proposed reservation. The F.S.O. passed an award in 1355 F. (1946). It was held that only one Sy. No. of an extent of Acs. 3-11 gts was bilmaktha which might be included in the proposed R.F and the claimant be compensated. In respect of other Sy Nos. comprising an area of Acs. 651-12 gts., the F.S.O. found that the grant of patta was of dubious nature as the very grant was against the rules. It was therefore ordered that the patta of those lands be cancelled.

Aggrieved by the order of the F.S.O., the claimant's successor-in-interestSriVenkatMuraliManoharRao filed an appeal before the Subedar (Commissioner) at Warangal. The order of the Subedar according to law in force then was final subject to a revision before the Government in Revenue department. But the Institution of Subedar was abolished and the Board of Revenue became the successor. The Board of Revenue was also abolished and the Commissioner of Land Revenue, the Commissioner of Survey, Settlement and Land Records, and the Commissioner of Excise became the successors to the Board of Revenue. The appeal against the award of the F.S.O. had been pending because of several vicissitudes in the State Revenue department. The basic information was gathered by going through the ancient record of archival nature. Owing to the pendency of the appeal in respect of Rally village lands, final notification of the whole block was held up. It was proposed by Sri SarvothamRao, the D.F.O. of Mancherial division that, pending resolution of the lands of Rally village, the reservation proposals to that extent be kept aside and larger area of the forest block be notified as reserved forest. The proposal was accepted and the Rally Block excluding the lands of Rally village was declared as reserved forest.

The claimant misinterpreting the pendency of reservation of Rally village forest asserted that the lands were no longer required by the Forest Department. He applied for permits to enable him to fell trees and transport timber. Permission to fell trees was refused because of the pendency of the matter before the Subedar, Warangal. A series of writ petitions were filed and the court passed different orders on different occasions.

While the matter of disputed lands of Rally village was pending, the State Legislature passed an Act called **the Andhra Pradesh (Telangana Area) Cancellation of Irregular Pattas and Abolition of Concessional Assessment Act, 1961 (Act No. 36 of 1961)**.The rules made under This Act prescribed the Tahsildar as the statutory authority for adjudicating the matters falling under the Act. The Pattadar was advised to approach the

Tahsildar, Luxettipet and obtain orders.

The correct thing for the Forest Department would have been to prove the requirements of the law before the Tahsildar and get the patta Cancelled. According to the Act 36 of 1961, patta of any land gets cancelled, if--

(i). Sanction of patta as bilmaktha or in excess of bilmaktha was made in settlement of ijara; and

(ii). The pattadar has not been put in actual possession of the land for the reason that the land in question is proposed to be constituted a reserved forest or has already been declared a reserved forest.

The Tahsildar, Luxettipet, without calling for proof of the present status of the lands as covered by notification of proposed reserved forest and without notice to the Forest Department, passed an order contrary to law and facts, relating to survey numbers 136 and 175 covering an extent Acs. 567-20 gts. It was held that the lands in the said two survey numbers were in possession of the pattadar. It was further stated that there was no proposal to include the lands in any reserved forest. This was an atrocious and outrageous order in deed.

The Tahsildar's order strengthened the case of the pattadar for proof of his ownership rights as he thought it would enable him to persuade the Forest Department to grant permission to fell trees in the lands in dispute. Contrary to this, the F.S.O's award was in favour of the Forest Department but that was under appeal and had been pending for decades. Rani Anasuya Devi, widow of the late VenkatMuraliManoharRao, filed an application dated 21.2.1975 before the Commissioner of Land Revenue seeking final orders on the pending appeal.

As Assistant CCF, I was caught up in this baffling situation and I was keen on giving a direction to this inveterate and complex problem instead of entrusting it to the DFO and the CF concerned. Having been well versed with the facts of the case, I delved deep into the subjects--law relating to ijara and law relating to cancellation ofpattas granted in settlement of ijara, I suggested to the CCF Sri P.S. Rao that, if we have to put an end to this intricate and vexatious matter, we should approach the Commissioner of Land Revenue and request him to take up suomotu revision of the order of the Tahsildar, Luxettipet under Act No. 36 of 1961. I explained to the CCF that an order to this effect under the Act would be all pervasive because of a non obstante clause in the Act. The CCF agreed to my suggestion. A detailed letter was drafted and sent to the Commisioner of Land Revenue on 28.1.1978 with a request take up suomotu revision of the order of the Tahsildar, Luxettipet under Act 36 of 1961.

A date for enquiry was fixed and the parties were summoned to put up their case. I appeared on behalf of the CCF and put up the case of the Forest Department while the pattadar was represented by an Advocate. The Commissioner of Land Revenue Sri M.R. Pai, IAS, heard arguments advanced on behalf of either party and reserved his judgment. Sri M.R. Pai took great pains to analyze the facts of the case under the relevant law duly exercising powers as appellate authority under the Forest Act and revision authority under Act 36 of 1961. In the order dated 29.4.1978 between Rani Anasuya Devi and State, the FSO's order was confirmed in respect of Sy. No. of an extent of Acs. 3-11 gts as a result the pattadar was entitled to compensation. Rights over the lands of an extent of Acs. 82-32 gts were recognized and it was held that they have to be compensated if they are proposed to be declared as reserved forest. The order of the Tahsildar in respect of lands of an extent of Acs. 567-20 gts was set aside. The finding of the Commissioner was that the lands were the patta of the claimant, granted in excess of bilmaktha under the law relating to ijara but the pattadar was not

in effective possession as there was no cultivation and there was a proposal to include them in reserve forest, the patta attracted the liability of cancellation under Act 36 of 1961. Assailing the order of the Commissioner of Land Revenue, Rani Anasuya Devi filed W.P. No. 2945/78. The writ petition was dismissed by the Hon'ble Justice Seetharam Reddy. The order of Tahsildar, Luxettipet, was perceived as a threat to the protection of forest. Confronted with the problem I was at my wits' end and I made no bones to grapple with it and get out of the maze. All is well that ends well. I thought.

In another case of Rally village outside the proposed reserved forest but pertaining to ijarapatta, Rani Anasuya Devi through G.P.A. G. Saya Ram filed W.P. No. 4634/79 when pemits for transport of timber were not granted for the reason that Bigawan amount towards the value of the forest growth was due from the Pattadar. An interim order was passed directing the Forest Department to grant permits. An appeal in W.A. No.336/79 was filed and the appeal was allowed. For the assistance rendered to the Government Pleader Sri P. Raja Rao in pleading the case of the Forest Department, he addressed a letter on 24.12.79 to Sri P.S. Rao, the CCF, appreciating the help he received from me and Sri G.K. Reddy,ACF (Law); an extract is reproduced as hereunder:

"....I would be failing in my duty, if I don't express my heartfelt thanks and deep appreciation for the able, prompt, sincere and qualitative assistance rendered to me, not only in this case but also in similar other matters where the Government interests are heavily involved, by two officers of the Forest Department, viz. Sarva Sri G.K. Reddy ACF and Liaison Officer, and K. Buchi Ram Reddy, Asst.CCF. I may also obliged to say that I am able to discharge my duties to the best of my ability and satisfaction as Govt. Pleader representing the Forest Department with all the able assistance rendered by the above two officers who deserve all encouragement in the hands of Government."

SOURCE; Autobiograhy

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various competitions conducted throughout the programme. The event provided an opportunity to reflect on the achievements of the twelve-day campaign and appreciate the enthusiastic involvement of students, faculty members, government agencies, environmental experts, and community members.

The World Environment Day 2026 celebrations at FCRI successfully combined awareness, education, community outreach, and practical conservation activities. Through rallies, plantation drives, cleanliness campaigns, competitions, expert lectures, nature-based learning programmes, and stakeholder engagement, the institute reinforced the importance of environmental responsibility and sustainable living.

The programme stands as a testament to FCRI's commitment towards environmental education, community participation, and sustainable development. The collective efforts of students, faculty, government departments, environmental organizations, and local communities demonstrated that meaningful environmental change is possible when individuals work together towards a common goal of building a greener, healthier, and climate-resilient future.

The author is an Associate Professor, FCRI, Mulugu, Telengana



Green Quiz – July 2026

Quiz Master : Dr. K. Tirupataiah

1. Which Foundation is supported by over 1700 corporates that provides fruit trees free of cost, geo-tags them, provides services support and gets carbon credits for farmers and corporates?
2. Which famous poet said, "Conversation about the weather is the last refuge of the unimaginative"?
3. It is a transparent free-living Nematode. Research on it fetched four Nobel prizes so far. Name it.
4. War is a big polluter. How much CO2 is produced on burning each liter of jet fuel?
5. What function do INS Ikshak, INS Nirdeshak, INS Sandhayak primarily carry out?
6. What is the term used for the official certification process ensuring a vehicle or its components comply with government technical safety and environmental regulations called?
7. What is the name of the Belgian Malinois Dog that tracked and helped capture an Elephant at Belur in Karnataka?
8. Even the venomous 'Kaliya' could not have defiled the Yamuna as thoroughly and deliberately as human beings have done over the past century or more. Name the author of 'Cobra's Gaze' who said this?
9. What is the name given to India's first dedicated train that has refrigerated coaches that carry lifesaving medicines and other sensitive equipment from Hyderabad to JN Port, Mumbai?
10. What is the name of the humanoid robot built by the Chinese smart phone maker 'honor' that outpaced human competition and set a world record for half-marathon?

For School Students

1. The 193 year old Tortoise in the Island of St.Helena is the longest living animal on Earth. What is its name?
2. By what popular name are the "coir mats" produced in Karnataka and exported all over India and abroad called?
3. What type of Carbon is produced by the impact of explosives, burning buildings and large fires during wars?
4. What type of Ammonia is produced by combining Nitrogen and green Hydrogen?
5. How many months are there in a quadrimester?

Answers on page no :56

In dwelling, live close to the ground. In thinking, keep to the simple. In conflict, be fair and generous. In governing, do not try to control. In work, do what you enjoy. In family life, be completely present

- Lao Tzu



LEGAL NOTES

Kadiyala Prabhakar Rao & Ors Vs. Government of Andhra Pradesh (Forest Dept) & Ors.

(Proof of title by Deed of Title only; Revenue Record is not a document of title)

K. Buchiram Reddy

Aggrieved by the judgment of the Division Bench of the High Court in W.A. No. 910 of 2012, the appellants approached the Supreme Court by filing S.L.P. No. 27590 of 2025. In the S.L.P filed by the appellants, it was urged that the DB has erred in reversing the order of S.J. dated 27.03.2012. The Single Judge allowed the writ petition and set aside the order of the Joint Collector's order dated 19.05.2003. The Division Bench disagreed with the Single Bench's finding that the Notification dated 06.02.1950 was ultra vires and non est in the eyes of the law because it was issued under the repealed 1326 Fasli Act. But it was held that a Notification is not invalidated merely because it was issued under the wrong enactment, provided it is not inconsistent with the provisions of the new Act.

The appellants' claim was right of ownership over land in Sy. No. 81 of Kalvalanagaram village having an extent of Acs. 600 and therefore it is not open to the Government to declare the land as reserved forest.The claimants in support of their claim produced copies of proceedings and orders by Land Reforms Tribunals, Copies of Revenue Records and other documents. The appellants contend that in 1920 (1330 F) rights were created in favour of SivaiJamadars, and the same were mutated in favour of the claimants in about 1931.

The Joint Collector by his order dated 19.05.2003, rejected the appellants' proprietary claim and held that the claimants failed to produce original documentary evidence.Although records for the mutation for thearea of Acs. 600.00 to the primary claimants were unavailable; it was admittedly destroyed during police action in 1948. The claimants failed to produce any original pattas or documentary evidence tosubstantiate how the claimants came into possession of Ac.300.00 each. For these reasons, the writ appeal set aside the order of the single Judge.

The Supreme Court Bench comprising Hon'ble Justice Pankaj Mittal and Hon'ble Justice D.V.N.Batti heard the arguments of the appellants submitted that the claim to the subject matter is established through Revenue Records: (a) Faisli Patti for 1342 Fasli (b)Pahanis for 1347 Fasli and 1356 Fasli and several years and an extract of VaasoolBaqi of 1352 Fasli. It is argued that they impugned judgment fell into error by observing that no piece of document has been placed on record before the Court to show how the names of the two claimants were mutated in the revenue records. According to the appellants, the revenue extracts established their claim to the subject matter. The report of the MRO dated 07-01-1990 fortifies that the revenue records stand in the name of claimants and the title is presumed to have been in favour of the appellants, and governmentipse dixit cannot treat the subject matter as available to declare in forest land. The respondents certainly declared the subject matter as forest land after the claim is adjudicated and compensation paid to claimants.

The controversy in the civil appeal centers around faisalpatti, VasoolBaqi and Pahanis in favour of appellants. The appellants do not place on record the documents of title i.e the patta, standing in their

names or their other predecessors in interest. The writ court has accepted the claims to the title and effectively directed the exclusion of subject matter from the proposed notification, designating it as a reserve forest. Therefore it is appropriate to test the case of appellants on the evidence produced by them. The evidence is summarized as below:

1. Entries in revenue record or jamabandhi serve only "fiscal purpose". Their primary function is to enable the person to whose name is mutated in the records to pay the land revenue in question.

2. A revenue record is not a document of title and does not confer any ownership or title upon the person whose name appears in it.Further, mutation does not create or extinguish the title and as absolutely no presumptive value regarding title.

3. The mere acceptance of municipal or agricultural taxes or the granting of bank loan based on these records does not stop the state from challenging the ownership of the land.

4. While they do not prove the title, the revenue records can raise a presumption regarding possession. Maintenance and custody of revenue records is the exclusive domain of the patwari and it is not uncommon that revenue records are often tinkered with by him to suit the exigencies.

5. Stray or solitary entries recorded for a single year do not raise a presumption of rights and cannot be relied upon against long, consistent course of revenue entries infavour of another party.

6. The creation of fabricated records in collusion acts as a camouflage to defeat the legal rights of the actual tiller, and the government is not bound by them.

The HonourableSupreme Court felt that the Single Judge expanded the scope of judicial review, and for all purposes declared the claim of the appellants as maintainable for the title to the subject matter.Sucha course is unavailable and the same has been rectified through the impugned judgmenthaving noted the claim and the documents on which the appellants are relying, the court was of the view that the life of the litigation need not be extended by leaving upon few non existing issues for a decision either by an authority or a court.Consequently the civil appeal fails and is dismissed. **Resultantly, the land in Sy.No.81 of Kalavalnagaram village in KarkagudemMandal and BhadrariKotohagudem district of an extent of Ac.600.00 is restored to the Forest Department.**

Source: The judgment of S.C dated May 6,2026.
K.B.R

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Answers: 1.Sankalpataru Foundation, 2.Oscar Wilde, 3.Caenorhabditiselegans, 4. 2.5 kg of CO2, 5.Navigational survey of Indian coast, 6.Homologation,7.Issa,8. Stephen Alter, 9. Aushadi Express,10. Lighting

For School Students: 1.Jonathan, 2. Dutch mats, 3. Black Carbon (more dangerous for heat trapping),4. Green Ammonia, 5.Four months

Felicitation of a nonagenarian Forester

D. Venkateswar Reddy

A remarkable personwas born on 20thJune 1932, who later became one of the most respected and distinguished officers of the Forest Department. He is none other than Sri J.V. Sarma, IFS (Retd.), an alumnus of the Southern Forest Rangers College, Coimbatore, where he underwent professional training during 1955–57. Even at the age of ninety-four, Sri Sarma continues to be admired for his vast knowledge, humility, sincerity, and above all unwavering commitment for conservation of forest-wealth.

On 20 June 2026, Sri J.V. Sarma completed his ninety-fourth year. To mark this memorable occasion, a felicitation program was organized at Telangana Contractors Cultural Club, Hyderabad, a prestigious venue known for its excellent facilities and great ambience. The event was celebrated not only for his long span of fruitful life but also his invaluable contribution to preservation of human values in general and conservation of forests in particular.

The program was conducted on the initiative taken by Sri Nagabhushanam, IFS (Retd.), with the supportrendered by Sri.A.Kishan, DFO (Retd.), and Sri D.B.S. Rao, DYCF (Retd.). Distinguished retired senior forest officers, Sri C. Madhukar Raj, IFS (Retd.) and Sri P.K. Jha, IFS (Retd.), attended the function and added dignity to the meeting.

The felicitation began with the presentation of shawls to Sri J.V. Sarma by retired senior colleagues of the department, followed by the offering of flower bouquets by other participants as a mark of respect and a conventional practice.

To begin with Sri C. Madhukar Raj, IFS (Retd.),spoke at length about the exceptional erudition, wisdom, and pragmatic approach of Sri J.V. Sarma concerning forests which are intricate self- sustainingeco-systems. Recalling his early years of service in Adilabad District, he narrated how he came under worthy influence of Sri Sarma and benefited immensely by his advice and meaningful support. He explained that whenever he faced difficult situations relating to forest protection and administration, Sri Sarma's guidance gave him clarity of thought enabling him to imbibe more confidence. He gratefully acknowledged that the values and strength he developed as an officer were largely due to the guidance of Sri Sarma which caused the strengthening of ethical values in him. Even today, according to his assertion he considers Sri Sarma as an elder brother and a source of inspiration.

This was followed by the address by Sri P.K.Jha,IFS (Retd.), who highlighted the significant contributions made by Sri J.V. Sarma throughout his career. He particularly referred to Sri Sarrma's efforts in matters relating to the Recognition of Forest Rights Act and his persistent efforts to place the issue of deprivation of forest-dependent tribal communities in case of livelihood benefits they have been getting for decades together before the judiciary. Sri Jha appreciated Sri Sarma's commitment in safeguarding both forests and the interests of tribal communities living in forest areas for generations.

Sri P.K. Jha also praised the scholarly articles written by Sri J.V. Sarma over the years. He took pains in compiling the articles as a compendium

along with Sri J.S.N. Murthy, IFS (Retd.), and Sri Nagabhushanam, IFS (Retd.), for the benefit of future generations.

After the speeches of Sri C. Madhukar Raj and Sri P.K. Jha, several other retired officers and colleagues shared their memories and experiences with Sri Sarma. Among them were Sri Nagabhushanam, IFS (Retd.), Sri V.V.HariPrasad, Dy.C.F (Retd.), Sri D.V. Reddy, Dy.C.F (Retd.), and ShriSehebIchay, Retired Accountant. Each speaker reflected on the close association they had with Sri Sarma and expressed their admiration for his concern, knowledge, and perseverance for the cause of protection of forests.

The program concluded with a heartfelt valedictory address by Sri J.V. Sarma, IFS (Retd.). His words reflected the same humility and wisdom that have earned him the respect and affection of generations of forest officers for decades together.

Apart from the speakers, the function was attended by several retired officers and well-wishers, including Sri M.J. Akbar (Retd.), Sri Dr. Narasaiah, IFS (Retd.), Sri D.B.S. Rao, Dy.C.F (Retd.), Sri VenkataramNarasaiah, Dy.C.F (Retd.), Sri A. Kishan, DFO (Retd.), and many others.

After the successful completion of the program, all participants gathered for lunch atthe restaurant. The occasion provided an opportunityto the participants to have an intimate timefor sharing memories and renewing their bonds of friendship thereby sustaining the professional camaraderie.

The felicitation of Sri J.V. Sarma was not merely a celebration of age, but a tribute to a life dedicated to conservation of forestsandabiding to moral values in ourday to day lives. His legacy continues to inspire present and future generations of forest officers for coming number of decades.

(The author, Sri D. Venkateswar Reddy, is a retired Deputy Conservator of Forests and a member of Telangana A.P. Retired Forest Officers Association.)

Compassion lies at the heart of the spiritual path. It is not a luxury or something reserved for saint. It is the very essence of our humanity. Without compassion, peace within remains out of reach, and without inner peace, peace in the world cannot take root. Compassion is not just a feeling. It is a deep and enduring concern for the suffering of others, paired with a wish to relieve it. Unlike pity, which looks down on others, compassion arises from recognizing our shared experience. Others, like us, wish to be happy and free from pain. This simple truth forms the basis of a compassionate life.

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Felicitation of Sri J.V.Sarma, IFS (Retd.)
A Crusader against Forest Rights Act

Photo : Sri V.V.Hariprasad, Dy.CF(Retd.)

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