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*Vanapremi wishes its readers
a devotional Maha Shivarathri*



Dr. P.L. Gautam
former chairman NBA
Honoured with Padma Shri
on R'day 2026

Baya weaver at Haldwani;

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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 Lalgudi 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)

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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From the Editor's Desk...

Dear readers of Vanapremi, Namaste,

Hope you could make some priority resolutions for 2026. I hope you are still keeping them and working on them. I am sure that if you cross February working on your resolutions, you have a very high chance of continuing and completing them. Good luck.

January end has seen probably the 'World's largest Adivasi Jathara', the Sammakka-Saaramamma Jathara held over four days, once in every two years (even numbered years) at Medaram village in Mulugu district of Telangana. It is regarded as the second largest human congregation after Kumbhmela. What started as a local festival, grew in size and organization during the Nizam/Mughal period and continues to grow as a 'state festival' and probably a 'national festival' next.

This month's Vanapremi covers a feast of articles on subjects of national importance. The issue of Aravalli mountain range is 'raging' and has implications for 'indian forestry' with a chance to look at 'incremental progress' balancing development with balancing nature. Indian forests are faced with ever fast spreading 'alien species' and urgent and multi-pronged measures are called for to address the issue. The 'green revolution' baskets are faced with waterlogging and greening appears to be one of the best bets to reclaim these lands.

On the wildlife front, an unfortunate train accident led to the killing of a horde of elephants in Assam. Analysis of the incident and measures to prevent such accidents are discussed in an article. Project tiger had been a great success. 'Tiger's brute force' discusses its anatomy and special characters that make tiger the fearsome animal that it is. However, excess tigers in an area have emerged as a consequence. What could be done by various stakeholders is discussed in an article. Open wells of yore have become dangerous traps for wild animals and rescuing them is a gigantic task. Rescue of a Bison from a well is documented with such detail that it could serve as a manual. Animal laws in general are discussed in detail and I am sure it benefits readers of all categories. 'Roller birds' are considered very auspicious. Their population is dwindling rapidly. Types of rollers, their significance and actions required to save them are discussed in an article.

A national seminar on 'Environment & Waste management' was held in the Forest College & Research Institute, Mulugu and a few pictures from it are presented. Similarly, the TG Forest Academy conducted a workshop on 'Accounting Procedures, Pensions and GPF related Issues' and pictures from it are presented.

Legal Note in this issue covers a landmark judgment by the Supreme Court that came in favour of the forest department after decades of prolonged legal battle. Under Sri.KBR's able guidance, the forest field staff put in dedicated efforts to collect and present material that clinched the issue in favour of the forest department. It once again highlights the importance of maintaining all relevant records of forest lands.

'Mischief' is sometimes the 'enlightener'. An incident of mischief during training and its impact is explained lucidly that could bring smile on the retired and a chuckle on the serving, alike.

In the past month we lost two illustrious members of the Indian Forest Service: Sri.P.S.Shankar Reddy and Dr.R.Sundarvanan. Vanapremi conveys its deepest condolences to the bereaved families and pray to God almighty to bestow courage to them to overcome this great loss. May the departed souls attain Sadgati. Om santhi, Om santhi, Om santhi hi:

Happy reading.....

Dr.K.Tirupataiah, IFS (Retd), Editor



SAVE ARAVALLIS FROM EXPERT COMMITTEES

Dr.UMA SHANKER SINGH, IFS (Retd), DSc

INTRODUCTION

Aravalli range is under serious ecological threat because narrow, technical definitions leave large parts of the hills without legal protection. The Aravallis are a living ecological system. Their role in groundwater recharge, climate regulation, and prevention of desertification is extremely important. Any expansion of mining activity in the Aravalli region would have severe and irreversible consequences, it would accelerate the depletion of groundwater, drying up of wells and traditional water bodies, intensify dust pollution, and worsen public health conditions across Rajasthan, Haryana, Gujarat, and Delhi-NCR. Most of the farmers, common citizens, pastoral communities, and rural populations would bear the brunt of this ecological damage.

Despite the conservation rhetoric, the fundamental problem remains unaddressed, environmental protection requires policies grounded in science, transparency, and respect for domain expert advice. The environmental experts have rightly questioned whether the government's steps genuinely address the risks created by the new definition and warned that disregarding concerns raised by statutory bodies and ecological experts could weaken environmental safeguards and erode public trust. I am becoming more convinced that the responsibility of citizens, civil society groups, and environmental activists to remain vigilant should be comprehensive and sustained public engagement, scientific advocacy, and grassroots mobilisation were essential to protect the Aravallis from irreversible damage.

Destruction of nature in the name of development

is neither constitutionally sound nor morally correct. Protecting the Aravalli range is essential for environmental security, public health, and the rights of future generations. A complete ban on mining in the Aravalli region, the phased closure of mining activities in ecologically sensitive zones, and strict action against illegal mining across the entire range are the need of hour. We also urge that the Aravallis be declared a Critical Ecological Zone with long-term and stringent legal protection.

ARAVALI IS OLDER THAN THE ADVENT OF MANKIND

After about a decade of court orders banning mining in the Aravallis, the issue suddenly became about 'what are the Aravallis? The court noticed how in many places mining and quarrying were continuing, with the justification that the area doesn't officially fall under the Aravallis. The question of definition has been pushed by mining lobbies. What is even the need of 'defining' the Aravallis? Have we ever defined the Shivaliks, the Vindhya, or the Himalayas? Everyone knows what the Aravallis are; they're self-evident. Part of the reason the Aravallis are so endowed with mineral deposits is their age. Geologically, the Aravallis date back to a time when the Earth was still undergoing major changes to become what it is now. The Indian subcontinent as we know it did not exist, and the Indian plate was part of the Gondwana landmass. Aravalis are formed during the Proterozoic era, roughly 1.8-2 billion years ago, therefore, they are known as 'fold mountains' since they were created when tectonic activity led to plates folding together. The Aravali hill ecosystem is older than the dinosaur fossil

which is only about 245 million years old, even ancient humans showed up a million years ago, geologically, the Aravallis predate the Himalayas by hundreds of millions of years.

DEFINITION OF ARAVALI AS GIVEN BY SC ON 20th NOVEMBER 2025

Now, the legal debate appears to take a new dimension after the apex court has stayed its own order last week. In the month of November, to be very precise on 20 November 2025, the Supreme Court adopted a first-of-its-kind "uniform" definition of the Aravallis across Gujarat, Haryana, Rajasthan, and Delhi as part of the 650-km-long Aravalli ranges in northwest and ruled that Aravalli hills will now qualify as such only if they are 100 metres or more in height across any of the 37 Aravalli districts. An Aravalli range, meanwhile, will consist of two or more such hills located within 500 metres of each other. The most interesting part of the judgement was the observation of the court which noticed that one of the major issues with regard to the illegal mining was on account of different definitions of Aravali Hills/Ranges as adopted by the different States.

Therefore, it becomes evidently clear that the SC was in a state where mining was predominantly hanging as a central issue and their priority was to decide which area could be mined and which area be left based on a definition. The conservation of Aravali was not on their priority list at all. It's the same definition that the SC had rejected in the year 2010 despite the fact that the Rajasthan government had been using this definition for the last 20 years in the complete knowledge of the court. This must be borne in the mind that for a highly eroded mountain range characterised by undulating ridges rather than towering peaks, this definition is effectively a death knell for Aravali. The nation has witnessed the Aravallis in Haryana sliced

and butchered like salami in front of her eyes, and experienced the environmental consequences of this concretisation therefore, this is rightly called in the many literatures that 'no Aravallis, no life'. Aravallis play an important role in maintaining the region's tree cover and water table. They also act as natural barriers against the spread of the Thar Desert, protecting cities such as Alwar, Jaipur, Delhi, and Gurugram from desertification.

COURT ON ARAVALI

For years before and after the 1992 notification, the Aravallis were protected by courts and governments with no real need to define them. As cases of mining, deforestation, and construction began cropping up, the Supreme Court passed successive orders restricting or banning these activities in specific areas, but did so without relying on formal definitions. In 1996, 2004, and 2008, SC judgments under the MC Mehta vs Union of India case sought to preserve parts of the Aravallis and their green belt against deforestation and mining. In these hearings, what constituted the Aravallis was treated as self-explanatory and was not a point of contention.

This is beyond anybody's imagination that do we ever need a definition to protect any hill of Aravali importance to be defined? The courts are very powerful otherwise and able to protect anything from degradation. The Supreme Court noticed that mining and quarrying were continuing in many places, with the justification that the area doesn't officially fall under the Aravallis but this could also be tackled with a clear judgement on complete ban on mining. It was only in 2010 that the Supreme Court decided to take up the question of defining the Aravallis. It, however, did not accept the Rajasthan definition back then.

In 2006, the Rajasthan government had adopted a definition based on geologist Richard Murphy's

classification, using a 100 m height benchmark to determine whether a hill qualified as part of the Aravallis or not. In areas that did not meet the benchmark, the Aravalli mining restrictions did not apply. But the Supreme Court in 2010 pulled them up on it, and said that this was Rajasthan's 'deemed' definition of the Aravallis.

The court instead instructed the Forest Survey of India to conduct ground truthing exercises and define the Aravallis accordingly. This 2010 Forest Survey of India (FSI) report demarcated the Aravallis in Rajasthan's 15 districts as covering around 40,481 sq km. The FSI also mapped 12,081 hills as belonging to the Aravallis in these districts, out of which only 1048 (8.7%) were over 100 m in height. The FSI also proposed a definition based on terrain rather than height, identifying Aravallis as hills with gentle slopes, a 100 m foothill buffer, and a distance of 500 m between hill formations.

Ironically, in 2025, the court faced the same choice it had in 2010: a 100 m height parameter but this time backed by the MOEFCC committee or the Forest Survey of India's 2010 terrain-based definition. There was no further explanation provided on how this would happen, and no data on how the Committee's '100 m' definition would include more area. To date, the Government of India has not conducted a comprehensive survey of the Aravallis to verify how much area the range covers, how many hills there are, or how many rise above 100 m in height.

The MOEFCC committee report also did not spell out why the 100 m cut-off was chosen. If this definition would have been continued then I am sure that more than 90 % of the Aravallis would no longer count as Aravallis. The best mining is done in the foothills, because that's where the richest deposits are.

RAJASTHAN RULES, A GAYTEWAY FOR COMPLETE DESTRUCTION OF ARAVALI

Even as the Centre faces the heat over a potential threat from the public anger over the destruction of Aravali and SC adoption of a definition which was pregnant with a complete annihilation of the hill ecosystem, the court initiated suo motu proceedings and stayed its own order of former CJI.

Interestingly, the Rajasthan government, earlier this year, formally opened large parts of urban hill terrain to a range of "low-density" activities. This was done under the Model Regulations for Conservation of Hills in Urban Areas, 2024, which the state government first came out with last year and approved in April 2025. The Regulations, which replaced the 2018 hill conservation norms, classify hills into three categories based on slope. Areas with a slope of over 15 degrees (Category C) are declared non-developable, while hills with a slope between 8 and 15 degrees (Category B) have been earmarked for activities such as farmhouses, resorts, amusement parks, wellness and yoga centres, camping sites and solar power projects.

Category B areas, projected by the government as conservation-compatible zones, include significant portions of the Aravalli range falling within urban limits. Hills with a slope of up to 8 degrees have been classified as Category A, where development has been kept largely in line with existing urban planning frameworks. Public utility infrastructure has also been permitted in all the zones.

Categories A and B run counter to the Forest Survey of India's (FSI) 3-degree slope formula, which counts all areas above the minimum elevation of an Aravalli state, 115 metres in the case of Rajasthan with a slope of at least 3 degrees as Aravalli. The widening of permissible uses in Category B hills

risks incremental erosion of one of North India's oldest mountain systems under the guise of low-density development. Under the 2024 Regulations, in Category B, resorts have been allowed to be developed on a minimum of two hectares with up to 20 % land coverage, while religious, spiritual and wellness centres are permitted on plots as small as one hectare. Farmhouses are allowed with ground coverage of up to 500 square metres within a minimum area of 5,000 square metres, subject to height restrictions. Hill cutting of up to three metres has also been permitted in Category B areas, subject to approvals and compliance conditions.

Category C comprises hills with slopes exceeding 15 degrees, which have been declared non-developable, with a general prohibition on construction and activities. However, the regulations allow exceptions for public utilities such as electricity and water supply, and also vest the state government with powers to permit land conversion or use in "special circumstances" based on the importance of individual cases.

GEOLOGY OF ARAVALI

Aravalli Range, hill system of northern India, running north-easterly for 350 miles (560 km) through Rajasthan state. Isolated rocky offshoots continue to just south of Delhi. The series of peaks and ridges, with breadths varying from 6 to 60 miles (10 to 100 km), are generally between 1,000 and 3,000 feet (300 and 900 metres) in elevation. The system is divided into two sections:

(A) The Sambhar-Sirohi ranges, taller and including Guru Peak on Mount Abu, the highest peak in the Aravalli Range (5,650 feet [1,722 metres]); and

(B) the Sambhar-Khetri ranges, consisting of three ridges that are discontinuous.

The Aravalli Range is rich in natural resources

(including minerals) and serves as a check to the growth of the western desert. It gives rise to several rivers, including the Banas, Luni, Sakhi, and Sabarmati. Though heavily forested in the south, it is generally bare and thinly populated, consisting of large areas of sand and stone and of masses of rose-coloured quartzite. In most of the areas of Aravalli hills, there are only exotic acacias. Because of these, the local vegetation is gradually disappearing (Gupta, H. 2022).

ARAVALI IS A LIVING ECOSYSTEM

The controversy over the redefinition of the Aravalli Hills has reignited a crucial question about how India protects its living landscapes. In late November 2025, the Supreme Court accepted a new uniform definition that recognises only those landforms rising at least 100 metres above the local terrain as the Aravalli hills and sets spatial criteria to group them into ranges. Later the court stayed its own order in the backdrop of critics arguing that the change could strip legal protection from over 90% of existing Aravalli hills, most of which are lower ridges and hillocks that underpin essential ecological services.

The developments raise a pressing policy question: Can an elevation-based legal definition adequately protect a landscape whose value lies in its ecological function and, if not, what must India do differently? First, legal definitions must align with ecological function rather than rigid geometric thresholds. Scientific terrain mapping, using digital elevation models, remote sensing and GIS, aims to bring clarity to regulatory frameworks. Yet the Aravalli system is not a series of isolated peaks. Of more than 12,000 mapped hills at least 20 metres high, only about 1,048 (8.7%) exceed the 100-metre cut-off now used in legal classification. Scientific terrain mapping, using digital elevation models, remote sensing and GIS,

aims to bring clarity to regulatory frameworks. These low-elevation ridges, often between 20 and 50 metres, act as the first line of defence against desertification, modulate wind and dust flows, and play a disproportionate role in shaping local microclimates and soil stability. Scientific and ecological research shows that terrain features that do not cross a height threshold can still exert significant influence on hydrology and ecosystem connectivity, yet under the new legal rubric, they risk being overlooked or deemed expendable.

It is not enough for the law to map hills; it must account for the functions those hills perform. Half of the human population depends on mountains. Defined by elevation above sea level (minimum between 300 and 1000 meters, depending on latitude), steepness of slope (at least 2 over 25 kilometers, on the 30 arc-second grid), and excluding large plateaus, mountains occupy about one fifth of the terrestrial surface. Twenty percent (1.2 billion) of the world's human population lives in mountains or at their edges, and half of humankind depends in one way or the other on mountain resources (largely water). Mountains are characterized by high biodiversity.

Because of the compression of climatic life zones with altitude and small-scale habitat diversity caused by different top climates, mountain regions are commonly more diverse than lowlands and are thus of prime conservation value. They support about one quarter of terrestrial biodiversity, with nearly half of the world's biodiversity hot spots concentrated in mountains.

Thirty-two percent of protected areas are in mountains (9,345 mountain protected areas covering about 1.7 million square kilometres) Güngöroğlu, Cumhur (2022). India must, therefore, adopt functional ecological criteria, for example, recharge potential, slope integrity, vegetation

continuity and corridor connectivity- alongside elevation. Only then will legislation protect what truly matters in environmental and climate resilience, rather than what is convenient to measure. Without this shift, a vast proportion of an active ecosystem risks becoming "invisible" to law even as it continues to regulate dust, climate and water flows.

Second, climate adaptation and disaster-risk planning must explicitly integrate these functional landscapes. The Aravallis historically slowed desertification and regulated local micro-climates, a role that over time will only grow in importance. Future climate risk frameworks should mandate that landscapes with measurable hydrological influence be incorporated into flood zonation, urban heat action plans and drought preparedness strategies irrespective of arbitrary height thresholds.

Third, the fundamentals of water security in rural India must be foregrounded in any Aravalli policy. The Aravalli hills act as a vast, fractured rock sponge that captures monsoon rain and recharges groundwater aquifers. Central Ground Water Board assessments have documented groundwater levels falling by more than 60% over two decades in parts of Haryana and Rajasthan, driven by over-extraction, loss of vegetation and disruption of natural recharge zones. The Aravalli hills act as a vast, fractured rock sponge that captures monsoon rain and recharges groundwater aquifers. Delhi-NCR's environmental resilience also hinges on how we treat the Aravallis. The region is home to more than 46 million people and routinely registers some of the highest ambient particulate matter concentrations globally during winter months, with PM2.5 episodes reaching hazardous levels. While anthropogenic combustion sources are a dominant factor, the natural topographic barrier that the Aravallis provide dampens dust transport from the

Thar Desert and regional plains. Research and monitoring indicate that when lower ridges are breached or removed, dust loads can spike by 4–6 times, exacerbating poor air quality episodes.

As urban heat islands intensify under climate change projections, the contribution of natural green and rocky buffers to moderating surface temperatures becomes even more critical. Urban planning for the Delhi-NCR must treat the Aravallis as essential natural infrastructure, integrating them into master plans, disaster management frameworks and climate adaptation strategies.

CONCLUSION

The mining operations have been totally unscientific and unplanned without environmental considerations. They don't even follow a properly monitored Environmental Management Plan. The biodiversity should be supported and conserved; for which the Government and the local people should involve heartily and work in sync. Mining should not be allowed at all, if practices involved are unsustainable. This can aid in keeping a safe and clean environment which can be provided to our future generations like we received from our ancestors (Dutta et al. 2014).

The Supreme Court, in late December 2025, stayed its earlier judgment (November 20, 2025) defining Aravalli Hills, citing concerns that a restrictive definition (100m elevation/500m cluster rule) could lead to massive mining and ecological damage, and ordered the formation of a new, high-powered expert committee to reassess the definition and ecological impacts before any

implementation. The sentiment that "committee formation in any complicated issue does not lead to solution" reflects a common, often justified, frustration with bureaucratic processes, commonly known as "death by committee". While committees are intended to bring diverse expertise to solve complex issues, they frequently fall short due to inefficiency, groupthink, and diluted accountability. In its earlier judgement also the then CJI Justice Gavai had constituted an expert committee while formulating a new definition on Aravali and six of the committee's nine members were bureaucrats, its chairman and MoEF secretary, the MoEF joint secretary, and the four forest secretaries of Aravali states namely, Delhi, Haryana, Rajasthan and Gujarat. The other three were a representative each from Supreme Court's Central Empowered Committee (CEC), Forest Survey of India (FSI) and Geological Survey of India (GSI). There was no one as practicing ecologist or a production biologist. The CEC is short on expertise and the FSI and GSI are professional bodies alright but not experts in handling live ecosystem.

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Forestry in India: Transformative Changes for Climate Change Adaptation

Dr. D. Nalini Mohan, IFS (Retd)

India's forestry sector must undergo systemic reforms to withstand climate change. Integrating climate-resilient species, empowering communities, embedding adaptation indicators into policy, and leveraging technology for monitoring. All these are essential to restore biodiversity, livelihoods, and carbon neutrality goals.

Introduction

Forests in India are not only ecological assets but also cultural and economic lifelines. They regulate water cycles, store carbon, provide livelihoods to millions, and safeguard biodiversity. Yet, climate change threatens these functions through rising temperatures, erratic rainfall, prolonged droughts, and intensified forest fires. According to scientific studies about **45% of India's forested grids are projected to undergo ecological change by the end of the century**. This includes the altitudinal zonation of different types of forests may shift, species composition in different agroclimatic zones may undergo change, growth cycles of different organisms may be altered etc. This makes forestry reform central to India's climate resilience strategy.

Climate-Resilient Afforestation and Reforestation

Current challenge: We are aware that monoculture plantations (e.g., eucalyptus, acacia) etc were grown in public and private lands starting from 1980s till about 2010 across the country over large extents of area primarily to meet the needs of pulpwood and other wood based industries and to meet the firewood needs of local people. They have reduced the biodiversity and water availability

as evidenced by many studies published.

Needed change: The silvicultural practices have to be made resilient with mixed plantation models **native, mixed-species plantations** which meet the needs of the communities as well as the wood based industries for the present and future also. This can be achieved by planting long rotation hard wood species with multipurpose short rotation which are drought- and heat-resilient, and consciously maintain the biodiversity of locality. Encouraging **assisted natural regeneration** in degraded lands instead of clear felling method used in monoculture is strongly recommended. There is an urgent need to expand **urban forestry** to mitigate heat islands and pollution. The case of Odisha's mangrove restoration after the 1999 super cyclone is a very good example as to how climate-resilient species can buffer coastal communities against extreme events.

Community-Centric sustainable Forest

Governance

Current Challenge: Forestry remains largely top-down, with limited focus on meeting the needs of the local communities and recognition of rights and concessions and local practices of the local communities. unless government is able to provide the food, fodder and firewood to the local communities, they continue to exploit the forest areas nearer to their villages as these are essential for their survival. These activities lead to degradation and loss of ecosystems services potential of the forest areas. If adequate employment and income generating avenues are not provided by the government, landless poor would continue to resort to encroachment of forest lands and cause

deforestation.

Needed change: There is no alternative to involving people in forest management even though past experience with **Joint Forest Management (JFM)** was not so encouraging after showing promise initially for about two decades (1990-2010 approx). The possible solution may be to revive and strengthen it by bringing in required safeguards to prevent destruction and alienation of forest land by selfish individuals or vested interests sponsored by political parties resorting to encroachments. Reforms are required to ensure usufruct sharing and legal remedies to real beneficiaries by fair and equitable distribution of benefits from natural resources protected and managed by the local communities. The administrative policy of protected areas has to adopt **coexistence rather than coercion** and displacement. This process has to be done duly integrating climate adaptation goals for sustainable forest management. Experts opine that such a change is not feasible without the role and **empowerment of women and indigenous communities**. Another aspect of importance is to recognize the **traditional ecological knowledge** as a formal pillar of policy. We can find an example of women in Bundelkhand who have revived drying water bodies and adjusted cropping patterns, building resilience long before formal climate plans reached their villages.

Forest Fire Management

Current challenge: Rising temperatures and prolonged droughts increase fire frequency and severity. One of neglected aspects of forestry in India is forest fire management. It has been largely reactive by the forest departments all over the country rather than proactive. The **forest fire hotspots** are high in Madhya Pradesh, Himachal Pradesh, Uttarakhand and Northeastern states with Mizoram topping the list in the region. The MoEF & CC's approach to forest fires is advisory in nature

mostly through automated fire alerts from the Forest Survey of India rather than mandatory in nature. Forest Survey of India (FSI) reports highlight a **significant upward trend in forest fire incidence over the last decade**, with detections rising dramatically (e.g., **186% increase from 2013-2021**) despite overall forest cover growth, affecting over 36% of India's forests, causing huge losses to resources and biodiversity, primarily driven by human activity and exacerbated by climate change. It is noticed that there is no correlation between the allocations made for forest fire management through various schemes compared to the number of fire incidents and damages occurring across the country as evidenced by meagre allocations and spending under **Green India Mission**, MoEF & CC's projected response to climate change. Though the exact amount expended on forest fire management especially on building infrastructure and resilience for forest fire management and the damages caused by fires is not readily available but it is insignificant. Another major study highlights the direct influence of climate conditions (temperatures and rainfall) on forest fire occurrences, climatic impacts, spatial patterns, and interface with anthrax incidence (Sagar. A et al, 2024).

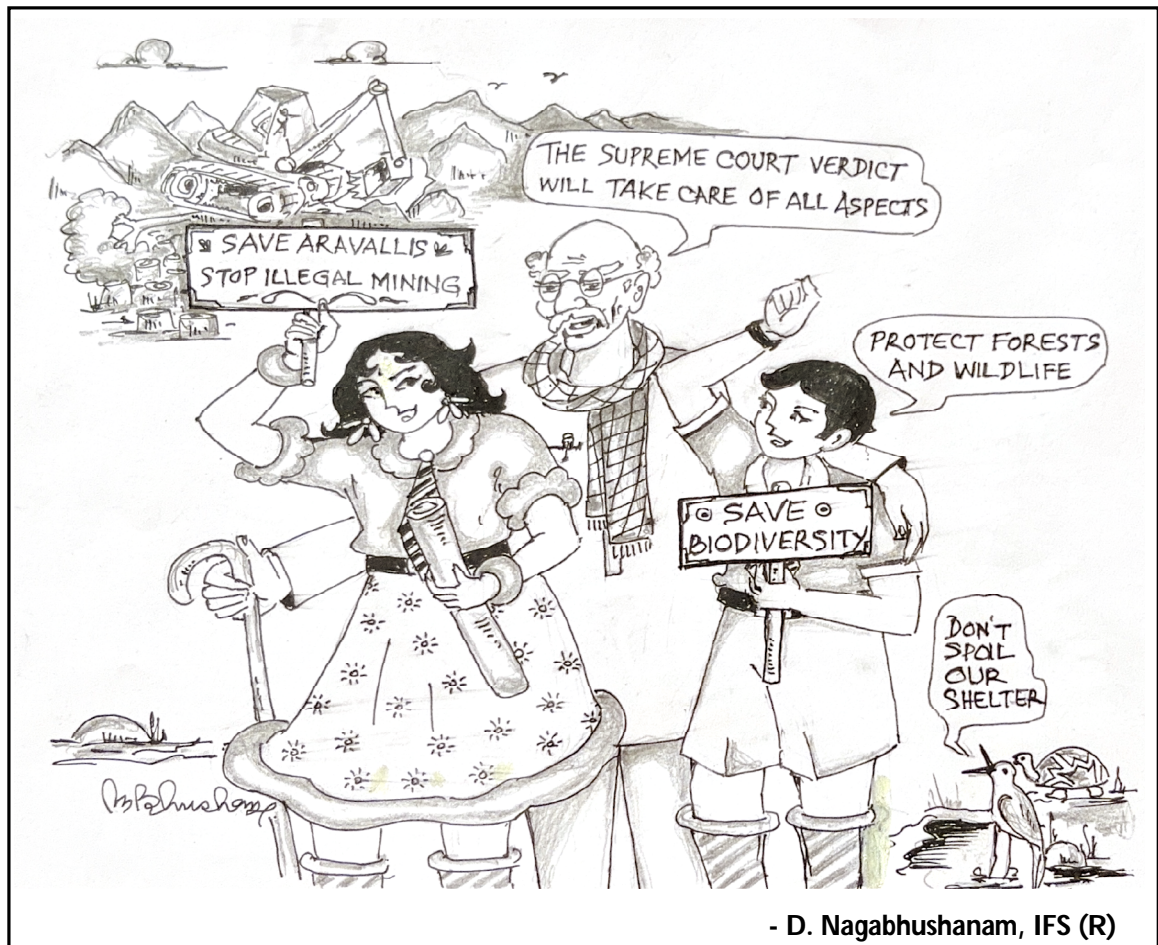
Needed change: There is a need to establish/expand the early warning systems using satellite and AI. Govt has to make policy initiatives and incentivize the states preventing and reducing fire incidents and losses and protecting forests. Mandatory budget allocations exclusively for fire prevention infrastructure and upskilling manpower have to be prioritized. Focus required on training and capacity building to frontline field staff and the local communities. Initiatives like awareness campaigns to sensitize local communities and establishing community fire brigades as tried in Protected areas of Andhra Pradesh in 2018-20 for rapid response can be extended. The forest base camps

established in some vulnerable areas in Andhra Pradesh and Telangana states are found to be effective and can be extended and strengthened. Protocols have to be established for infrastructure to prevent and fight fires including suitable vehicles fitted with equipment, integrating the use of military aircrafts and helicopters for forest fire fighting in case of exigencies as establishing a fleet for forestry alone is capital intensive. There is

need for shifting from reactive suppression to adaptive fire management that contributes to resilient forest fire management systems over a period of time. The 2026 amended Forest Conservation Guidelines allow non-government participation in restoring degraded forest land, which can include fire-prevention activities.

(To be continued)

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- D. Nagabhushanam, IFS (R)



Science, Environment, Spirituality and Nature:

A classic case of an 'Incremental Progress'!

"Roads to science and spirituality are opposite,
but we should try to trend both"

Dr B. Raghotham Rao Desai, IFS (R)

Introduction & the Background:

Justifiably, and understandably there is a sense of euphoria, pride, and sheer joy at what the Nation has achieved—having become only the fourth country to land a spacecraft on the lunar surface, and the first to do so near the moon's south pole. Still no one in ISRO said 'I did it' and team members were noteworthily-invited to face the cameras—its leadership giving full credit to the leaders, past & present, showcasing the team spirit that was so crucial for the mission, by stating 'This is not our work alone, it is the work of a generation of ISRO leadership and ISRO scientists....**This is 'incremental progress'!**

And what do we find aftermath? While the ISRO chief showed he could traverse all worlds, the politicians are rushing to hog credit—a lesson in leadership and credit sharing! While we certainly learn a lot when we look outside, but Indian thought and spiritual traditions are being brought into play to teach us that we learn a lot more when we look inside!!

Perhaps **it is true to our tradition of respecting nature, to worship nature, and to learn from it**, instead of turning this into a tool to use the language of domination & control (or to '**torture nature to force it to reveal its secrets**') as **Francis Bacon (1561-1626) the 'Father of Scientific Revolution' put it**. But, without the approach and tools of science, blind belief runs the risk of listening to and promoting superstitious thought—this

being, however, the very approach some of the ruling elite (and their minions) have brought back in the name of rediscovering our roots!

On the other hand, **without reverence for nature and all that it provides us, the enterprise runs the risk of becoming an exploitative model that has brought us the age of the anthropocene and the Climate Crisis** that confronts humanity today—the crisis being global, and its **answer coming in the form of various ecological movements** that are raising new questions on the ideas of progress for mankind! These challenges are completely alien to the ruling elite (and the minions) who speak the language of domination and in the process, **go about destroying natural systems in the mindless hope that this is how India can grow and become a superpower in the new order!!**

The thought process analysis:

It is needless to say and I would like to reiterate that **spirituality is not religiosity**—a person practicing any religion (or indeed practicing no religion at all) can be as or more spiritual than a believer. **Spirituality connects myriad strands and triggers deep inquiry that resonates across time frames, geographies, religious belief systems, and celebrates a million approaches to it**. The crisis today appears to be our country ceased to understand neither the inside nor the outside, doing a disservice to both—doing no justice to the scientific approach when theories are

propounded, doing more injustice in its careless and thoughtless plunder of nature. If everything is reduced to immediate profit-and-loss kind of thinking, without long-term vision, then it is no surprise India's basking in the glory of an important big step on the moon (caused by its scientists) accompani- es smallness of the mind!

Conclusion:

The ISRO chief's high performance in space exploration is rooted in his love for the methods of science, as indeed it must be. But he did not forget during that hour of glory (when we travelled this far) to turn to Indian thought and spiritual traditions & touching on them lightly by stating 'I read many scriptures, try to find the meaning of our existence and our journey in this cosmos—I am an explorer— I explore the moon, I explore the inner space'.

Inner space is where all journey's begin and end—all battles being on the inside, our body and its actions forming the battlefield.

Trivia:

Spirituality is an experience—one has to grow from inside out, and none can teach how to go about to make one spiritual, there being no teachers but one's own soul (**a soul that is absolute and the ultimate truth**)! Spirituality is about integrity—helping us to find the meaning in life, providing a foundation of our values to guide us in the way we behave with self and others, as well as the world around us. people seek refuge to spirituality for solace.

No problem can be solved from the same consciousness that created it—we must learn to see the world anew. **Spirituality is an attitude that is positive and looks at the best in everyone and everything.** Whereas when we talk

about science, it not only brings true knowledge, but factual knowledge with logic and evidence. **More the scientific discoveries, more the question on belief system—science** having a more rational approach, it being a work of logic and proofs. No matter what amount of scientific knowledge we may possess, it'll be very little compared to the vast mysteries of the world, and this **void is filled by spirituality.**

Spirituality is very scientific—even going beyond science, since **science stops at the universe** whereas: **spirituality looks at it, then looks at the self, then sees the direct relation between the two** and hence sees the two in one.

If the mind is not scientific enough, it cannot be spiritual—it cannot move to something beyond the universe, if the mind does not know it. Both just help us to go towards something that is of the beyond, something that is not merely a mental apparition.

Spirituality promotes brotherhood, social cohesion, and equality—in contrast, science encourages people to think rationally and devoid of superstitions. Hence, conditions of two will definitely enhance the standards of living and well-being.

Coordination of science & principle holds importance—science and technology facilitate to protect Environment, in contrast, blind faith spirituality comes in the way of growth & development in the modern world. **For science that which cannot be detected, does not exist, whereas spirituality says that something that cannot be thus detected may also exist**—it may, in fact, be more real than what the senses announce as real. **Spirituality thus lacks the arrogance of science!**



Part of Autobiography 1980s Field Resilience

Indian Gaur (Bison) Rescued from an Open Well Near Ichchapuram Border Srikakulam District

Dr.K.Thulsi Rao

The 1980s were a defining period in my life — a time when youthful energy met professional responsibility. I was young then — physically active, mentally sharp, and deeply passionate about nature and wildlife. My age offered a unique combination of fearlessness and fascination. I was drawn to adventure not merely as thrill, but as a means to **explore the unknown, learn the unseen, and do the undone.**

Field life was never predictable, and I welcomed that unpredictability. There was an innate **curiosity to understand ecosystems**, to observe animal behaviour firsthand, and a **desire to find solutions differently** — beyond textbook methods. I did not just want to do my duty; I wanted to live it, breathe it, and improve it. That mind-set often took me into challenging terrains — both physical and psychological.

My psychological strength during those days came not just from physical stamina but from a sense of inner clarity and purpose. I had undergone **rigorous field trainings** that taught survival, animal handling, teamwork, participatory management and more importantly, adaptability. Those trainings, however, were just the foundation. What shaped me further was **on-ground experience**, where each moment demanded situational awareness, presence of mind, and the ability to think and act fast — often under pressure.

One of my core traits was **adapting quickly to changing scenarios** — whether it was a sudden change in terrain, a wounded animal's aggression, a local community's unrest, or a rescue situation that needed improvisation. I could mould myself — emotionally and tactically — to fit what the situation demanded. **I didn't resist challenges; I reshaped myself to meet them.**

Bison in the Well: A Test of Grit and Guts

It was during this period, one humid afternoon, that I received an urgent message from Mr. Padmanabham, then the Divisional Forest Officer (DFO), overseeing Wildlife Management for North Coastal Andhra Pradesh, that arrived urgently at Visakhapatnam Zoo, where I was serving as Assistant Curator. He presented a telegraphic directive issued by Sri Pushpakumar, Chief Conservator of Forests (Wildlife), Hyderabad. The instruction appointed me to lead the rescue operation of a Gaur that had accidentally fallen into a well, in coordination with the DFO of the Wildlife Management Division.

By instinct, I grabbed my binoculars, ropes, my field stick, and alerted a few watchers. I had no time to waste. The old open wells with no fortifications in these parts were deep — sometimes 20 to 30 feet — and often hidden in dense vegetation. The thought of any large animal stuck inside sent a shiver down my spine. Without any delay, we departed for the site of the incident.

In the early 1980s, the interior forest regions of the Srikakulam District—especially near the Ichchapuram border adjoining the Orissa forests—were still untouched by modern development. There were no roads cutting through the dense canopy, no electricity, no mobile networks, and certainly no access to modern rescue machinery like cranes or transport vehicles. It was a time when wildlife management relied more on intuition, courage, and sheer manpower than on technology.

As we got down from the vehicle, a group of villagers came rushing in, communicating breathlessly, "Sir! A big animal fell into the old open well near the hill slope!" I paused. "What animal?, only to respect their concern and commotion. They weren't sure — just that it was huge, wild, and alive.

Reaching the site itself was an ordeal. We trekked for couple of minutes on foot through rugged forest terrain, guided only by local knowledge and instincts sharpened through years in the wild. There were no vehicles that could navigate the area, and communication was limited to word-of-mouth messages sent through forest guards and villagers.

When we arrived, the scene was both heart-wrenching and daunting. The Gaur, a massive bull likely weighing close to a ton, was wedged helplessly at the bottom of a narrow well. Its immense strength was obvious in the way it had torn at the rock and mud walls of the well in panic, but it was also exhausted, confused, and beginning to show signs of dehydration.

Upon arrival, we assessed the situation and found the Gaur—an adult male weighing nearly a ton—trapped but unharmed. The narrow dimensions of the well and the sheer size and strength of the animal posed serious challenges. We quickly coordinated with local forest officials, veterinary experts, and heavy machinery operators to plan a safe extraction. So, we did it the old-fashioned way — with teamwork, timing, and trust

One wrong move — and it could die. There's no time to think. We're out of options. Every second counts. I took a deep breath. **This was no ordinary rescue.** And there was no time for overthinking. I quickly assessed the situation. The well walls were jagged but not crumbling. The animal wasn't injured fatally. But we had to act fast — before it gave up, or worse, charged in desperation.

It was during such a time — both in my life and in my short career — that I faced one of the most daring and complex wildlife rescue operations: rescuing a full-grown gaur (wild bison) that had accidentally fallen into an open well. The situation was not just about lifting a heavy animal from a death trap; it was about handling panic-stricken animal and the villagers, coordinating a safe operation with limited tools, understanding animal stress, ensuring team safety, and making moment-to-moment decisions. Though I was formally trained in wildlife tranquilization during a prestigious assignment in

Kaziranga National Park, where I had the privilege to work under Dr. Woodforth, a renowned American wildlife veterinarian deputed to India specifically for skill transfer in handling large and dangerous animals like the one-horned rhinoceros — that expertized knowledge of training could not be directly applied here.

The reality on the ground in Visakhapatnam Zoo was starkly different. We had no access to tranquilizing equipment. The only available dart gun was kept at the Hyderabad Zoo, several hundred kilometres away, and obtaining it would mean long delays, endless procedural formalities, and most importantly, cost the animal precious time.

The state level authority responsible for wildlife management, consistent with his well-known hesitancy to devolve modern technology to field-level officers, did not authorize the use of tranquilizing equipment, as the knowledge of using chemical capture was a recent one in India, then. The field staff was to operate, as always, on limited tools, traditional knowledge, and professional judgment.

It was under these constraints that I was **asked to lead the rescue operation.** The request was simple but heavy with responsibility — “Use whatever you know from your training... and apply your commonsense.”

And so began an extraordinary mission — not armed with guns, but with using sedatives under veterinary support, **experience, forest knowledge, improvisation, and a deep sense of duty** toward the animal whose life hung in the balance.

Then it struck to my mind about our training in Military Engineering Services where we were taught about using improvised rescue operations while in war against enemy country

I asked the team to fetch thick ropes brought from the zoo, a strong crate, and some sturdy bamboo poles. There were no dart guns readily available in those days. As seen from the top of the well, the animal was in aboveknee depth water. And we had no crane or machinery readily available.

While preparations were underway to extract the distressed bison from the open well, we **alerted a young veterinarian** in the region to be on standby and to assist us, especially with sedatives such as **Rompun (Xylazine)** and Ketamine, the only hope if the situation turned unmanageable. We had to prepare for all possible scenarios, and in a rescue like this, seconds could mean the difference between life and loss — for the animal, and potentially for the rescuers.

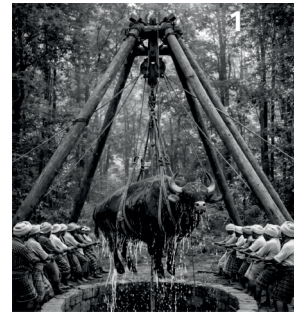
But sedating such a **massive, wild, and furious bison inside a narrow, muddy well** posed enormous risk. The animal was **agitated, struggling with brute force**, trying to jump out, each attempt failing as its hooves slipped repeatedly on the **plastic mud walls** of the well. It was exhausted, but not subdued — the kind of animal that could easily crush bone in a single strike, even in that state.

Since we lacked darting guns and long-range tranquilization equipment — and couldn't afford to wait for any to arrive from Hyderabad — **I decided to take the risk myself**. I requested the veterinarian to accompany me into the well hauling bamboo. I volunteered to **inject the animal manually**, lowering myself into the well. It was a dangerous decision, but calculated.

To facilitate the immobilization procedure, an improvised yet functional descent mechanism was engineered. A bamboo-woven platform, capable of supporting two individuals, was suspended by ropes affixed at all four corners, resembling the balance of a weighing scale. These ropes were secured through a manually operated pulley system anchored to a robust tree. The system was controlled by trained forest personnel positioned at the mouth of the well who regulated the descent with incremental precision.

Operational instructions were explicit: in the event of sudden movement or an upward charge by the bison, the platform was to be retracted immediately to prevent injury to the personnel below. This required both physical strength and acute coordination from the team above, as the safety of the operators depended on their ability to execute rapid counteraction.

The descent itself constituted a high-risk phase, demanding composure and precision. Suspended directly above the agitated animal, the operator prepared the tranquilizing apparatus. At a controlled depth, the bison was successfully darted on the gluteal musculature using a blowpipe, ensuring effective drug delivery while minimizing risk to both the animal and the personnel. The procedure was executed with meticulous attention to safety and accuracy, ultimately achieving the intended outcome of sedation and preservation of the animal's life.



Rescue Operation Using Derrick Tripod and Pulley System

Site Preparation

The rescue begins with a careful assessment of the well. Its depth, diameter, and water level are measured, while the stability of the surrounding soil is checked to avoid collapse during lifting. The area around the rim is cleared of vegetation and obstacles to make space for the tripod. A safety perimeter is established so that only trained personnel remain close to the operation, preventing panic or accidents.

Constructing the Derrick Tripod

Four selected long and strong log size pole 'Sal trees were cut from the surrounding forest, and lashed together firmly at the apex to form a tripod. The legs are spread wide around the rim of the well to provide maximum stability. Each leg is anchored securely with ropes and stakes, to prevent slipping under the heavy load. This tripod becomes the central support structure for the pulley system.

Pulley System Setup

At the apex of the tripod, a block and tackle arrangement is installed. Multiple pulleys were

attached to multiply the lifting force, allowing rescuers to raise the heavy animal with controlled effort. Thick, high tensile ropes were purchased from nearby shandy and threaded through the pulleys and connected to the harness belts around the bison. A manual winching team is positioned to provide steady and reliable lifting power.

Animal Harnessing

The 'guar' is gently secured using wide flat rubber tube belts. These belts are wrapped around its torso and under the chest and abdomen, distributing pressure evenly to minimize the risk of internal injury. Padding is added to prevent discomfort and ensure breathing is not restricted. Secondary straps were placed around the hindquarters to balance the weight and keep the animal aligned during lifting. A veterinarian from Itchapuram supervised this stage to monitor the animal's condition.

Safe Lifting Procedure

The ropes were gradually tensioned to test the stability of the harness and observed the animal's response. The gaur is then lifted vertically in a controlled manner, ensuring its body remains aligned to avoid twisting. The lift was paused at intervals to reduce stress and allow the animal to adjust. Guiding ropes attached to the sides of the harness prevented swinging and kept the gaur from hitting the well walls.

Precautionary Measures

Throughout the operation, a veterinarian remained present to monitor for signs of distress or injury. Quick release were incorporated into the harness system to allow immediate disengagement in case of entanglement. The animal was kept calm with hydration and under mild sedation. Once lifted out, the bison undergoes a medical check up for muscle strain, internal injury, or shock before being released safely into the specially made 'Crate'.

Key Safety Principles adopted during the operation:

- Even weight distribution through wide belts

used to prevent concentrated pressure points.

- Got Mechanical advantage from the pulley system that reduced strain on rescuers and ensured smooth lifting.
- Animal welfare was prioritized at every stage to minimize stress and harm.
- Human safety was ensured by stable tripod construction and controlled lifting procedures.

.The villagers helped. I organized them into two groups on either side of the well. We carefully lowered a looped rope behind the bison's shoulder, anchoring it just above the front legs — the only way to lift without choking or hurting it.

It wasn't easy. **People pulling from opposite sides made the bison swing and slip**, water splashing, the animal grunting. We had to control both the **weight and the direction of pull**.

"Stop!" I shouted. "We need balance. Everyone—shift closer. Coordinate!"

We tried again, **slowly pulling in unison**. Inch by inch, the bison began to rise.

The tension in the air was unbearable. I could hear the rope stretching. My heart pounded — **what if it snapped? What if it thrashed and fell back?**

But we held. And finally — **the animal was at the edge**.

It took one last push — and the bison collapsed onto the slope. The moment its body touched solid ground, it **jerked up violently** with Wild eyes, Flaring nostrils and Powerful legs.

It **banged into the crate**, shaking it so hard I thought it would burst open. It was a happy ending and the animal was moved to Zoo for further treatment if required, before it was released back into the wilderness

Finally, that rescue would not have been possible without that specific version of me — **young, alert, passionate, trained, psychologically strong, and deeply connected to the cause**.

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Mischief in Medikeri


Dr. Padam Parkash Bhojvaid, IFS (R)

Some memories do not fade; they ferment. They lie quietly at the back of the mind, gathering meaning with age, until one day they ask—not for judgment, but for telling. This is one such memory. Neither a scandal nor a triumph, it is a small transgression from youth that has travelled with me for over four decades, from the rain-dark forests of Coorg in 1984 to the reflective stillness of retirement. Writing it down is less an act of confession than of release. I was then a probationer of the Indian Forest Service (1983 batch), learning to read forests as one reads texts—patiently, humbly, alert to what lies beneath the surface. On a study tour to Medikeri, our guide was Dr. S. N. Rai, a teacher whose authority needed no raising of voice. He taught silviculture not merely as a discipline but as a way of seeing: ordered, restrained, attentive. In classrooms and under forest canopies alike, he carried himself with a quiet exactness. On field days, dressed simply in khaki, sturdy shoes and an umbrella in hand, he seemed almost designed to blend into the landscapes he revered. That particular morning began badly. The duty officer announced the wrong assembly time and dress code, and we arrived late—awkwardly dressed in ties and blazers instead of field gear. Our teachers stood waiting in khaki, their displeasure unmistakable. Dr. Rai's irritation was restrained but palpable. Once breached, discipline appeared to unravel the day itself: delayed buses, sharp words for drivers, even a burst tyre on the way to the reserve. It felt as though the rhythm of the day had slipped out of tune. The forest, when we finally reached it, seemed to receive us under a cloud. Medikeri Biosphere Reserve, nestled in the Western Ghats, was our open classroom. Beneath its dense canopy, Dr. Rai spoke of layered abundance—evergreen forests, grasslands, streams alive with

orchids, elephants, civets, macaques, and birds rare enough to make silence feel sacred. Yet beneath his measured lecture ran an undercurrent of reprimand, and beneath our attentive listening stirred restlessness—the impatience of youth, the itch to test boundaries even in a place that demanded reverence. After the introductory talk, the batch was split into two groups, led by Dr. Rai and Dr. Dilipkumar, walking about 250 metres apart to allow focused discussion. It was here, in the spaces between authority and attention, that mischief quietly took root. Four of us— young, overconfident, and foolish—slipped away under the pretext of a natural call. What began as momentary evasion soon became indulgence: a smoke, a discreet sip of rum hidden in a water bottle, and the heady thrill of being unseen. For nearly an hour, the forest seemed to cooperate. Thick undergrowth swallowed sound; winding paths erased sightlines. We timed our movements between the pauses of the leading group and the approaching footsteps of the trailing one. It felt clever then, almost elegant—a choreography of avoidance played out in green, buoyed by the illusion that the forest was vast enough to forgive small rebellions. Then, without warning, the forest withdrew its consent. The murmurs faded. Footsteps vanished. The canopy appeared to close ranks. An unnatural silence settled—dense, alert, unsettling—as if the land itself had noticed our trespass. In that instant, bravado drained away, replaced by fear. We realised, with sudden clarity, that we were lost. Every snapped twig sounded like accusation. Paw prints of big cats, boar tracks pressed into soft earth, towering iron trees and ancient tree ferns—all seemed to lean inward. Our freshly acquired knowledge deserted us. We guessed directions from the sun's angle,

the slope of land, the imagined course of a stream. The rum added no courage, only confusion. Voices dropped, tempers frayed. For half an hour that felt far longer, the forest reduced us to helplessness. Catharsis, I later learnt, often arrives disguised as fear. Relief came on a bicycle. A man appeared, pedalling carefully along a narrow forest path, a polystyrene box tied behind him. Language failed us, but gestures did not. He was carrying lunch—vegetable biryani—for our group. With nods and signs, he conveyed that both batches would meet near a waterfall just ahead. He pointed the way, then guided us like one might shepherd errant children back to safety. The sound of voices returned first, then laughter. We pressed five rupees and a few cigarettes into his hand and asked, again in gestures, for silence. He replied with the familiar Kannada sideways nod—wordless, reassuring. One by one, we merged back into the group by the


waterfall, unnoticed. Cool water washed sweat and fear from our faces. Lunch was served. The biryani tasted extraordinary—not for its spice, but for what it represented: return, survival, forgiveness unasked. Around us, the forest resumed its role as classroom, serene and indifferent to our private reckoning. Our teachers never knew. Or perhaps they did, and chose silence. Among ourselves, the episode became a shared secret, retold years later over quiet drinks, always with laughter edged faintly with shame. Now, at 68 and retired from service, I understand what that day truly offered. The forest disciplined us more effectively than any reprimand could have. It stripped away arrogance, reminded us of scale, and returned us humbled. This telling is my final release. To retired senior IFS officers Dr. S. N. Rai and Dr. Dilipkumar, this is a belated confession—and an apology. The forest has long forgiven us. It is only now that we forgive ourselves.



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.	S.No.	Name of the Serving Officers	D.O.B.
	SARVASRI			SARVASRI	
1	P. Upender Reddy	05-02-1942	1	VS.N.V. Prasad	10-02-1979
2	Smt. R. Sobha	11-02-1962	2	Smt. P. Shyamala	12-02-1980
3	Mohd. Thayyab	16-02-1956	3	P. Ramulu	14-02-1963
4	Sultan Mohiuddin	17-02-1942	4	Ch. Suryanarayana	15-02-1966
5	Sharada Prasad	17-02-1952	5	M.S.J. Vasantha	23-02-1980
6	A. Kishan	20-02-1952	6	V. Krishna	25-02-1966
7	I. Vijay Kumar	23-02-1954	7	Smt. A. Soni Bala Devi	01-03-1974
8	Md. Abdul Aleem	25-02-1951	8	V. Saibaba	04-03-1980
9	P. Rajender Reddy	27-02-1956	9	S.P. Sultan	04-03-1989
10	M. Anjaneyulu	01-03-1954	10	K. Vinod Kumar	05-03-1979
11	L. Krishna Bhoopal Rao	02-03-1942			

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



Tiger's brute force: Insights spanning Fayrer's 1875 anatomical study to contemporary biomechanical research

Sri R.Hemanth Kumar, IFS (Retd)

Just finished reading a book titled *The Royal Tiger of Bengal, His Life and Death*, written by Sir Joseph Fayrer in 1875. I am awed by the way he described the tiger's anatomy, which gives it the brute force to kill and drag animals much larger than itself. The following is an abstract of what Fayrer wrote in 1875.

"The tiger, one of nature's most formidable predators, possesses a body uniquely adapted to the demands of hunting and survival. Its anatomy reveals a series of modifications in the skull, teeth, muscles, claws, and digestive system, all of which work together to create an animal of extraordinary strength, agility, and efficiency.

The skull of the tiger is built for power. Short and strong, the lower jaw is hinged to allow vertical movement, enabling the mouth to open and close with precision. Large temporal muscles attach to the coronoid process, while expanded zygomatic arches provide space for additional muscle fibres. This arrangement gives the tiger immense biting force. Its teeth are equally specialized: small incisors scrape and gnaw, massive canines pierce and hold prey, and sectorial molars act like scissors, slicing flesh and crushing bone. Together, these features make the tiger's jaws a perfect tool for dispatching and consuming large animals.

Muscular development further enhances the tiger's predatory abilities. The neck, shoulders, and forelimbs are especially powerful, allowing the animal to strike down prey, hold it firmly, and even lift or drag heavy carcasses. Observers have noted the anthropoid resemblance of the tiger's muscular frame when stripped of its skin, underscoring the sheer strength concentrated in its upper body.

The claws provide another deadly advantage. Retractable by design, they remain sharp and unworn during ordinary movement, only extending when needed for attack. Five claws on the forefeet and four on the hindfeet can be unsheathed at will, turning the tiger's paws into formidable weapons.

Beyond its physical weapons, the tiger's senses sharpen its hunting prowess. Vision and hearing are acute, while sensitive whiskers act as tactile feelers during stealthy movements. The greenish tapetum lucidum in its eyes produces a characteristic glare in low light, aiding nocturnal hunting.

Internally, the tiger's skeleton and digestive system reflect efficiency. Dense, compact bones provide strength without sacrificing agility, while a simple stomach and short intestine allow rapid digestion of freshly killed meat. This streamlined system reduces abdominal bulk, giving the tiger a light, graceful body suited for speed and leaping. Even the rudimentary clavicles, often overlooked, highlight evolutionary refinement, lying embedded in the shoulder muscles and contributing to mobility.

Taken together, these anatomical features reveal a creature perfectly engineered for predation. The tiger's skull and teeth secure and process prey; its muscles and claws deliver lethal force; its senses guide stealth and attack; and its internal systems ensure efficient digestion and mobility. Every aspect of its body reflects the necessities of its existence as a carnivore. The tiger is not merely a symbol of strength and ferocity—it is a living masterpiece of evolutionary design."



Photo Credit: behance.net

Why did I want to write an essay on this subject?

Sir Joseph Fayrer's 1875 work "The Royal Tiger of Bengal, His Life and Death" offered one of the earliest systematic anatomical studies of the tiger. By detailing its skeleton, musculature, dentition, sensory organs, and internal systems, Fayrer showed how anatomy underpins the tiger's ability to overpower prey larger than itself. **Though framed in colonial hunting narratives, such studies laid a foundation for modern zoology, biomechanics, and conservation science. They help us trace the evolution of knowledge, confirm anatomical adaptations with current research, and enrich our understanding of predator-prey dynamics—bridging historical observation with contemporary ecological insight.**

Reading this book made me explore how and from where tigers derive their brute force. While reading on this subject, I came across interesting observations from eminent persons and what they have described about tigers, which are as follows:

▯ In the 17th century, Jahangir, in the book **The Tuzuk-i-Jahangiri**, mentioned that "The tiger is an animal of such strength that it overpowers the buffalo and carries it away into the jungle."

▯ **Indigenous communities** living alongside tigers for centuries have described the tiger's ferocity not as brutality, but as **sacred strength**. Among the **Gonds and Baigas** of Central India, the tiger is often regarded as a forest ruler, capable of killing the strongest herbivores because it embodies the forest's power itself.

Tribal trackers frequently note that: A tiger chooses its target carefully. It attacks only when success is assured. Its ferocity is unleashed only when necessary. In their worldview, the tiger's ability to kill larger animals is a sign of **cosmic balance, not cruelty**.

▯ **Elwin, V. (1939)**. In his book "**The Baiga**", he mentions that "The tiger is believed to kill even the strongest animals of the forest because it carries the strength of the jungle on its shoulders."

▯ **Corbett, J. (1944)**, in his book, **Man-Eaters of Kumaon**, mentioned that "Once a tiger has seized its quarry, nothing short of death will cause it to relinquish its hold." He further noted: "I have known a tiger to kill a full-grown sambar stag and drag it as though it were a calf."

Corbett described tigers killing animals "that no other predator would dare to tackle alone," including full-grown sambar stags and wild buffalo calves. He wrote that once a tiger commits to a kill, "nothing short of death loosens its grip."

Importantly, Corbett distinguished between **Ferocity during the kill** and **Calm restraint otherwise**. **This duality—gentle movement punctuated by explosive violence—made the tiger particularly terrifying to human observers.**

▮ **Kenneth Anderson**, in his book titled **Nine Man-Eaters and One Rogue (1951)**, repeatedly expressed astonishment at the tiger's physical power, stating that, "The sheer strength of a tiger has to be seen to be believed; it will kill animals far heavier than itself and drag them away over ground where a man could scarcely walk."

Kenneth Anderson, writing from the forests of South India, often described his astonishment at the sheer physical power of tigers. He recounted scenes where tigers had: Dragged large cattle uphill, broken the necks of prey with a single blow and killed animals in terrain where the footing itself was precarious.

For Anderson, the ferocity of the tiger was not loud or chaotic—it was **sudden, silent, and decisive**, often leaving witnesses shocked at how quickly a massive animal had been subdued.

▮ **George B. Schaller**, in **1967**, wrote in his book titled **"The Deer and the Tiger: A Study of Wildlife in India"** that, "The tiger is a consummate predator, a masterpiece of muscular strength, capable of killing prey larger than itself through sheer power and persistence."

Schaller documented tigers killing adult sambar deer weighing nearly twice their body mass and noted that death often resulted from prolonged suffocation rather than instantaneous trauma, highlighting the tiger's endurance and strength.

George Schaller, one of the most influential wildlife biologists of the twentieth century, rejected sensational portrayals of the tiger as a mindless killer. Instead, he described its ferocity as precise, economical, and purposeful. In Kanha National Park, he observed that tigers routinely killed sambar deer weighing nearly twice their own body mass. He wrote that the tiger is "a masterpiece of muscular strength," whose power lies not in frenzy but in controlled violence, delivered at the right

moment and in the right manner.

For Schaller, the tiger's ferocity was inseparable from its anatomy—powerful shoulders, thick neck muscles, and a reinforced jaw—making it capable of prolonged struggles with large prey.

▮ **K. Ullas Karanth & Sunquist (1995)** in their research paper titled **"Prey selection by tiger, leopard and dhole in tropical forests"** explicitly link tiger ferocity to prey size and hunting mode: "Tigers routinely kill prey that are as large or larger than themselves, a feat made possible by their powerful forelimbs and their ability to hold on during prolonged struggles."

Karanth repeatedly emphasized that the ferocity of the tiger must be understood in relation to Indian prey species such as sambar, gaur, and nilgai. According to Karanth, killing such animals requires: **physical dominance rather than speed alone, the ability to withstand violent resistance, and the sustained application of force.**

He notes that a tiger's ferocity is most visible during the final moments of a kill, when it **absorbs blows, antler thrusts, and kicks**, yet maintains its grip until the prey collapses.

▮ **Melvin Sunquist & Sunquist, F. (2002)**, in their book titled **"Wild Cats of the World"**, mentioned that "Among the big cats, the tiger stands out for its ability to subdue large prey alone, relying more on brute strength than on cooperative strategies."

▮ **Sukumar, R. (2003)**, in his book **"The Living Elephants: Evolutionary Ecology, Behaviour, and Conservation"**, observed that "Predators such as the tiger are capable of overpowering prey much larger than themselves, particularly in habitats where ambush and physical strength are more important than speed."

▮ **Valmik Thapar** described the tiger as “an animal built not for speed alone, but for decisive, overwhelming force.”

▮ **Indian forest officers, trackers, and guards**—who often encounter tigers at dangerously close distances—describe **ferocity impractical, experiential terms**.

Many officers note that a tiger rarely retreats once it has seized prey. Even injured tigers can overpower large animals, and the animal's confidence during a kill is absolute.

Accounts from Central India describe tigers killing adult sambar in daylight near waterholes, unfazed by human presence, suggesting that the act of killing places the tiger in a **state of total physical dominance**. Forest staff often emphasize that the tiger's ability to kill larger prey is not accidental—it reflects **complete anatomical preparedness**, especially in the shoulders and forelimbs.

Thus, across scientific studies, colonial memoirs, indigenous knowledge, and modern field observation, there is striking agreement on one point: **the tiger's ferocity is not random aggression, but controlled, overwhelming power**.

Whether described by zoologists as a marvel of biomechanical efficiency, by hunters as the embodiment of terrifying strength, by forest officers as the undisputed ruler of its domain, or by tribal communities as a sacred force woven into cultural identity, the tiger consistently emerges as more than just an animal. It is a living paradox—graceful yet ferocious, revered yet feared.

At the heart of its reputation lies an extraordinary ability: the tiger can kill prey larger and heavier than itself. This feat is not achieved by brute force alone, but through a remarkable combination of strength, technique, and resolve. Its muscular

frame, razor-sharp claws, and scissor-like teeth are complemented by stealth, patience, and precision. Each strike is calculated, each movement honed by evolution to maximize efficiency.

Thus, the tiger stands as a symbol of nature's most refined predatory design. To scientists, it is a study in anatomical perfection; to those who encounter it in the wild, it is a reminder of raw, unchallengeable dominance; and to communities who live alongside it, it is a sacred presence that commands respect. Across perspectives, one truth remains constant—the tiger is a creature that embodies power in its purest form.

This convergence of perspectives underscores a fundamental truth: **the tiger's ferocity is not myth—it is an evolved biological reality, refined by landscapes and prey that demand nothing less than dominance—and it is achieved through a combination of strength, technique, and persistence**.

After reading these, my interest grew, and I referred to many books and articles, and I attempted to organise the knowledge in a structured manner; as a result, the following essay has been prepared.

The Extraordinary Physical and Functional Abilities of Tigers: A Zoological and Wildlife Science Perspective

Among all terrestrial predators, the tiger (*Panthera tigris*) stands apart as a supreme embodiment of power, precision, and solitary predatory efficiency. Zoologists, wildlife biologists, and natural historians have consistently described the tiger as the most physically formidable of the big cats, not merely because of its size, but also because of a remarkable suite of anatomical, muscular, skeletal, and behavioural adaptations. These adaptations enable the tiger to hunt, kill, and drag prey that may equal or exceed its own body mass—often in dense forests and rugged terrain, without

cooperative support.

The tiger is universally recognised as the most power-adapted of all extant felids. Its anatomy reflects a predator evolved to hunt large, dangerous prey single-handedly, often in dense forests where speed alone is insufficient. Instead, success depends on ambush, explosive muscular force, skeletal robustness, and precise killing techniques. Unlike lions, which evolved cooperative hunting strategies, the tiger's solitary lifestyle exerted intense evolutionary pressure, favouring extreme individual strength and efficiency (Schaller, 1967; Sunquist & Sunquist, 2002).

From the reinforced lower jaw and elongated canines designed to suffocate large ungulates to the mighty shoulders and forelimbs capable of grappling and subduing struggling prey, the tiger represents the pinnacle of evolutionary refinement, shaped by ecological necessity. Unlike lions, which rely on group hunting, tigers evolved as solitary hunters, compelling them to develop extreme individual strength and efficiency.

This essay examines in detail the **ability of tigers, as described by zoologists and wildlife experts, focusing on key anatomical and functional modifications—particularly the lower jaw, shoulders, forelimbs, neck, spine, and overall musculoskeletal system—that enable tigers to kill and drag large, heavy prey.** It integrates classical zoological literature, modern biomechanical understanding, and field-based observations from India and other tiger range countries.

Evolutionary and Ecological Context

Tigers evolved across a vast geographic range encompassing boreal forests, tropical rainforests, mangroves, and dry deciduous ecosystems. Such ecological diversity exposed them to prey species ranging from small deer to massive bovids such

as gaur and wild buffalo. According to Kitchener (1999), this ecological breadth selected for a predator with **maximum functional versatility and power, rather than extreme cursorial speed.**

Indian prey species generally possess thick hides, strong neck muscles and high endurance. Accordingly, Indian tigers primarily employ throat suffocation, rather than quick nape kills. This explains why tigers have deep mandibles, strong masseter and temporalis muscles and long canines designed to crush the trachea.

Schaller's seminal fieldwork in Kanha National Park demonstrated that sambar (*Rusa unicorn*), often weighing 200–260 kg, form the staple prey of tigers in central India—animals that require immense grappling strength to subdue (Schaller, 1967).

Lower Jaw and Dentition: Instruments of Lethal Efficiency

Structural Strength of the Mandible

The tiger's mandible is deep and thick, built to withstand high bending and torsional stresses generated during prolonged killing bites. Comparative osteological studies show that the mandible of Tigers is proportionally more robust than that of leopards and cougars, reflecting adaptation to larger prey (Turner & Antón, 1997).

The mandibular structure provides a stable base for the attachment of the masseter and **temporalis muscles**, which together generate sustained bite pressure essential for suffocation-based killing.

Canines and Carnassials

Tiger canines are elongated, laterally compressed, and sharply pointed, allowing deep penetration into the throat or nape of prey. Their primary function is not crushing of the bone, but rapid vascular and

respiratory incapacitation (Antón et al., 2004).

The **carnassial teeth** function as highly efficient shearing blades. According to Van Valkenburgh (1989), the carnassial complex in large felids is optimised for processing large carcasses quickly, reducing feeding time and vulnerability to kleptoparasitism.

Killing Techniques

Schaller (1967) documented that tigers predominantly employ:

- **Throat bites** for large prey, crushing the trachea and carotid vessels
- **Nape bites** for smaller prey, damaging the cervical vertebrae or spinal cord

These methods require precise coordination of jaws, neck, and forelimbs.

Shoulders and Forelimbs: Primary Weapons of the Tiger

Scapular and Muscular Adaptations

The tiger's shoulder girdle is among the most powerfully developed in the mammalian carnivore guild. The scapula is large and flat, allowing extensive muscle attachment, including the trapezius, deltoid, rhomboids and latissimus dorsi (Gonyea, 1978).

Biomechanical analyses indicate that these muscles generate extraordinary pulling and stabilising forces during prey grappling.

Forelimbs in Prey Subjugation

Field observations consistently show that tigers rely heavily on their forelimbs to overpower prey. The forelegs act as grappling hooks, pulling prey off balance and pinning it to the ground. The retractile claws enhance grip and reduce slippage

during violent struggles (Sunquist & Sunquist, 2002).

Corbett (1944) described cases in which a single paw blow from a tiger instantly incapacitated large animals, underscoring the destructive potential of the forelimbs.

A single blow from a tiger's forepaw has been documented to:

- Break the neck of medium-sized prey,
- Fracture skulls,
- Knock down large deer with sheer impact.

Dragging and Transport of Heavy Prey

Biomechanics of Carcass Dragging

One of the tiger's most remarkable abilities is dragging prey weighing up to twice its body mass. This behaviour is biomechanically facilitated by:

- Massive shoulder and chest musculature
- Powerful forelimb flexors
- Hind limbs provide thrust,
- A rigid, force-transmitting spine
- Strong neck muscles anchoring the skull

Karanth and Sunquist (1995) documented numerous cases of tigers dragging sambar carcasses over 100 metres into dense cover.

Adaptive Significance

Dragging prey into cover reduces interference from scavengers such as dholes, leopards, bears, and vultures. This behaviour highlights that the tiger's strength is not merely for killing, but also for **post-kill resource defence**.

In tigers, **killing power does not come from the**

jaw alone. It is the integration of jaw, neck, shoulders, forelimbs, and spine that allows:

- Prolonged throat suffocation
- Control of large struggling prey
- Dragging of heavy carcasses

Zoologists describe the tiger as a **forequarter-driven predator**, with the jaw functioning as a locking device and the shoulders supplying most of the force.

Neck and Nuchal Musculature

The tiger's neck is exceptionally thick and muscular, providing the strength required to maintain prolonged killing holds. The nuchal ligament and associated musculature stabilise the skull during violent prey struggles (Antón et al., 2004).

Zoologists note that the neck acts as a **mechanical bridge**, transferring force from the forequarters to the jaws, particularly during throat bites.

Spine, Posture, and Whole-Body Integration

Spinal Function

The tiger's spine combines flexibility for stalking and ambush with rigidity during prey grappling. During the kill, spinal flexion is minimised, allowing efficient transfer of force from hind limbs to forequarters (Gonyea, 1978).

Low Centre of Gravity

The broad chest and relatively short limbs lower the tiger's centre of gravity, increasing stability when wrestling large prey. This contrasts with cursorial predators that rely more on speed than grappling strength.

Solitary Hunting as an Evolutionary Driver

The solitary nature of tiger hunting is central to

understanding its anatomy. Unlike lions, which rely on cooperative strategies, tigers must overpower prey alone. This ecological reality favoured individuals with:

- Greater absolute strength
- More robust skeletal elements
- Superior killing efficiency

Schaller (1967) argued that this solitary hunting pressure explains why tigers surpass other felids in raw power.

Comparative Zoological Perspective

Comparative studies show that:

- Jaguars possess higher bite forces relative to skull size (Meachen-Samuels & Van Valkenburgh, 2009)
- Leopards excel in climbing and carcass hoisting
- Lions rely on group dynamics

However, the tiger uniquely combines **size, forelimb power, and solitary killing ability**, making it the most formidable individual predator among felids.

Conclusion

The tiger's extraordinary abilities are not accidental traits but the result of millions of years of evolutionary refinement shaped by ecological necessity. Its reinforced lower jaw, lethal dentition, immensely powerful shoulders and forelimbs, thick neck musculature, and stable yet flexible body structure together create a predator uniquely suited to killing and dragging large, heavy prey.

Zoologists and wildlife experts consistently

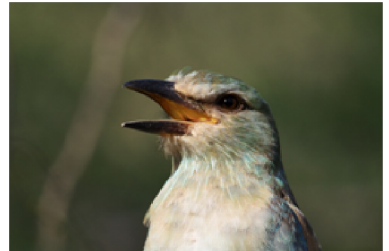
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FCRI-Pictures from National Seminar on Environment & Waste Management

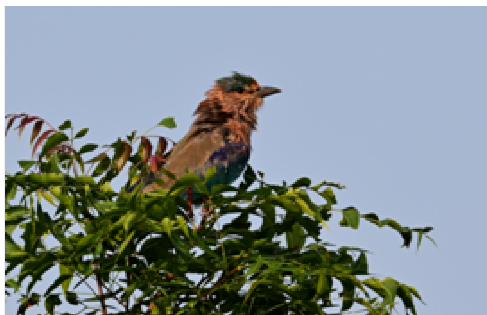


Rollers (Photocredit: Sri K.Praveen Rao, IFS (Rtd))

European Rollers



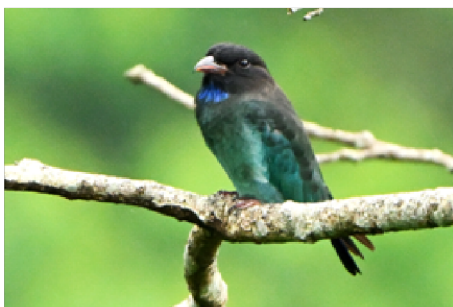
Indian Roller



Indo-Chinese Roller



Oriental Dollar Bird



**TGSEFA-State Level Workshop on
Accounting Procedures, Pensions and GPF related Issues
8th January 2026**



పర్యావరణహితం సింగరేణి అభిమతం



దోర్ల ఓసీ దంపుపై పెరిగిన ప్లాంటేషన్



బ్లాక్ ప్లాంటేషన్



సింగరేణి ఆధ్వర్యంలో నిర్మించిన చెరువులు



అవెన్యూ ప్లాంటేషన్



ఎకో పార్కులు



సింగరేణి
కాలరీస్ కంపెనీ లిమిటెడ్
(ప్రభుత్వ రంగ సంస్థ)



Continuation from page No. 28

emphasize that the **tiger is not merely a large cat with sharp teeth—it is a precision-engineered apex predator**, capable of overpowering animals larger than itself through a combination of strength, technique, and anatomical specialization. In the tiger, nature has produced one of its most formidable creations, a living testament to the power of evolutionary design. The tiger is not simply a large cat; it is an apex predator sculpted by evolutionary pressures demanding solitary dominance over large, dangerous prey. As Schaller aptly noted, the tiger represents “a masterpiece of muscular strength,” a pinnacle of carnivorous adaptation in the natural world.

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**Slow & Steady: to be capable of steady friendship or lasting love,
are the two greatest proofs, not only of goodness of heart, but
of strength of mind. (Slow & steady does it)**

- William Hazlitt



Invasive alien species-A curse in India

Sri V.V. Hariprasad, Dy.C.F (Retd.), Advocate

Invasive alien species devastate Earth's ecosystems by causing biodiversity loss, species extinctions, and ecosystem collapse through predation, competition and disease, while also inflicting massive economic costs on agriculture, fisheries and tourism, and posing direct threats to human health via allergies and pathogen transmission, leading to irreversible ecological and financial damage. They are a primary driver of biodiversity loss, second only to habitat destruction, and their economic burden exceeds hundreds of billions annually, disrupting food security and natural services. India, with its largest land area in the group of seven countries in South Asia, tops the list with **185 invasive alien plants**.

What is invasive species?

Invasive alien species (IAS) are species introduced into places outside their natural range that have negative impacts on native biodiversity.

Terrestrial invasive species- It refers to non-native plants, animals, fungi, or microorganisms that have been introduced to and established in terrestrial ecosystems, which include land-based environments such as forests, grasslands, deserts, and urban areas.

Aquatic invasive species- They are non-native plants, animals, microbes, and pathogens that have been introduced into aquatic ecosystems, including freshwater and marine environments.

The impact of invasive species

Loss of biodiversity- According to IUCN Red List of Threatened Species, IAS are one of the top causes of biodiversity loss, and the second most common cause of species extinctions.

Species extinction- IAS alone contributed either solely or alongside other drivers, to 60% of recorded global extinctions. Islands are particularly vulnerable as 90% of global animal and plant extinctions are occurring here.

Economic impact- They have substantial economic costs, affecting not only local ecosystems but also water, biology and security.

Impact on vulnerable population- The economic costs are disproportionately borne by poor and disadvantaged populations living in degraded environments heavily infested by alien species.

Impact on India- A study indicates that about 66% of India's natural systems are threatened by invasive species. They negatively impact ecosystems crucial for survival of apex predators like tigers.

Impact on human health- IAS pose threat to human health directly or indirectly.

The Asian tiger mosquito (*Aedes albopictus*), native to South-East Asia, is a vector of a number of human diseases such as Dengue fever and West Nile virus.

Reduced navigation- Water hyacinth native to South America, has been intentionally introduced around the world for ornamental purposes and as animal food, but it has rapidly invaded water ways, irrigation channels, lakes and rice paddies. Under the right conditions it can double in biomass within two weeks forming dense mats, with potentially disastrous consequences.

In Africa's Lake Victoria, water hyacinth infestations covering 12,000 hectares have blocked shipping trade and access to ports, and halted fishing

**Aedes albopictus**

activities.

Impact on food security- Agriculture and fisheries are particularly vulnerable to the impacts of IAS, placing food security at risk.

The fall armyworm was introduced to sub-Saharan Africa, it is spreading rapidly across the continent causing yield losses of over 40% for smallholder maize farms in some countries.

Climate change- The resilience of natural habitats can also be reduced by IAS, making them more vulnerable to the impacts of climate change. Introduced grasses and trees may alter fire regimes, particularly in areas that are becoming warmer and drier due to climate change, putting habitats and human life at risk.

Ecological Impacts

Biodiversity Loss & Extinction: IAS outcompete natives for food, water, and space, leading to population decline and extinction, responsible for 60% of recorded global extinctions.

Habitat Alteration: Invasive plants change soil, nutrient cycles, and fire patterns, making environments unsuitable for native life, while aquatic invaders disrupt food webs.

Ecosystem Disruption: They alter predator-prey dynamics, energy flows, and disrupt essential ecosystem functions, creating imbalances

Economic Impacts

**Water hyacinth**

Massive Costs: Global economic costs have quadrupled every decade, exceeding \$423 billion annually by 2019, affecting agriculture, forestry, fisheries, and tourism, notes the **Convention on Biological Diversity**.

Infrastructure Damage: Species like zebra mussels clog water pipes, causing expensive infrastructure damage.

Food Security: They threaten food and water security, disproportionately affecting vulnerable communities, notes the Convention on Biological Diversity

Human Health Impacts

Disease Transmission: IAS can carry and spread new pathogens and parasites to humans and livestock, notes Iberdrola.

Allergies & Poisoning: Some species cause severe allergies or are directly poisonous.

Indirect Effects: Pesticide/herbicide use to control invasive plants further pollutes water and soil, notes the Convention on Biological Diversity

Examples

Brown Tree Snake (Guam): Caused mass extinctions of native forest birds.

Water Hyacinth (Lake Victoria): Depleted tilapia, harming local fisheries.

Cane Toad (Australia): Toxic to native predators, disrupting food webs.



Cane toad



Brown tree snake

Historical propagation- Due to the increase in the movement of people and goods around the world, and with new trade routes opening and enhanced transportation, the number of species being introduced into new areas is rising

Human modifications- It refers to alterations made by humans to natural landscapes, ecosystems, or habitats through activities such as urbanization, deforestation, agricultural expansion which creates new opportunities for invasive species to thrive.

Shifting soil moisture regimes- Invasive species may have a competitive advantage in altered soil moisture conditions, species adapted to drier or wetter soils may thrive when these conditions change allowing them to outcompete native species.

Altered cycle of natural disturbances- If the frequency or intensity of wildfires changes, it may favour invasive species that are adapted to such disturbances, allowing them to outcompete native species.

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Key Invasive Species Examples in India:

Water Hyacinth (*Eichhornia crassipes*): Aquatic plant causing siltation, blocking irrigation, reducing oxygen, hindering transport.

African Catfish (*Clarias gariepinus*): Preys on native fish and birds, upsetting wetland balance.

Lantana camara: Dominates forests, increases fire risk, reduces crop land, causes allergies.

Red-eared Slider (*Trachemys scripta elegans*): Pet turtle outcompeting native turtles.

Aedes mosquitoes: Vectors for severe diseases like dengue

Drivers & Exacerbating Factors: Intentional/ Accidental Introduction: Ornamental trade, poor biosecurity.

Disturbed Ecosystems: Easier for invaders to establish in human-altered environments. Invasive species pose a massive threat, compromising natural resources, affecting millions of livelihoods,

and demanding urgent management and policy intervention, **such as India's Wildlife Protection Act amendments**

Conclusion: To restrict the introduction of alien species that threaten ecosystems, the conference of parties to CBD called upon governments (CBD, 1992) to recognise the importance of prevention of alien species introduction as the responsibility of the government that needs scientific, administrative, and political coordination. However, efforts made are not up to the mark and still need policies concerning the use and management of invasive species. Invasions are not directly related to climate but promote the establishment and spreading of invasive species in ecosystems. The invasive species showed a decline and even destruction of several marine ecosystems including pathogen loss. The most cost-effective measure to address the impact of invasive alien species is to prevent their introduction. A collaborative approach involving various sectors such as environment, health, agriculture, fisheries, customs, transport, private sector, and civil

society is essential. Governments, donors, and agencies need to understand the impacts of IAS to integrate prevention and management measures into projects, including those supporting the Sustainable Development Goals (SDGs).

Kunming-Montreal Global Biodiversity Framework, agreed at COP-15 to UN Convention on Biological Diversity, speaks of reducing the impacts of IAS on biodiversity and ecosystem by at least 50%, by 2030. The Kunming-Montreal Global Biodiversity Framework (GBF) is a landmark, non-legally binding agreement adopted in December 2022 at COP15, aiming to halt and reverse biodiversity loss by 2030 and achieve a vision of living in harmony with nature by 2050, featuring 4 long-term goals and 23 urgent 2030 targets, including protecting 30% of land/sea, restoring degraded ecosystems, reducing pollution/pesticides, and aligning national plans (NBSAPs) for implementation, finance, and reporting, with countries submitting targets and progress tracking underway. (Ref: INTERNET)

(Sri.V.V.Hariprasadis a retired Deputy conservator of Forests and a practicing Advocate who can be accessed at vvhp53 @gmail.com and 7893673767,

Good Debate: A good leader can engage in a debate frankly and thoroughly, knowing that at the end he and the other side must be closer, and thus emerge stronger. You don't have that idea when you are arrogant, superficial and uninformed-

Nelson Mandela



EIGHT ELEPHANTS KILLED IN ONE TRAIN ACCIDENT

Sri B.K.Singh, IFS (Retd)

In the wee hours of Saturday, 20th December 2025, eight elephants were knocked down by the 'Mizoram- Delhi Rajdhani' express in Sangjura village, Hojai district of central Assam, killing seven of them on the spot and injuring one. The injured elephant also died the next day while undergoing treatment. Five of the killed elephants were calves. The visibility was very poor due to heavy fog, when the train struck the elephant herd. The loco pilot did apply emergency brake to save the accident, a testimony to this is the derailment of locomotive and first five bogies of the train. The train could only be started four hours later, when derailed bogies were replaced.

The Forest and Railway departments blamed each other for this. Though Sangjurai village is not in the recognized elephant crossing corridor, movement of elephant herds in the paddy fields as well as around the cluster of houses in the village is quite common. Forest department has already recognized several corridors for the movement of elephants' crossing the rail tracks in the state. I talked to Assam's Chief Wildlife Warden Dr. Vinay Gupta, who says that the recognized corridors are too many, where trains move with upper speed limit of 20 km per hour and are monitored with array of gadgets, but it may not be practical to recognize all rail tracks in the state as corridor. He further added that

the track running through paddy fields of the village Sangjurai is elevated and the elephants on the track would not have sufficient time to move out, even after locomotive whistle/ sound was heard. He is hopeful of finding a solution to the problem in the forthcoming brainstorming session with the Railway officials.

Range forest officer, Kampur has informed the press that the place of collision is about three-fourths of a kilometer from the potential crossing spot at pillar Number 125. Further, AI enabled intrusion detection systems (IDS) are installed at several places. The nearest system to the accident site is 32 km away, located between Hawaipur and Limdung towns linking central Assam to the Barak valley and Mizoram. Locals on the accident site feel that a similar system at Sangjurai could have avoided the accident. They also said that the elephants regularly move out of forests from November to February and come to the village for food (paddy and sugarcane) and the authorities have been pleaded to recognize it as elephant route.

A total of 94 elephants are said to have been killed in Assam since 2019-20 in train collisions. The elephants in Jalpaiguri belt of West Bengal are even more vulnerable for train accidents. The last two train collision cases were recorded there. A report, "Suggested measures to mitigate elephant and other wildlife train collisions

on vulnerable railway stretches in India” has identified 127 stretches spanning over 3,452 km. 77 railway stretches over 1,965 km in 14 states have been prioritized for mitigation measures. Clearly, there have been laxity on the part of Railway and Forest departments, as despite such measures in place, accidents continue to happen.

Linear infrastructures like roads, rails and canals fragment forests and wildlife reserves as well as the corridors for their movement. Although widening of roads and converting single rail track into double are the necessities of growth and development of the country, but at the same time proper mitigation measures must be in place. Development projects like mining, industries, expanding agriculture too lead to deforestation and degradation of natural forests and in the process the forests get fragmented. As the forests shrink, the wild animals have no option but to stray out of the reserves. If the size of the forests/ reserves is large enough to hold a viable population of wild animals and also provide enough food and water, probably the animals can be contained within the reserves. Assam's forests have been sufficiently fragmented owing to the development projects and expanding agriculture. The Bodo agitation also took its toll on the forests and there have been massive deforestation during that period. Northeastern states, in general, have a practice of shifting cultivation. Forests are cleared and burned for growing agriculture crops and after a few years, when agricultural productivity falls, the villagers clear fresh

area and burn tree growth for cultivation again. Fifteen years later, when forests revive and produce enough humus on the floor, the villagers come back to original area and again clear the tree growth and burn. Thus, the areas are perpetually cleared for cultivation. What remains as the natural forests is on the hill top, which has been spared by the villagers as growing agriculture is not viable there. The practice of shifting cultivation is quite harmful for forests and wildlife conservation.

Forest dwelling communities and tribals claim rights over the forest land under the Forest Rights Act, 2006. The Act has been grossly misused in the Northeast and several other states in central India and the coast. This has given a tool for local communities to occupy forests after clearing tree growth and burning. The Act has created a tendency among the communities to grab land. This Act has been the biggest driver for deforestation in post-Independence India. Officially the communities are to claim rights over forest land, if they are in occupation of the land as on 13th December 2005. More than 20 years have passed since the cut-off date, it is high time the Act is repealed. Central Coalfield Limited, Ranchi once came up with a proposal to lay a railway line through forests in Jharkhand. During scrutiny of the proposal for Ministry of Environment and Forests, I found that the line has been purposely aligned through forests to save cost, as user agency had to pay heavily for the acquisition of the private lands. I turned it down, but after my transfer, the proposal was accepted.

Similarly, Daitari-Baspani single railway line project through the forests of Keonjhar district of Odisha was turned down by me, but was approved later. This has led to the increase in wildlife conflict and collision of elephants with trains have gone up many fold. Now the doubling of this rail line has been proposed.

Hubbali-Ankola rail line through the best forests and wildlife rich areas of Uttara Kannada district of Karnataka has been turned down by several officers during last two decades, but user agency with the support of some politicians, continue re-opening the file every time a new person comes on the seat. Despite it has been rejected many times in the past, the file of Saravathy pump storage project requiring to sacrifice 200 ha pristine forests in the same district in the Western Ghats is being re-opened every now and then. These projects will have disastrous

consequences on the lives and livelihoods of the people of Karnataka and will further aggravate human wildlife conflict cases.

The land is scarce commodity and is required for development projects. If any project is to be permitted, land has to be acquired or the forests are to be diverted. The need of the hour is to minimize the diversion of the forest lands, and wherever it is necessary, proper mitigation measures must be built in. The highways and railway lines must have sufficient underpasses for the movement of wild animals. The new rail and road projects in elephant areas must be made elevated.

Wildlife and forests protect each other. Since we are not able to transition away from fossil fuel consumption at scale, we must keep our forests intact which has potential to absorb one-third of greenhouse gases we emit.

B K Singh is a former Head of Forest Force, Karnataka. M-94498 63501

Holistic Health: An Indian axiom says that everyone is a house with four rooms-physical, mental, emotional and spiritual. Unless we go in to every room every day, even if only to keep it aired, we are not a complete person.

–Rumer Godden



ROLLER BIRDS OF INDIA

Sri K. Praveen Rao, IFS (Retd)

The most sought-after stocky bird (with intense blue and pale blue plumage) during the festival of 'Vijaya Dashami', also known as Dussehra festival in southern India, is an old-world roller called Indian Roller. Seeing the Indian Roller is regarded as auspicious on Dussehra day. Rollers are members of the family Coraciidae and are found in the old-world countries of Africa, Europe and Asia. Members of the family Coraciidae are known as rollers because of the acrobats, dives and somersaults they perform during their territorial flights or during their courtship display.

Family Coraciidae has 13 living species at present. Family Coraciidae has been classified into two genera viz Coracias and Eurystomus. In India, Genus Coracias is represented by three species of rollers, they are Indian roller, European roller and Indo Chinese roller whereas the Genus Eurystomus is represented by one species viz Oriental Dollarbird. The rest 9 species are found either in Africa, Europe or Australasia.

Members of the family coraciidae have dominant colours like pink, blue, cinnamon etc like bee-eaters, kingfishers etc. They have stocky body and hooked beaks. They have larger head and short necks. Some of the toes of its members are joined at the base known as syndactyl. This enables them to have good hold on the perch and good grip when they pounce on the prey. This helps the bird in stronger grip to perch but not run, they cannot hop or move along the perch. They have weak feet and short legs. Their food mainly

consists of insects. The bill in Genus Coracias rollers is generally black whereas in Genus Eurystomus the bills are broad and brightly coloured.

The Genus Coracias rollers are watch and wait type of hunters. They observe the prey, mostly insects and terrestrial invertebrates, from the top of a perch and descend down to pick with their beak and move back to the perch. Whereas Genus Eurystomus rollers, like Dollar birds, take their victims like flying beetles, crickets, swarms of termites. They crush them with their broad beaks. This behaviour of catching the prey is attributed to the wing span of Genus Coracias rollers and Genus Eurystomus rollers. Coracias have short wing span whereas Genus Eurystomus roller have long hence they are more aerial.

The rollers nest in an unlined hole in the tree and aggressively protect their territory. They patrol their area by their croaking harsh calls and displaying their wings stretched showing dark pattern of their wings. The enemy is attacked by rolling dives to intimidate it.

A brief description of individual species of Rollers found in India is as follows:

Indian Roller (*Coracias benghalensis*)- A crow sized bird with pinkish face and throat. Its Head and back are brown with blue on rump, various shades of blue on wings, tail and belly which are prominent while in flight; white streak along breast and throat. It is a resident bird found throughout the entire

India, mainly in the agricultural fields sitting on the branch of a tree or perching on electric wires. It pumps its tail while sitting or perching. Its numbers are falling very fast. This is attributed to the use of pesticides and unavailability of insect prey. Now it is classified as near threatened species by IUCN (International Union for Conservation of Nature)

Indo-Chinese Roller (*Coraciasaffinis*) – It is also known as Burmese roller or Black-billed roller. Indochinese roller is recently split into a separate species basing on the molecular studies. Earlier it was considered as sub species of Indian roller. It is found in Nepal, Eastern India, Burma and South East Asia. Its head and vent are blue in colour. It has a purple blue breast, darker olive back and the general colouration is darker blue. The bill is darker.

European Roller (*Coraciasgarrulus*)–It is a blue bird with orange brown back. When in-flight the blue colour with black flight feathers is contrasting. It is the only roller that breeds in Europe. It breeds in Europe and winters in Africa. It is a passage migrant to western parts of India but also reported from Uttar Pradesh, Andhra Pradesh, Tamilnadu and kerala. It visits India during August to November months before it moves to Africa (Autumn migration) and on its return journey to Europe they visit India during March, April (Spring migration).

Oriental Dollarbird (*Eurystomusorientalis*)
– This bird belongs to the genera *Eurystomus*

and has long wings compared to the other three rollers. It is found from India to Australia through south East Asia. While In flight two white dollar shaped spots are seen underwings that gave its name 'Dollar Bird'. Sometimes it is confused for mynas, but the longer wings of Dollar bird are its distinguishing feature. Its head is flat and the dark blue bird has a red bill.

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the photographs showcasing the sanctuary's landscapes, as well as its rich flora and fauna.

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Reclamation of Waterlogged Areas through Bio-Drainage

Sri R. K. Sapra, IFS (Retd.)

The Haryana Forest Department initiated the reclamation of waterlogged farmlands through the bio-drainage scheme in 1998. The outcomes of this scheme were exceptional, as it not only reclaimed waterlogged areas and made them suitable for cultivation, but also provided additional income to farmers through cultivation of clonal eucalyptus on bunds, while contributing to environmental conservation through carbon sequestration. Over time, however, the implementation of this scheme under plantation programmes has declined. This decline has adversely affected the farmers whose farmlands are waterlogged and has led to the neglect of an environmentally sustainable alternative. As per press reports, a restriction on the planting of clonal eucalyptus has been enforced by the State Government recently. Since clonal eucalyptus is the principal species used for raising bio-drainage plantations, any decision to discontinue its planting is likely to seriously affect this programme.

According to Haryana Water Resources Atlas-2025, an area of 7.24 lakh acres was affected with the problem of waterlogging and salinity in the State during June 2023. The problem of



waterlogging is quite severe in Rohtak, Jhajjar, Hisar, Jind, Sonapat, Ambala and Fatehabad districts. Recently, the Hon'ble Chief Minister of Haryana has raised the issue of increasing waterlogged areas in the state during pre-budget discussions with the Hon'ble Finance Minister of India and demanded special financial assistance to handle this problem. In this context, it is suggested that the bio-drainage plantations using clonal eucalyptus may be raised in the above districts as its wood remains the most sought-after raw material for wood-based industries. At present, a substantial quantity of timber that could otherwise be produced locally is being imported, resulting in income losses for the farmers, reduced employment opportunities for rural labour, and revenue loss for the State Government, thereby adversely affecting the entire value chain.

It is noteworthy that eucalyptus is among the most widely planted tree genera globally, comprising more than 500 species. In Haryana, farmers have cultivated eucalyptus on their farmlands for over five decades without significant complaints regarding its adverse impacts. On the contrary, it has provided higher returns compared to agricultural crops.



The eucalyptus is a highly adaptable species that regulates its water requirement according to site conditions. In waterlogged areas, its higher water uptake contributes to increased wood production, thereby enhancing the farm income. Presently, the cultivation of clonal eucalyptus in normal soil provides returns varying from Rs 80,000 to Rs 1,00,000/acre/yr from 5-year-old plantations. In waterlogged areas, its return will depend on the density of planting as well as the salinity level in farmlands

Clonal eucalyptus, being a high yielding variety requires more water, but it is the most efficient user of water. Due to its faster growth, it is recommended that clonal eucalyptus planting may be banned in the districts receiving annual rainfall below 500 mm except its planting in waterlogged areas to reclaim them. Although concerns regarding the cultivation of eucalyptus have largely been resolved by farmers themselves, the matter has also been settled in its favour by the National Green Tribunal and the Punjab and Haryana High Court. Any remaining

apprehensions may be conclusively addressed through the involvement of reputed research institutions such as the Forest Research Institute (FRI), Dehradun, the Central Soil Salinity Research Institute (CSSRI), Karnal, and Haryana Agricultural University (HAU), Hisar.

Based on my 40 years of professional experience, I am firmly of the view that the Budget for 2026–27 should accord a clear thrust to bio-drainage plantations in the waterlogged districts falling under the Central and Western regions of Haryana. Although Haryana has the Plywood Capital of India at Yamuna Nagar but focusing on this initiative would facilitate the diversification of panel industries such as plywood, MDF, and particle board in these neglected regions of agroforestry. Hence, this environmentally friendly intervention may not only ultimately result in the reclamation of waterlogged areas and enhancement of farmers' incomes, but may also help in mitigation of the effects of climate change and in achieving a carbon neutral economy in Haryana.

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Infinity Capacity: Infinity exists in a finite seed. A seed planted becomes a tree. From a tree again there is a fruit, from a fruit there is a seed, from a seed a tree, so in a finite seed there is infinite capacity to grow.

Swami Sukhabodhananda



Excess Tiger Population in TRs-A Challenge

Sri B M T Rajeev, IFS (Retd)

The surge in the population of tigers in one of the 9 prime Tiger Reserves (TRs)-Bandipur started with the launch of 'Project Tiger' in the 1973 in India and its adjoining 2 TRs-Nagarahole & BRT Hills in the districts of Mysuru, Chamarajanagar & Kodagu. The border districts in south of Karnataka is witnessing the chorus tiger...tiger by the people when tigers stray out of their den-TRs with demand to capture and deport to captivity or elsewhere.

During 2025 from Sept to end of the year many incidents of tigers straying into human habitations have caused 4 human maulings with 3 deaths and 1 severely injured. And another incident of tiger attack & kill of a staff, inside the Bandipur TR while on duty, happened in December 2025. The tiger attacks on humans outside the TRs were all the acts of tigers on humans for their obstruction by



humans while preying on the cattle. The preying on cattle by tigers is also on rise. The sighting of tigers in the human habitation is frightening the people to cry against it with anxiety of attack on them or their cattle and to force the forest authorities to capture & deport. During this milieu, the farmers forced the TRs' management to close the wildlife safaris in the famous Bandipur & Nagarahole TRs fearing disturbance to the tigers in the safaris as

the reason for tigers to invade humans habitats and cause conflicts.

Pic: Tigress with grown up cubs being followed by safari vehicle

These three TRs are contiguous to the Mudumalai TR, & Sathyamangala of the Tamil Nadu, and Wayanad WLS of the Kerala to the South and the MM Hills WLS to the East & Western Ghats forests in the Coorg dist-to the West in Karnataka to where, the surplus tigers can spread and find home ranges. But, the northern borders of these TRs are with bubbling rural civilization with farming of food grains and commercial crops.

The population of tigers is found to be more than the carrying capacity of the TRs Bandipur and Nagarahole; the new recruitments, after weaning away from their mother-tigress, find it difficult to squeeze in the TRs for their independent home ranges... are forced to move out in all directions of their den of birth to establish their home ranges and mother tigress too may move out in search of new home range The tigers whichever move towards human habitations come in contact with the humans and cause frictions by preying on cattle or mauling humans whoever obstructs them, such tigers are branded as cattle lifter or man-eaters by the people as they fear a lot for these frictions and presence of tigers as devils and will force the TRs authorities to capture and deport such tigers from their village limits. This is the trend or a model around these TRs, but, how many tigers can be captured and deported and to where is a question? Whether such tigers be trans-located into tiger-

less TRs or WLSs? Or should such tigers be kept in captivity? Or can tigers co-exist with humans?

Do tigers coexist with humans?

Yes, tigers and humans have coexisted for millennia across much of Asia, where tigers are native to the dense forests of India and Southeast Asia to the Russian Far East. Archaeological evidence and historical records show that early human societies, including indigenous communities, shared landscapes with tigers, often viewing them with a mix of reverence, fear, and practical conflict management through folklore, rituals, and territorial boundaries. For instance, in regions like the Indian subcontinent, ancient texts and cave art depict tigers as integral to human cultural narratives, indicating long-term overlap rather than isolation.

***Population of tigers in the past:** Indian sub-continent hosted about 100,000 tigers in 1900 CE; 40,000 in 1930; 30,000 in 1939 and 4,000 tigers in 1964, as per the estimation of the naturalists and plunged to its nadir 1,827 tigers in 1972 (1st ever tiger census). India had a high density of tigers, lions, leopards, cheetahs- all predators/big cats with sufficient prey base; and people lived along with them. This legacy of rich wildlife wealth was lost due to unabated hunting as games for pleasure by the emperors/ kings/maharajas and British officers on sabbatical trips and poaching by the culprits for trade in animal parts in the past.

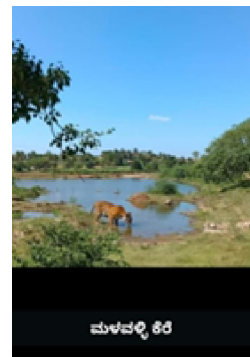
But, we see in mythological films like Harischandra...that when the predators attack villages & create havocs, the kings used to go on hunting expedition to hunt/kill problem causing predators like tiger, leopards & lions etc to resolve the unrest of his subjects as an act of people's welfare measure. During British rule except the Viceroy Lord Curzon & U P Governor Malcolm

Hailey rest of the British Rulers all indulged in ordering to hunt and eliminate tigers, leopards involved in cattle lifting and elephants indulged in crop raiding; and left hunting of wild animals free as a game for pleasure and rewarded the hunters for killing of the problems causing animals like tigers, leopards& elephants..

The people who lived with tigers in the past appear to be a myth & forced one as they had to live and lived with fear of dying without alternatives in those eras.

***In modern times,** scientific studies have documented successful coexistence strategies. A landmark 2012 research project in Nepal's Chitwan National Park used camera traps to reveal that tigers and humans utilize the same trails and habitats with surprisingly low conflict rates, as tigers adapt by shifting their activity to nighttime hours when human presence diminishes. This behavioral flexibility allows both species to "share space" effectively, a pattern observed in other tiger strongholds like India's Sundarbans mangrove forests, where local fishing communities have lived alongside tigers for generations, employing deterrents like beehive fences and early warning systems. The Sundarban's situation has no alternative for the residents of it to think of.....

***Issues in Karnataka:** But, In Mysore



& Chamarajana Nagar Districts-Karnataka, it is a different scenario... the people are assertive in demand for safer life against the frictions of tigers, leopards and elephants. It requires a lot of change in the hearts of people in the areas close to Tiger Reserves to tolerate the presence of

tigers in their habitations. Now, tigers are sighted all along northern fringe-human habitations of the TRs and it was seen more in the autumn of 2025. Tigers are sighted around Mysore city and even in the AirPort of Mysuru on Jan 4th, 2025, about 50 km away from the Bandipur TR. The tigers are sighted around Mysuru, Bengaluru and other cities in Karnataka. Most of them are captured and deported to the Forests.

Pic: A tiger watering in a village tank of Malavalli close to the BTR which was caught & deported

To quote: The Coffee estates in the districts of Coorg & Hassan say...they have tigers, leopards & elephants staying and breeding in their Coffee estates moving from place to place by avoiding encounters with humans...this is an example of coexistence of humans & tigers, elephants in the same habitat. Here too...parallel cannot be drawn between the coffee estates and the farming human habitations.

Understanding "Excess" Tigers in Habitats

While tigers remain globally endangered (with ~5,600 wild individuals worldwide as of 2025), India's conservation success has led to **local high**



densities in some reserves. This creates challenges like increased dispersal into human areas, heightened human-tiger

conflicts, and potential ecological imbalances (e.g., prey depletion or competition with other carnivores like leopards or friction in finding home range to new recruits in their habitats etc). True "overabundance" is rare—most experts view

it as a sign of success—but when populations approach or exceed a reserve's carrying capacity, active management is needed to prevent spillover issues.

Pic: Tigress with cubs

India's tiger population has grown to over 3,700 (70-75% of global total), concentrated in 58 reserves. High-density sites (e.g., Corbett: ~260 tigers; Bandipur/Nagarahole: 140-150 each) see young tigers dispersing outward, leading to conflicts. Management focuses on **Meta population dynamics**: maintaining source populations in core-areas while allowing safe dispersal or translocation. (Meta population means is a group of separate yet interconnected population of the same species)

Key Challenges from High Local Densities:

The scientific measures to be taken to deal with the high density of tiger population in TRs are as follows.

- **Human-Tiger Conflict** -Dispersing tigers entering villages, preying on livestock or rarely attacking humans.
- **Habitat Spillover** -Artificial prey boosts (e.g., via water/meadow management) inflate densities beyond natural levels, pushing tigers out.
- **Genetic and Ecological Issues**-Isolated high-density pockets risk inbreeding if corridors fail; competition affects leopards/co-predators.
- **Uneven Distribution** --~40% of tigers in 11% of reserves; many others have <10 tigers or none.

Management Strategies

India's National Tiger Conservation Authority (NTCA) guidelines emphasize science-based Tiger Conservation Plans (TCPs). When nearing

carrying capacity:

The challenges in the above 3 TRS of Karnataka are as follows.

1.Limit Habitat Interventions: Reduce artificial enhancements (e.g., fewer waterholes or meadows) to curb unnatural prey/tiger booms and minimize spillover- This is a trickling issue in the above 3 TRs of Karnataka.

The habitats have been invaded by the invasive exotic weeds- Lantana, Eupatorium and Parthenium species causing depletion of the fodder resources leading for migration of elephants & other herbivores like gaurs & deer spp to farm lands....for which uproot of the exotic weeds and sowing of grass seeds for development of fodder meadows are in progress and it is a must and cannot be stopped in the interest of containing elephants inside the TRs from depredating on the farm crops.

Then water scarcity during summer in the interiors of these 3 TRs is severe; to contain the life and survival of small animals and deer spp... water holes have to be maintained with water throughout the year, if not, the animals will die or depredate into human habitations and cause problems. Even borewells are dug & maintained during summer. This intervention too cannot be stopped in these 3 TRs.

2.Secure and Restore Corridors: Protect connectivity between reserves for natural dispersal, reducing conflict. Examples: Terai Arc Landscape (India-Nepal) corridors enable movement without human areas.

The Corridors for dispersal of animals from these 3TRs is natural towards the south, east and west but not to the north which is with developing rural civilization and there is no scope for corridors

except creation of barriers between the TRs and the human habitations. But the corridors to south, west and east are also tiger habitats to which it appears that tigers of these 3 TRs may not be free to disperse or dispersing freely...needs a research finding.

3.Tiger Translocation/Reintroduction: Relocate excess/dispersing tigers to low-density reserves for genetic diversity and repopulation. Recent successes:

*2025: Tigress airlifted from Pench (MP) to Ramgarh Vishdhari (Rajasthan)—first inter-state aerial translocation.

*Ongoing: Transfers from high-density MP/ Maharashtra reserves to Rajasthan, Sahyadri, etc.

*Historic: Panna (extinct → reintroduced → thriving); Sariska recovered.

This strategy has scope in Karnataka to see that the tigers in excess be trans-located to the TRs like Kali, Bhadra and PAs like Sharavati WLS and Dandeli NP and even to Bisle RF and Kodachadri RFs. But, it is difficult to translocate the stray tigers involved in the HACs as they too may cause problems in the new areas to find a mate.... The family of tigers like nursing tigresses with 2-6 cubs of around one year age should be identified and trans-located into an enclosure with prey...and gradually left to wild in the new habitats to establish in the prey rich TRs and PAs/ RFs to see that the problem of surplus tigers in Bandipur and Nagarhole is stabilized along with implementation of other strategies and tiger population in Karnataka is spread out and TX2 achieved (TX2-double the tigers in a given time).

4.Human-Animals Conflict Mitigation:The MACs mitigation measures in the above 3 TRs are as follows.

***Tiger-proof livestock enclosures:**

The above 3 TRs are provided with elephant proof barriers along the boundaries abutting the humans' habitations like EPT, Old Rail Fencing, Solar pulsating fence & even masonry walls in combination and tiger proof fencing is untenable in this elephant dominant region. However, it can be tried in the villages very close to the boundary limits of the TRs.

***Rapid response teams for problem tigers:** The Karnataka is well in advance in this strategy, task force-teams of officers equipped with vehicles have been formed to address the call for help by the people, sound systems of bees swarming, crackers abled with AI technology are installed across strategic routes against straying of elephant, tiger, leopard and bears into the human habitations with a high powered control room in the AranyaBhavan in Bengaluru in all the sensitive areas of human-animals conflicts (HACs) around the TRs, PAs and RFs.

***Community eco-development in buffers** (e.g., sustainable livelihoods to reduce encroachment). This has been done on a large scale in the Nagarahole TR for 10 years under WFF and to some extent in the Bandipur TR. There is huge scope for it the Bandipur & BRT TRs. The threat of

forest encroachments is no longer visible.

***Monitoring and Adaptive Management** Use camera traps, DNA analysis, and M-STRIPES for real-time data. Adjust based on prey base and density. (M-Stripes is an ecological mobile application for monitoring the ecology of the TRs). Camera traps and DNA analysis- identification of tigers and in the census of tigers were took birth in the Nagarahole TR with research by Dr K UllasKaranth and they are in very much use since Y2ks in Karnataka and M-Stripe mobile App is in very much use for the monitoring of ecological changes in the TRs of Karnataka.

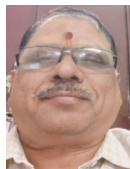
Outlook

High local densities are a conservation win, enabling India's role in global recovery (TX2 goal achieved early-doubling tiger population). Challenges persist due to fragmented habitats in a human-dominated landscape, but strategies like translocation and corridor security are scaling up. Long-term: Expand protected areas, manage meta-populations, and balance ecology with development. The TRs in Karnataka are geared up in tackling the tigers in abundance in line with the scientific strategies developed by the NTCA and TCPs.

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**In solitude: Alone let him constantly meditate in solitude on
that which is salutary for his soul, for he who meditates in
solitude attains supreme bliss**

- Guru Nanak



Prevention of Cruelty to Animals Act, 1960

Dr. Akula Kishan IFS (Rtd)

Introduction

The Constitution of India provides a moral and legal compass for animal protection. Article 48 urges the State 'to preserve and improve animal breeds and to prohibit slaughter of cows and calves and other milch and draught cattle'; while Article 51A(g) casts a duty on every citizen to 'protect wildlife and show compassion to living creatures'.

Different Animal Laws in India are:

1. The Prevention of Cruelty to Animals Act, 1960
2. The Wildlife (Protection) Act, 1972
3. The Cattle Tress Pass Act, 1871
4. The Elephant Preservation Act, 1879

Further, there are a few provisions in BNSS 2023 and BNS 2023 also.

Different States have also enacted local laws for protection animals.

Definition of 'Animal' in different enactments

a) 'animal' means any living creature other than human being

(Sec 2(a) PCA 1960)

b) 'animal' includes mammals, birds, reptiles, amphibians, fish, other chordates and invertebrates and also includes their young and eggs (Sec. 2(1) WLP 1972)

c) 'animal' means any living creature, other than human being (sec. 2(2) of BNS 2023)

Prevention of Cruelty to Animals Act, 1960

The Prevention of Cruelty to Animals Act, 1960 is the foundation of animal welfare law in India. It mandates humane treatment of animals and criminalises acts causing unnecessary pain or suffering. The Animal Welfare Board of India, created under this Act, works alongside State agencies, to promote welfare standards and public awareness.

Different rules made under the PCA Act, 1960 are as follows:

1. The Prevention of Cruelty to Draught and Pack Animals Rules, 1965 - These rules specify the categories of animals and the permitted weight it can carry or number of persons it can pull through Cart.

2. The Prevention of Cruelty to Animals (Licensing of Farriers) Rules, 1965

Regulates persons engaged in shoeing of horses and other equines, ensures humane methods and prevents injury.

3. The Experiments on Animals (Control and Supervision) Rules, 1968

These rules provide for stocking of animals for experiment, conduct of experiments, restriction of sale of animals for experiments and maintenance of records thereof.

4. The Performing Animals Rules, 1973

They provide for the Registration of performing animals which are used for or for the purpose of any entertainment to public.

5. The Transport of Animals Rules, 1978

These rules provide for transport of Dogs and Cats, Monkeys, Cattle. Equines, Sheep and Goats; Transport of poultry by Rail, Road and Air; Transport of Pigs by Rail or Road, prescribes the sizes of crates for transport.

6. The Prevention of Cruelty to Animals (Application of Fines) Rules, 1978

The fines collected under the Act of 1960 are to be made over to Animal Welfare Board of India, and the financial Assistance to Societies.

7. The Prevention of Cruelty to Animals (registration of Cattle Premises) Rules, 1978

Every person owning or in charge of premises in which not less than five heads of cattle are kept for the purpose of profit shall register the premises.

8. The Prevention of Cruelty to Animals (Capture of Animals) Rules, 1979

These rules regulate capture of animals, prohibits cruel methods such as: Use of poisoned baits, certain traps.

9. The Breeding and Experiments on Animals (Control and Supervision) Rules, 1998

Provides for registering of breeding of animals for experiments, and maintenance of records about animals used for day to day for conducting of experiments, stocking of animals, and permission to be taken from the Committee constituted by Central Government.

10. The Prevention of Cruelty to Animals (Slaughter House) Rules, 2001

These rules govern functioning of slaughterhouses, their Licensing,

Ante-mortem and post-mortem inspection, Humane slaughter and

Prohibition of slaughter outside recognised slaughterhouses

11. The Prevention of Cruelty to Animals (Establishment and Regulation of Societies for Prevention of Cruelty to Animals) Rules, 2001

For Regulates the Societies for Prevention of Cruelty to Animals, their

Constitution and management, Functions, Grants and accounts and

Powers and duties.

12. The Performing Animals (Registration) Rules, 2001

Applies to animals used for performance or exhibition and requires:

Registration, Conditions for training and performance, linked with restrictions imposed by notifications on use of certain animals

13. The Animal Birth Control (Dogs) Rules, 2001

Applies mainly to street dogs, provides for: Sterilization, Immunization against rabies, Role of local bodies and NGOs and emphasizes non-lethal population control.

14. The Prevention of Cruelty to Animals (Transport of Animals on Foot) Rules, 2001

These rules are applicable to transport of animals on foot when the distance from the boundary of Village/town/City of origin of such transport to the last destination is 5km or more than 5km. The procedure and care during transport is specified.

15. Prevention of Cruelty to Animals (Circus Animals) Rules, 2001

Specifically governs animals used in circuses,

prescribes: Housing and transport.

Prevention of Cruelty to Animals (Care and Maintenance of Case Property Animals) Rules, 2017

Deals with animals seized during investigation or trial

Provides for: Custody, Care and maintenance expenses and Interim release of animals

16. Prevention of Cruelty to Animals (Regulation of Livestock Markets) Rules, 2017

Regulates sale and purchase of livestock in markets, Intended to:

Prevent cruelty, ensure humane handling. Certain provisions were later diluted / modified following judicial and policy changes

17. Prevention of Cruelty to Animals (Dog Breeding and Marketing) Rules, 2017

These rules regulate: Commercial dog breeders, Pet shops and requires:

Registration with AWBI, Minimum standards of care, Prohibition of irresponsible breeding

18. Prevention of Cruelty to Animals (Aquarium and Fish Tank Animals Shop) Rules, 2017

Applies to aquarium shops, Prescribes standards for: Housing, Care

Transport of fish and aquatic animals

Judiciary and the Animal Welfare

Indian courts have consistently strengthened animal protection.

a) In Animal Welfare Board of India v. A. Nagaraja is (2014) 7 SCC 547, decided by the

Supreme Court of India on May 7, 2014, which banned Jallikattu and bullock-cart races as cruel, violative of the Prevention of Cruelty to Animals Act, 1960, and Article 21 of the Constitution, highlighting animal suffering.

b) Supreme Court of India (three member bench) in 'SUO MOTO WRIT PETITION(CIVIL) NO(S). 5 OF 2025 IN RE: "CITY HOUNDED BY STRAYS, KIDS PAY PRICE" WITH WRIT PETITION(CIVIL) NO(S). 784 OF 2025 SLP(CIVIL) NO(S). 14763 OF 2024 AND SLP(CIVIL) NO(S). 17623 OF 2025 (2025 INSC 1018) in their orders dated 22.08.2025 , the Supreme Court directed all States and Union Territories to ensure that stray dogs are removed from the premises of hospitals, educational institutions, sports complexes, bus terminals, and railway station. The Court made it clear that the dogs once picked up must not be released back into the same area. The Court further held that it would be the duty of local authorities to identify, capture, and relocate stray dogs from these institutions/areas to authorised shelters after vaccination and sterilisation, in accordance with the Animal Birth Control Rules. Directing strict compliance, the Bench said the Chief Secretaries of all States and Union Territories would be personally accountable for enforcing the order. Each such premises, it said, must also have a designated nodal officer responsible for supervision and upkeep, while municipal bodies and panchayats must conduct regular inspections over the next three months and submit their findings to the Court. Directing strict compliance, the Bench said the Chief Secretaries of all States and Union Territories would be personally accountable for enforcing the order. Each such premises, it said, must also have a designated nodal officer responsible for supervision and upkeep, while municipal

bodies and panchayats must conduct regular inspections over the next three months and submit their findings to the Court.

Conclusion

The prevention of Cruelty to Animals Act, 1960 and rules made there under are quite elaborate and if they are implemented in true letter and spirit the animals would be properly treated and taken care of. But there is no

sufficient mechanism to implement the Act and Rules with Animal Husbandry Department and additional manpower available with Government may have to be roped in. The implementation of directions of the Hon'ble Supreme Court of India in respect of controlling the dog menace is an opportunity to formulate and implement by involving various wings of the Government.

The author is a retired IFS officer/CF, Telangana cadre. He authored many books on Forest Act and Allied Acts, the Forest Code and drafted various amendments. He is a practicing advocate in APTG High Courts. M-70930 06261.



Answers to Green Quiz: 1.Dev Karan, 2.Pineapple express, 3.Polyphenol oxydase, 4.Tinai/Ainthinal, 5. Phalap/Khalap, 6.Peregrine Falcon, 7.Polar Point, 8.Bile juice, it only emulsifies fats; 9. Doda district and Badarva area, 10. Edward Lorenzo, working on a climate prediction project

For School Students: 1.Shadnagar, presently NRSC is also located there, 2. Esther LalduhawmiHnamte, Mizoram, 3. Rajasthan and MP, 4. French for City of Dawn, 5. Captain Mohan Singh



LEGAL NOTE-SUMMARY of SAHEBNAGAR FOREST CASE

(A story of fraud to grab government forest)

Sri. K. Buchiram Reddy, IFS (R)

The matter relates to a forest reservation where one Forest Settlement Officer rejected the claim but another F.S.O, in re-enquiry under the orders of District Court on the same material on record, passed an award against the Forest Department. On appeal by the D.F.O, the District Court confirmed the order of the F.S.O. When the matter was taken to the High Court in revision, justice was denied to the State. The D.F.O filed an appeal in the Supreme Court. It was a valiant battle and an untiring effort. At last, at the Supreme Court, Justice though delayed but justice is not denied. Now read on for further details.

Forest land in Survey No.201/1 of Sahebnagar village of an extent of Acs. 102.00 is part of land of an area of Acs. 570 handed over to Forest Department in the year 1953 by the Board of Revenue of the Government of Hyderabad for establishing soil conservation research centre. This land, together with land of an extent of Acs.333 of Turka Yamjal village in Sy.No. 93 and another land of an extent of Acs. 30 of Nadargul village in Sy.No140/1 with total area of Acs. 465, was proposed to be constituted as a reserved forest under the name -Gurramguda Forest Block; and a notification to that effect was published in the Andhra Pradesh Gazette dated 12.08.1971. Consequently, the Forest Settlement Officer issued a proclamation inviting claims over the land and objections, if any, against the proposal to declare the area as reserved forest. The proclamation of the F.S.O was issued on 05.01.1972 and the same was published in the Andhra Pradesh Gazette. The claims/objections had to be made to the FSO within six months to one year. There were no claims. But, after nearly 31 years, Mir Jafar Ali Khan and others filed a claim

petition before the F.S.O in 2005, stating that the land in Sy.No. 201 belonged to the Salar Jung III and it is purchased by Saheb Begum Saheba, a great grandmother of Salar Jung III, and that the claimants are the successors of the Salar Jung. They produced some documents (Sale Deed etc) which are proved to be dubious and false.

Thanks to D.F.O Sudhakar Reddy; it is because of his perseverance and pursuit with the Archives, the truth is disclosed. Initially the F.S.O Smt. U.Achyuta Kumari, having admitted the claim after several years, rejected the claim on 03.09.2010. The claimants maneuvered by appeal in the District Court and got the case remanded for de novo enquiry. By then Sri S.Yadagiri took over as the F.S.O and he passed the award saying that the land in question is Arazi Maktha and self-acquired property, passed an award on 15.10.2014 in favour of the claimants.

The battle began then with all serious attention by the D.F.O Ranga Reddy district. The importance of the land due to its proximity to the twin cities of Hyderabad and Secunderabad was realized. There was growing awareness for environment protection in view of 42nd amendment to the Constitution in 1976. (Art.48A Protection of forest and environment as state policy and Art. 51A (g) as every citizen's duty to protect forest and safeguard environment); and also Environment Protection Act enacted in 1986.

The FSO's award was challenged in appeal in the District Court, Ranga Reddy District. The appeal was registered as C.M.A No.5 of 2015. The P.C.C.F requested the Advocate General to appear and argue the case. On behalf of the A.G., Sri Mohan

Rao, Special G.P. took up the case. We briefed him well. He took pains to present the case before the Principal District Judge, Ranga Reddy district, Sri Vijender. Sri Mohan Rao presented abundant documents and vehemently argued for three days. But it looked that the eminent lawyer's arguments fell on deaf ears. There was no appreciation for the reliable evidential strength. As coming events cast their shadows, the appeal of the Forest Department was dismissed.

Protection of the precious public property was in peril and we were determined to save the public property come what may. The opposite party was determined to grab the land mischievously producing false evidence. Realising its importance we decided to approach the High Court by way of filing writ petition; but it was not permissible. Therefore we were advised to file a Revision Petition

A revision petition was filed in consultation with the Advocate General and it was numbered as C.R.P No. 417/2017. The revision petition was heard by The Hon'ble Justice Smt. P.SreeSudha. On behalf of the revision petitioner, Special G.P. SriHarendarPershad appeared for the Advocate General and placed the material record before the court. He cited a number of rulings in support of the Government's case. But we grew suspicious of the outcome of our case and started preparing to approach the Supreme Court. As anticipated the Revision Petition was dismissed. The Advocate General advised to file appeal in the Supreme Court. It became a matter of Do-or-Die.

Sri Sudhakar Reddy D.F.O Ranga Reddy took upon himself the responsibility of preparing the documents and got in touch with the Advocate-on-Record at Delhi Sri Shravan Kumar and went to Delhi along with a team of officers who were willingly helped him. The A.O.R prepared the papers and filed Special Leave Petition together

with Appeal. Leave to Appeal was granted and the Appeal was numbered as Civil Appeal No. 9996 of 2025. Sri Sudhakar Reddy explained to the A.O.R. the meanings / definitions of Persian and Urdu terms like Jagir, Inam, Maktha, Arazi Maktha etc.

The Appeal was posted before the Bench comprising The Hon'ble Justice Pankaj Mittal and The Hon'ble Justice S.V.N. Bhatti. On behalf of the Appellant, Ld. Additional Solicitor General Aishwarya Bhatti, Ld. Senior Counsel C.S. Vaidhyanadhan and Sri Kodandaram appeared and argued the matter well. Their Lordships went through the voluminous record and made a critical analysis of the issues and carefully followed the arguments of the Leaned Counsel representing the appellant. Extracts of the judgment of The Hon'ble Supreme Court are reproduced below:

"The District Court and the High Court fell into error of law in affirming the view taken by the Forest Settlement Officer through the order dated 15.10.2014."

"The claim for the Subject Matter in claim petition No.1 of 2005 for the appreciation and examination of the very case of the claimants fails, and the claim is thus rejected. It is held that the Subject Matter has been government land and the final notification under Section 15 of the Telangana Forest Act has been validly instituted. The impugned judgments for the above reasons are unsustainable, warrant interference, and accordingly, the order of the Forest Settlement Officer dated 15.10.2014, as confirmed by the Principal District Judge and High Court is set aside. The appellant has kept the proposal for final notification under section 15 of the Telangana Forest Act pending from 1971 till 20.12.2004."

"It is a matter of common knowledge that lung spaces are shrinking in all the cities and twin cities of Hyderabad and Secunderabad are no

Contd.. on page No.56



Green Quiz – February 2026

Quiz Master: Dr. K. Tirupataiah, IFS (R)

1. Name the Indian youth who emerged as one of the five global winners of UN backed young activist summit for his work on restoring traditional ponds in India.
2. What is the name of the atmospheric river which moves heavy moisture from Hawaii to the US West coast causing storms and heavy flooding?
3. While ethylene is responsible for the ripening of Banana, what is responsible for blackening of the peeled Banana?
4. By what term were geographical landscapes described in the Sagam literature?
5. What is the name of the rare traditional Indian dark Tea made by the SingphoTangsa and Nagas in Arunachal and Assam that has a smoky aroma?
6. Which is the fastest bird in the World that exceeds 320 kms/hour, in its dives?
7. What is the name given to the boundary where the cold Antarctic waters meet the warmer sub-Antarctic waters driving powerful sea-air exchange?
8. Which is the only juice produced in the human body that doesn't have an enzyme?
9. Which district in J&K is called the Lavender capital of India?
10. Who coined the term 'Butterfly effect' to phenomenon of widespread effect of a remote event?

For School Students

1. Where in present day Telangana was the earth station of the Satellite Instructional Television Experiment (SITE) launched in 1975 located?
2. Which 9 year old rendered 'MaaTujhe Salaam' in 2020 in a AR Rahman's concert?
3. Which two states in India made newspaper reading mandatory in schools?
4. Auroville in Pondicherry was established by Aurobindo and his followers. What does Auroville mean?
5. NetajiSubhas Bose was the third leader of the INA. Who was its first leader?

Answers on page no :53

Continuation from page No. 55

exception. Hence, the Chief Secretary, State of Telangana is directed to ensure completion of pending proposals under section 15 of the Telangana Forest Act for including the Subject Matter as a reserve forest within 8 weeks and file

the compliance status report before the registry of this court." The civil appeal is allowed accordingly.

The Honorable supreme court stuck to its motto, "Yatho Dharma sthatho Jaya" meaning where there is Dharma there is victory.

Of course, there is delay but justice is not denied.

Note: The author is a Retired Dy.C.F. He is on Ph: 966 609 7788. Source: "2009 (4) ALD (NOC) 47". His Email ID: keesarabuchiram@gmail.com mailID: keesarabuchiram@gmail.com



OBITUARY

Sri P.S Shankar Reddy, IFS (Retd.)

It is quite unfortunate that A.P Forest department lost a retired octogenarian Sri P.S Shankar Reddy IFS who was a well-known officer of A.P Forest Department called affectionately as TTD Shankar Reddy and who put in herculean efforts in developing greenery in the forest areas of TTD Tirupati. He worked for a long time on deputation with TTD Tirupati and retired in 1995 when he was on deputation there. He breathed his last on 10-01-2026 at Tirupati. The bereaved family comprises one daughter, two sons, four grandsons and three granddaughters. Because of the passing away of his eldest son Madhusudhn Reddy who was a quinquagenarian being in his early fifties due to sudden ill health ten days prior to his demise he was subjected to lot of mental agony at this advanced age. Sri P.S. Shankar Reddy was born on 09-11-1936 at Rachanapalli of Anantapur district. His parents were Late P.Chenna Reddy and P.Lakshmiddevamma. He pursued his studies at Anantapur. He was 19 Years old when he joined Southern Forest Rangers' College Coimbatore as Forest apprentice. In the first posting he joined at Kurnool as Forest Range officer. He worked as Divisional Forest Officer Eluru of West Godavari district and for a long period he worked as DFO TTD Tirupati on deputation from A.P Forest department. To his credit he was awarded Gold medal in Botany at Forest College. He was also awarded a merit certificate by Late Sri. N.T.Rama Rao, former CM of A.P when he was DFO at Eluru in West Godavari district. He was awarded Vriksha Mitra when he was serving as DFO in TTD, Tirupati.. A coffee estate in R.V. Nagar, Vishakapatnam was named after him as "Shankar Reddy coffee

estate". After retirement he worked as consultant for TTD Tirupati. In 1996 he led the implementation of Biodiversity enrichment plan for TTD forests at Kailasgiri hill along with Late Sri.V.S.Raghavaiah IFS Retd and actively promoted afforestation there. In view of the initiative taken up by him, S.M.C structures were constructed in Veyilingala Kona. Following this, he and Sri Thammanna, Retired Garden Superintendent, were entrusted with the responsibility by Andhra Pradesh government for carrying out plantation programs in major temples namely: Srisailam, Annaram, and Simhachalam for a period of one year. In 2003-2004 he was appointed by Executive officer TTD Tirupati along with Late Sri Rajasekhara Reddy IFS Retd for evaluating the implementation of the afforestation project taken up by forest wing of TTD in its forest areas and by A.P Forest department in RF areas in Chittoor east division with the funds provided by TTD. He further contributed to TTD's action plan for ghat road plantations under the guidance of Sri. Raja Shekhar Reddy, IFS (Retd.), with the active participation of Sri. Santhaseela Babu, Retired DFO. It is worth knowing that TTD Tirupati under his supervision started for the first time in A.P, the practice of planting tall plants under the component of TTD afforestation. From 2007 onwards he was serving as the Hon'ble Advisor for Sri City plantations, Tada. In this connection VANAPREMI while paying homage to the great soul, offers condolences to all the members of the bereaved family.

V.V.Hariprasad

Dy.Conservator of Forests (Retd.)



OBITUARY

Dr. Royyuru Sundarvadan, IFS (Retd)(1956-2026)

Dr. Royyuru Sundarvadan, a distinguished officer of the Indian Forest Service (1982 batch), passed away, in the late hours of 17 January 2026, at his residence in Hyderabad. He developed sudden breathing difficulty and after giving CPR at home, he was rushed to the nearby multi-speciality hospital. The doctors there diagnosed it as a massive heart attack and tried to revive him, but could not succeed. With his passing, the Indian Forest Service has lost a committed administrator, a dynamic leader, and a warm human being.

Born on 13th September 1957 (official date: 1st August 1956) at his Maternal grandparents' home in Ventrappagada, Shri Sundarvadan hailed from Royyuru village of erstwhile Krishna district in Andhra Pradesh. His father Late Shri R V B Gopala Rao was a Village Karnam of Royyuru and Sundar was the eldest of four siblings (two brothers and two sisters). His Mother Smt. Savitri (87) pre-diseased him on the 26th October 2025.

Sri Sundarvadan completed his schooling at Godavarru in Krishna district and graduated from Satavahana College, Vijayawada. He did his M.Sc in Botany from Benaras Hindu University. A scholar of merit, he emerged as the topper of the Indian Forest Service Examination, 1981, conducted by the UPSC and joined the Indian Forest College, Dehradun on 1st May 1982.

He was allotted to Andhra Pradesh cadre and joined for field training in the Adilabad Division in July 1984, which marked the beginning of a long and impactful career spanning several important field and administrative assignments. As Divisional Forest Officer, he served with distinction in Warangal North, Karimnagar East, and Guntur Divisions. His career also included significant developmental roles as Project Director, DRDA; Project Director, DPAP; and Project Director, DDP in Nalgonda, Chittoor and Anantapur districts, respectively.

On promotion to the rank of Conservator of Forests, he was posted to the Office of the Principal Chief Conservator of Forests as Conservator (JFM), where he played a key role in implementing the World Bank-aided Forestry Project. He later served the Government of Andhra Pradesh as Additional Secretary in several

departments, including Industries, Animal Husbandry & Fisheries. He was Commissioner, Differentially abled for over six years. In all these deputations, he contributed meaningfully to policy and administration beyond the forestry sector.

In 2013, Sri Sundarvadan suffered a serious illness and underwent a brain surgery. Demonstrating remarkable resilience and commitment to public service, he recovered partially and returned to duty, serving as Conservator of Forests (CFM & Environment) until his retirement. He was allotted to Telangana cadre after the bifurcation of Andhra Pradesh and retired on 31st July 2016.

Known for his outgoing personality, enthusiasm, dynamism and leadership, he left a lasting impression wherever he served. His ability to bring about positive changes in working conditions and to motivate colleagues was widely acknowledged. These qualities were evident even during his IFS training at Dehradun, where he served as Mess Secretary and was fondly addressed as "Brother" by the batchmates for his helpful nature and inclusive leadership. He was totally affectionate and committed to his family as a Son, Brother, Brother-in-Law, and a devoted Son-in-Law, besides being the most affectionate, guiding husband and father.

Sri Sundarvadan is survived by his wife Smt. Sobha, an Indian Forest Service officer of the 1986 batch (a former PCCF (HoFF) of Telangana), their son Prasannavadan, and daughter-in-law Lavanya Razdan. Prasannavadan holds a B.Tech in Computer Engineering with a minor in Business & Finance from Nanyang Technological University, Singapore, and is currently working as a Business Analyst and Hardware Engineer with Citibank Corporation, Singapore. Lavanya Razdan, is a Business Administration graduate from Jammu, and is working with Face Book in Singapore.

Sri Royyuru Sundarvadan will be remembered as a dedicated civil servant, a compassionate leader, and a colleague who inspired trust and camaraderie. His contributions to the Forest Department and public administration, and the warmth he brought to professional and personal relationships, will be cherished by all who knew him.

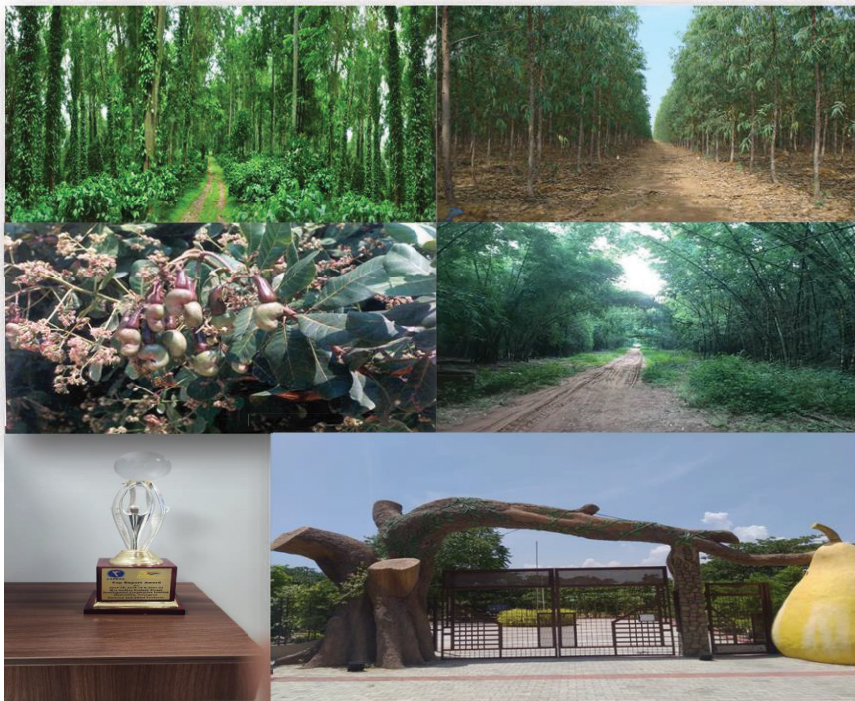
May his Atma attain Sadgathi. Om Shanthi Om shanthi Om shanthi

Dr. K.P. Srivasuki, IFS (Retd)



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One sub-adult Blackbuck challenging the territorial dominance of an adult one.

Photo Dr. Thulsi Rao : Rural Landscape of Kurnool District during "Operation Blackbuck- about 6000+blackbucks were safely translocated.

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