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VANA PREMI

Nav Se Nawvey Saal Tak Ke Bachhon Ka Saathi

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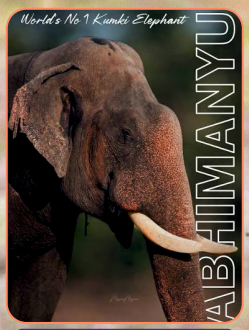
Vanapremi wishes its readers a Happy Independence Day



World Elephant Day 12th August

World Lion Day 10th August

African Lion (Masai Mara)

Photo : Sri. Kola Venkateswarlu
Award winning Wildlife photographer, Kodad

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

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

VANAPREMI

Vol. : 27 **AUGUST - 2026** **No.08**

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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The opinions expressed in Vana Premi are those of the author. They do not purport to reflect the opinions or the views of the Association of the Retired Forest Officers of Telangana and Andhra Pradesh.

Please consult the Associate Editor.

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From the Editor's Desk...

Independence Day greetings to all readers of Vanapremi,

August, as the name suggests, is really an 'august month' full of World, International, National events and festivals. The summer had retreated and the monsoon has reached its peak month, though delayed and sporadic. The National Handlooms Day (7th) calls for encouraging handlooms. One of the former Chief Secretaries of AP called for all employees to wear handlooms once a week which was also encouraged by Telangana government from 2014-2024. Power of youth has been seen with telling effect in Bangladesh, Nepal and now in India. Swami Vivekanand's birthday (12th), observed as 'international Youth Day', calls for listening to the youth and empowering them so as to harness our 'demographic dividend'.

India's Independence, through non-violent means, inspired many colonial nations to fight and secure freedom. May be it is time for us to look back on our fundamental rights along with fundamental duties so as to contribute to realizing the goal of the sleeping giant (Elephant) becoming a 'developed nation', by 2047. By the way, 12th Aug is observed as 'World Elephant Day'.World Organ Donation day (13th), World Humanitarian Day (19th) and SadbhavanaDiwas (20th) carry a common message of "Vasudhaiva Kutumbakam", which looks all the more relevant in view of the major conflicts going on. Parsi community (new year on 16th) contributed immensely to the nation. The famous 'Onam festival' (22nd), Women's Equality Day (26th) and Raksha Bandhan (28th) bring in to focus women empowerment and family relations.

The year 2026 has two major sporting events i.e The Commonwealth Games at Glasgow (on going) and the Asian Games (Sept-Oct). The National Sports Day (29th) reminds us that we have potential to become a major sporting nation too.

This month's issue carries core contribution of one of our authors towards amendments to the WLPA 1972 and a related article on the success mantras from Project Tiger. Effect of El Nino, rural-urban distress and the 'presence' of effects of climate change, form a group of related articles. Evolution biology is continued. The article on the engineering and architectural wisdom of Termites is really exciting. Reunions of batch mates are always exciting and the Ruby Re-union of the SFRC colleagues is no different. Academies carry a lot of sweet and funny memories both for the trainees and the trainers. One such experience from the SFSC Dehra Dun is not only hilarious but memorable too.

The world is getting digitized fast and crime related to it is too going up. Training forest personnel on the latest tech and gadgets is very essential and an effort by the APFA is quite interesting.

While India's green cover outside forests is constantly increasing, its import of wood, especially Teak timber, is not coming down in the same order. A comprehensive analysis of the issue along with a strategy to overcome this foreign exchange drain is suggested in one of the articles.

Our authors not only contribute articles while in India, they also continue to do so while touring abroad. The "Fossil Rim centre in Texas" visited by one of our authors features in the issue with impressive pictures. Two of our senior members released their books recently and we carry review of these books.

Green Quiz and Legal Notes, our regular features, continue to brain tease and educate the readers.

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



Amendments to WLPA, 1972 for Course Corrections

B M T Rajeev

Indian Wildlife (Protection) Act, 1972 is a special Act for conservation, protection and management of wildlife. This Act underwent many amendments depending on the requirements for better wildlife protection, conservation & management in the field and the Act saw amendments in 1977, 1980, 1986, 1991, 2002, 2003 and 2006 when National Tiger Conservation Authority (NTCA) was introduced for effective management of the tiger and other important wild animals endangered much in India. The 2022 amendment to WLPA, 1972 is important asit is the latest in which a lot of changes have been made in the schedules of animals to be protected with vision.

Preamble: I authored and published a book "Handbook of Indian Wild Animals" in Kannada in 2018. In fact it took about 2-3 years for me to translate my own book "Glimpses of Indian Wildlife" in English 2009-a chapter on wild animals of India with updates by incorporating the details of all the animals in India as cited in the Schedules of WLPA, 1972.

After completion of the book an idea struck me to – note the Schedule-number for all the animals discussed in my book with reference to the list of animals in Schedules-I, II, III, IV& V in the WLP Act to ensure all animals listed in the schedules have details. Further, an idea struck me to identify all the National/ States' animals and birds and note in my book etc … This exercise after completion of the book puzzled me a lot where I found that names of some important animals missing in the schedules/some animals named twice/some animals indicated by the family/some by scientific name and some by local name. The scientific names given for butterflies and mollusks under invertebrates were leading nowhere when tried to search about them on the internet… I myself was struck with a puzzle even after retirement and with considerable knowledge in the field of wildlife conservation with service in PAs for a decade and after producing two books on wildlife about the status of somewild animals in the schedules of the WLP Actfor protection. It led me to imagine the puzzle it is causing in the field to the executive Wildlifers/Foresters to take recognition of the offences to subject them for judicial process in the process of wildlife conservation. It forced me to compile such lacunae in the schedules of the wildlife Act and then write to the authorities to be redressed.

I chose to write to the Hon'ble PM-Narendra Modi ji listing all the lacunae and confusions in the schedules with request to cause for suitable amendments. I wrote and submitted two representations in Feb, 2016 and April, 2016 and got replies from the PM's office and an appreciation letter by the Ministry MoEF&CC for the suggestions given for improvement in wildlife conservation. (The said letters written to the PM were made in to an article as "Lacunae/ Riddles in the Schedules of WLPA, 1972" and it was published in the Indian Forester in October, 2017 and also in theVanaVikas in Sept, 2016 and VanaPremi-March 2018. It has been printed in my book-"BharateeyaVanyaJeevigalaKaipidi", vide page 265-277.

Further, I had a puzzle over the invasion of the

habitats of PAs affecting their carrying capacity by exotic invasive weeds – Lantana, Eupatorium and Parthenium and it has been discussed in my books on wildlife management and in articles. I submitted a representation about the menace of the Lantana in PAs of Karnataka to the Hon'ble Prime Minister with a request to grant Rs. 1,000 Crore under Compensatory afforestation-CAMPA to Karnataka to control exotic weeds in PAs on 24th Oct, 2016. It was referred to the attention of the Empowered Committee (EC) of the CAMPA appointed by the Supreme Court and onto the MOEF&CC and finally the wildlife wing of the Ministry, for Action.

Both the above problems have been considered positively by the MoEF&CC and suitably accommodated in the Amendment-2021 of WLPA, 1972. I was overwhelmed with joy to see the amended WLP Act-2021 and my reaction on it was as follows (which was published in the Deccan Herald on 17th January, 2022 under the heading…."Wildlife conservation gets a boost with timely amendment")

The amendment to Indian wildlife (Protection) Act-1972 was introduced in the parliament in 2021 and referred to a Parliamentary Standing Committee on Science and Technology, Environment, Forest and Climate Change.It was finally passed in the LokSabha in August, 2022 and notified.

The 2022 Amendments to WLPA 1972 …

This amendment's aim is: "Conservation, Protection and Management of wildlife" from the earlier 'Protection of wild animals, birds & plants'.

Section 2 – I6A-definines exotic and invasive species of animals and plants, whose introduction or spread may adversely affect the animals, plants and their habitats with a provision in Sec-62A to control, check, regulate and also to destroy such alien species.

*It is a very innovative move to check & control the invasive exotic weeds like Lantana, Eupatorium,Parthenium and Sennaspectabilisetcin Protected Areas affecting the carrying capacity of the habitats in terms of fodder, space, regeneration of grasses and trees and in controlling fires. Earlier, there was no provision even to remove grass or dead flowered bamboo,as fire hazardous fuel wood load from the Tiger Reserves, due to restrictions imposed by the Hon'ble Supreme Court in a WP.

Section 6A-an addition – It has given powers to the State Board of wildlife to constitute "Standing committees" for the purpose of exercising powers and performing Boards' duties as may be delegated to it by the Board with sub-Committees like in the National Board of Wildlife whose Standing Committees' powers too have been enhanced.

*This provision has hastened the clearing of the projects in the forest areas with reference to wildlife mandated under FCA, 1980; fast without sitting of the State Board of Wildlife (SBWL) which has to be presided by the Hon'bleChief Minister or by the Minister for MOEF&CC- which cause delays and much debate with the presence of all the board members. Whereas the clearance under sub-committee is fast with less debates that makes the act of FCA clearance easy and fast-This is detrimental for the conservation of wildlife and their ecosystems,

Section-28 (b) – Amended to grant permission for film-making without causing any adverse impact to the habitat/wildlife.*It is not a welcome move since PAs are already overcrowded with tourists all over India especially for tiger sighting.

Section-33- It has been amended to vest powers with the Chief Wildlife Warden (CWLW) to manage sanctuaries in accordance with the management plans approved by him as per the guidelines of

Central Government and with consultation of GramaSabhas wherever such PAs fall under the "Recognition of Forest Rights Act, 2006". Similarly construction activities including govt lodges are restricted. *This is a positive step.

OTHER AMENDMENTS

Gun license – around protected areas (PAs) has been restricted up to 10 km radius against the 5 km radius earlier. Wild animals involvedaffected in crimes have to be nursed in zoos or in rescue centers till released into their habitats. The certified owner of a live elephant can transport it without permits as per the procedure prescribed.***A Positive measure benefitting wildlife conservation**

The Chapter-VB- A New chapter has been added for Regulation of International Trade in Endangered species of wild Fauna and Flora as per – CITES vide Sections-49D to 49R to deal with the breeding, conservation, trade-in import, export, re-export etc of schedule fauna & flora has been added with power to the central government to appoint "Management Authority" with organization to cover all outlets& inlets of international travels… It is also provided for a new department to deal with CITES – hither too handled by the Customs Department.*It is a very good arrangement to deal with the trade in animals and animals parts of lucrative market under CITES but, it is a very good arrangement that the GOI has already stared under the Ministry of EF&CC.It is called as Wildlife Crime Control Bureau (WCCB) headed by a DIGP under the DIGF-Wildlife. **It is under NTCA-provisions but not under this chapter.**

I spoke to officer concerned in the INA Port, Bengaluru-he said-the 2022 amended schedules in WLPA has added many left over animals & mentioned the Sparrow…for which I felt happy. He said that local Foresters are afraid of taking care of the seized exotic wild animals under CITES for which they are not allowing them to down load in to India & forces them to take back from where it was loaded.

Section 51- Has been amended by increasing fines but Penalties in terms of imprisonment remain the same. Fines have been increased from Rs. 10,000 to Rs. 25,000, From Rs. 25,000 to Rs1.00 lakh.

Section 54-Compounding power under this section has been increased from Rs.25,000to Rs. 5.00 lakh.

SCHEDULES OF THE ANIMALS IN THE ACT:

The schedules of animals, birds, reptiles, amphibians, fishes and invertebrates; vermin and plants in Schedules I, II, III, IV, V & VI of the Act have been reduced to 4 Schedules and Schedule-V- Verminlist has been dropped to declare such animals when foundnecessary. Sch.I -Animals (Animalsof old Sch I&II clubbed)

Sch.II- Animals (Animals of old Sch-III& IVhave been clubbed)Sch.III – Plants (Old Sch-VI has been changed to Sch-III)

The Schedule – IV has been added pertaining to CITES with Appendices I, II, III for details of fauna, flora & their origins to guide prosecution Section 5I (I) proviso (ii); accordingly changes have been made in the corresponding Sections of the Act.

The Schedules of animals/plants have been made as very simple lists of species of fauna and flora with common names with corresponding scientific names with grouping of animals under Sch-I &Sche-II in Parts A,B, C… & as mammals, birds, reptiles, amphibians, fishes, echinodermata, mollusca, anthropods, butterflies,dragonflies, corals…with names in alphabetical orders under each group and made it easy for identification of all animals under schedules.

This amendment has also sought to address the anomalies found in the Schedules of animals listed in the Act, some with local names, some with scientific names, some with both, and some with family names etc… Which were most confusing and sometimes used to lead nowhere for the field officers to take cognizance of the offences and to approach courts. I noticed these lacunae while identifying each animal with a Schedule number- to show its status in protection for my book-"Hand Book of Indian Wild Animals." Made a list of such lacunae and submitted two memorandums to the Hon'ble Prime Minister of India to set right the anomalies in the Schedules of the wildlife Act, 1972 in 2016 and got appreciation letter from the Ministry MoEFCC.

Now, I am happy that most of my suggestions are accepted and the schedules of animals are updated. E.g.1) Alpine musk deer – State animal of Uttarakhand was missing and has been included in Sch-I.



Pic: House sparrow (State bird of UT-Delhi)

2) Whales and Dolphin-only a few were named in the Schedules earlier, now-17 whales, and 11 dolphins have been listed in Sch-I.3) Birds like – House sparrow, Eagles/Kites, Lapwings, Ibis, Terns, Frogmouths and Wagtails; some reptiles, fishes, frogs etc were missing in Schedules are now listed.

In a nutshell, this amendment is more technical and a need of the hour to plug loopholes in the field of wildlife protection, conservation and management. It opens an era of protection for the aquatic/marine mammals, reptiles, fishes and other invertebrates since the wildlife wing has to take action to monitor and reign over Coasts to safeguard marine fauna – hitherto neglected. The trade in animals and their parts will be put under strict vigilance with the invocation of the CITES-Management Authority under this Act to strengthen the protection measures to wildlife. This amendment deserves to be praised in the interest of wildlife.

NB: This article was republished in the VanaVikas of the KRFOA in April, 2022 and it contained the appreciations for my above efforts by my Senior Forest Officers, my colleagues, friends and relatives.

The Gist of the Appreciations is as follows

*Very well done BMT Rajiv ji, I am so happy that your efforts have been acknowledged. I share your feelings with satisfaction. When I had gone through it in your first mail to me I was surprised to see so many things missing in the Act as pointed out by you. My efforts in reaching out to the ministry for above genuine cause make me happier that your tremendous passion and work has been acknowledged. All the best **Avni Kumar Varma, IFS, PCCF &HoFF(Retd)**

*Now, you know the reasons why I used to address you as "Dr. Rajeev", though there are many in the forest faculty in Karnataka, only a few however sharing the limelight like you. Keep it up, my dear friend, and many more contributions come from you, with the same zeal and dedicated interest in the wildlife wing particularly. Yours sincerely, **AC Lakshmana, IFS, Former Secretary to Govt& Member NITI Ayog, Karnataka**

*Very good and wonderful suggestions to set right the lacunae. It is so nice of the Ministry to have accepted and effected changes in the Wildlife (Protection) Act enhancing its effectiveness to conserve and to help to convict offenders. My compliments to you for this contribution.**B K**

Singh, IFS, PCCF &HoFF (Retd), Karnataka

* Fantastic Rajeev, I am sooo very happy to go through your sustained, industrious and brilliant efforts in the cause of wildlife and their safety, security and management. I am proud to feel that it was great to have been associated with you in a lot of hard work, planning and execution Visions | 395 to further the cause of in-situ and captive management of wildlife. But your work has now been appreciated and probably incorporated in the now edited wildlife Act by none other than the Hon'ble Prime Minister of India speaks volumes for your efforts. I share your joy as a forester and a close associate. **SK Chakraborty, IFS, PCCF & CWLW (Retd), KAR**

WAY FORWARD

Further Amendmentsto WLPA that are required for course Correction are ….

1. The WLPA 1972 is very strong in penalties & fines. The cases booked in the core area/ NP/ WLSs under the Tiger Reserves are all cognizable offences with a minimum RI of 3 years & up to 7 years with a fine of Rs not less than Rs 1.00 lakh and above as per Sec 51(1-C) r/w sec 38 V (2) & 38 V (4)(i),- means all these offences have to be taken to the court for trail which involves investigation and filing of charge sheets as per the procedure.

Whereas the WLPA has empowered the officers not below the rank of aAsst Director of wildlife Preservation or Assistant Conservator of Forests vide Sec.50 (8) to investigate and file charge sheets for offences under WLPA…. So it compels the TR management to impose the burden of investigation and filing charge sheets for all the cases booked since the Range Forest Officers (RFOs) who are empowered to book the offence cases cannot investigate & file charge sheets as there is no provision to compound the cases in TRs except in the buffer zone/forests/elsewhere in their jurisdiction. It is a heavy burden on the ACFs to investigate all the cases booked by 3 or 4 RFOs under their jurisdiction to investigate and file charge sheets and follow the cases in addition to his other responsibilities of supervision & quality/ quantity control/checking of all new/maintenance works/ protection etc…

1(a). It requires the WLPA 1972 to cause an amendment to Sec.50 (8) **empowering the RFOs and above to investigate wildlife offences and file charge sheets for trial in the court of law.** The RFOs in status, minimum qualification of a degree in science for recruitment have all changed compared to what it was in 1972 and they are well equipped to take up investigation. However, the cases pertaining to tiger, leopard, lion, elephant and Rhino …star animals which have higher risk with interstate connection in investigationto be entrusted to the officers' equal to ACF and above level for best interest of the protection.



Pic: Tigress with 2 cubs ; photo by Ramachandra IFS

2. The WLPA 1972 prohibits the alteration of the boundary of any WLS without the recommendation of the National Wildlife Board vide Sec 26-A(3) and that of any NP vide Sec 35(5). But for the development projects of the state or GoI , the required area of WLS or NP i.e. PAs are cleared and given to project under FCA 1980 as per its rules on payment of NPA of forest area & alternative equal fallow land for raising afforestation with cost

anywhere in the concerned state on the permission of the NWLB.

It means that it is treated as a forest land and not as a PA. This is a great injustice to wildlife conservation since it permanently takes away critical wildlife habitats from the ambit of PA management where wildlife is protected and conserved. The Compensatory afforested area may become a forest or not but will be a forest land and it will not serve as a PA. It is necessary to put a condition under these sections to give equal area of RF to be added to the same PA or to any PA in the state so that PAs area remain intact since compensatory forest is added and raised somewhere else and will not be a PA. This provision is necessary since public have agitation to declare RFs into PAs. Otherwise these provisions of restrictions will have no meaning when cases dealt under FCA in the PAs. E.g. Mekedatu dam project in Karnataka where 12,600 acres of Cauvery WLS is under stake-submersion.

2(a). It requires to amend Sec 26-A(3) and Sec 35(5) with additional provision to deal with the FCA 1980 in the WLS and NPs respectively to get equal area of RF to be added to the same PA or any PA in the state in addition to the compensatory afforestation to ensure the equal area of PAs in the state.

3. The electrocution of elephants raiding crops in Karnataka has become common. The state has lost about 30 elephants due to electrocution-touching live current wires connected to solar fences in past 3 years (2026). There is no much fear in the minds of the culprits in connecting live current wire to solar fences around crop lands leading to electrocution of elephants/other animals. In one of the case there was an opposing argument that the death due to electrocution is not an offence as per the definition of hunting in the WLPA vide Sec.2(16).

3(a) It is necessary to amend and Sec. 2(16) (b) by including electrocution as one of the cause of death of any animals.

The Provisions of the WLPA 1972 with reference to the amendment-2022 is given in the following table for reference of the Field officers while booking the wildlife offence cases in the field. It will help the officers to visualize the gravity of the offences while booking. It helps further to strengthen the cases if the relevant sections are noted while drawing Mahazars and the FIRs…

Sl no	Offences in contravention of WLPA Provisions under Sections 2	Punishments imposed for the said offences under Section of WLPA with imprisonment & fines 3
1	Contravene of any provisions of the WLPA, rule or order or breach of conditions (Except Chap.V-A, 38-J) U/s 9-Sch-II animals, 17, 18-A, 27-32, 33-A, 35, 36-A, 36-C, 39,40, 41,43,44,47,48,48-A, 49,	U/s 51(1); Upto 3 years RI or fine up to Rs 1.00 lakh or both; but Compoundable under Sec.54 *For 2nd & subsequent offences –Not less than (Nlt) 3 yrs& up to 7 yrs RI Plus fine NltRs 1,00 lakh

1(i)	i)Hunting of Sch-I animals or possession of its meat, trophy or uncured trophy U/s 9 R/w S.2(16) anywhere ii)Hunting of any animals Sch-I & II and altering of boundary in PAs-NPs or WLSs or Con.Rs or Com.Rs U/s 9, 27(3) R/w Sec 35, 18, 36-A,36-C	U/s- 51(1); *Nlt 3yrs & up to 7 yrs RI with fine NltRs 25,000/- *For 2nd & subsequent offences –Nlt 3 yrs& up to 7 yrs RI plus fine NltRs 1,00 lakh-
2	Trade in Trophies Chap-V-A U/s 49-A,49-B, 49-C	U/s 51(1-A); Nlt 3years & up to 7 yrs RI plus fine NltRs 25,000/-
3	Teasing of animals in Zoos U/s 38-J	U/s 51(1-B); Up to 6 months SI or fine up to Rs 2,000/-or with both *For repeated offences up to 1 yr RI or fine up to Rs 5,000/- or both NB: But compoundable under Sec.54
4	Tiger Reserves: i) Offences in the Core Area/NP/WLS of TRs U/s 9, 18(2),(3)&(4), 27, 30, 31,32,(b) &(c), 33 R/ws 38-V(2)&(4-i) *ii) Hunting of any Sch.animals in TRs U/s 9 R/ws 38-V (4-ii) *iii) Altering Boundary of TR U/s 27(3) R/ws.35-V	U/s 51(1 C); - *Not less than (Nlt) 3 years & up to 7 yrs RI with fine NltRs 50,000/ & up to 2.00 lakh *For 2nd & subsequent offences –Nlt 7 yrs RI with fine NltRs 5.00 lakh & up to Rs 50.00 lakh *For Abettors-Punishable as provided for offenders as above u/s 51(1-D)
5	Attempts and abetments U/s 52	Whoever attempts to contravene or abets any provisions of this Act will be deemed to be contravene the Act & Rules.
6	Compounding of offences of minimum punishment not fixed U/s 51	U/s 54 (4); Compounding fee should not exceed Rs 5.00 lakh
7	Offences-Purchase & Sale of animals parts-Chap-6A U/s 58 A to 58 X	U/s-58Y Punishable with RI upto 5 years & fine Rs 50,000/-

Note: Where Nlt- Not less than; U/s- Under Section; R/ws-Read with section; RI-Rigorous Imprisonment; Sch-Schedules of the Act; P.A- Protected Areas; NP-National Park: WLS-Wildlife Sanctuary; Con.Rs-Conservation Reserve; Com.Rs-Community Reserve. E&OE…Based on the interpretationof law.

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MONSOON DEFICIT – RURAL AND URBAN DISTRESS

B.K.Singh

The new rural employment scheme Viksit Bharat – Guarantee for Rozgar and Ajeevika Mission (VB- GRAM)rolled-out in the country from this month has significantly focused on projects relating to water security in the villages, which are impacted by suppression of monsoon by super El Nino this year. Though the World Meteorological Organization (WMO) in the latest up-date indicated that this climate phenomenon is projected toaggravate heat wave conditions, droughts and other extreme weather events in many parts of the globe from July to September, Indian sub-continent has already experienced more than 40% rainfall deficit during the month of June. Union Agriculture and Rural Development Minister Sri.Shivraj Singh Chouhanhas urged the states to strengthen water conservation structures to store water for drinking and irrigation and make available additional employment opportunities for landless and agricultural laborers in distress.

The 2026 southwest monsoon has been later than usual in arriving across most mart of India with large swathes of northwest still uncovered. Indian Meteorological Department (IMD) has forecasted that the deficit of 40% rainfall in June would reduce to 10% at the end of southwest monsoon season. As July begun, rainfall picked up in Gujarat, Maharashtra and across western to eastern Himalayas. It caused flooding in Mumbai, Surat, J&K, Sikkim, Arunachal Pradesh and Assam. IMD has projected the monsoon to be slowing down in the second half of July.Moreover, when the deficit narrows down, different parts of the country are likely to receive more intense rainfall in the remaining period of southwest monsoon, which may cause flooding, landslide and disrupt lives and livelihoods of the rural and urban communities in different regions.

Human misery in India this summer is caused by intense heatwaves in May and June months. The temperatures soared beyond 450 Celsius in several regions causing human health risk and death. Later in the month of June and even in early July, European continent grapples under the high temperature soared to 350 Celsius and even up to 400 Celsius in southern regions. France, the Netherland and Belgium recorded 3700 excess human deaths and authorities warned that these numbers are preliminary and may even rise. People above 50 years of age accounted for larger proportion of the deaths. A number of deaths are reported due to persons drowning in water bodies; those who did not know swimming also jumped in deep water to beat the heat and perished. Experts have found that the current heat waves in Europe is worst recorded in its history. This has caused disruption to power generation, damaged infrastructures and overwhelmed health care system. The rivers are running low and even nuclear power generation has taken a hit due to slow cooling of reactors. European houses are designed tokeep inside warm with minimum ventilation; 25% houses are not air conditioned. The high temperature has caused melting of road tops and even bending of rail lines, thus slowing down the traffic and cancellation of some trains. The road tops and rails are designed to remain sturdy during winter, while it snows in some regions. Europe is facing the biggest infrastructural challenge in the early part of this summer. July and August are the peak summer season there.

US is also not spared of the heatwave conditions.

As it sweeps across the country, the power grid and water supply systems are strained. Data-centers which consume vast amount of electricity and water are testing public support. Regulators and policy makers have consistently warned that pace of construction of data-centers are faster than the expansion of water and electricity infrastructures. Data-centers at present consume 4% of US power demand, which is projected to rise to 9% by 2030. 40% of the power consumed in data-centers is used for cooling. Because of the climate change, the land, sea and atmosphere are warming and more power is needed for cooling the data-centers.

In this opinion piece, let me analyze the impact of El Nino weather conditions in rural and urban India. In a warming world the enhanced sea surface evaporation increases the moisture deposits in atmosphere and when the conditions become favorable several hundred mm of rainfall takes place in a few hours. As explained in the earlier Paras, 40% rainfall deficit in June narrows to 10% by September, we are bound to have downpours and more than 100 mm of rains may be dumped in one hour. This would overwhelm the drainage system and bring floods. The urban centers, like Mumbai faced a few days earlier, will face the brunt. The apathy of civic agency claimed quite a few lives in recent flooding in Mumbai. A person fell in open and flooded manhole and died, another girl died of electrocution while wading through flooded water. The civic agencies must ensure that city drainage system that was designed to take a load of 50 mm of rains per hour is upgraded to withstand more than 100 mm of rains per hour. The use of basement of the buildings for commercial activities like coaching centers, dispensaries etc. without alternate and proper evacuation facilities can be more dangerous. It can be flooded in no time or can be at blaze requiring urgent evacuation. Civic bodies must regulate such commercial activities. Many a times, water has to be pumped out of the basements. A larger underground sump to store some rainwater will help its conservation.

The distress among the agriculture dependent communities is enormous when the rainfall is suppressed. Union Agriculture Minister Shivraj Singh Chouhan has urged states to take up the strengthening of water harvesting structures so that maximum quantity of water is impounded in such structures. Karnataka's rainfall has also been suppressed so far, and CM has urged the farmers to delay sowing till rains arrive. Further drinking water for Bengaluru and other townships in the vicinity is said to be available for only two months, if water is not released for irrigation. KRS and Kabini reservoirs have only 25% water against the total storage. In similar situations, the farmers in Mandya protested in the past for release of water to grow paddy. If there is any such protest, Bengaluru and other towns will get drinking water for only one month. Hope there would be some respite and rain God would bless us with good rains. A sizable population of Bengaluru is dependent on ground water for their necessity. In the absence of rains, the water table would further deplete, bringing more misery for people. The story is similar in other cities of the country. The urban centers are concrete jungles. There is very little area left on the surface of the earth for water to percolate. The water harvesting structures on the roof top are hardly functional, and most of them have collapsed. The civic agencies must ensure that certain percentage of area on any site is not cemented to enhance percolation. If we go on deepening bore wells, what are we leaving for our future generations?

Finally, a word of caution to farmers, our Annadatas. In a situation when rainfall is suppressed, please do not go for water intensive crops like paddy and

sugar-cane!I have some feedback on this from social influencers of my native state Uttar Pradesh. They say that the area under paddy cultivation is not reduced, despite the flow of water in canals has gone down by one-third as compared to last year. People continue to pump ground water and plant paddy. Union governments have been sending advisories for farmers to go for less water consuming crops. Millets like Bajra, ragi etc. are efficient to use minimal soil moisture and can withstand temperatures as high as 420 Celsius. These are highly nutritional, too. Farmers should also adopt soil moisture conservation strategy and must make sure that the integrity of the catchment of their fields are maintained. The forests in the catchment must be preserved, so that there is sustained water flowing in the inlet drains ending in agricultural fields.

The author is a former PCCF &Head of Forest Force, Karnataka and presently teaches Economics in the Karnataka Forest Academy. M-9449863501



Birthday Greetings

We wish the following born on the dates mentioned

"A Very Happy Birthday"



S.No.	Name of the Member/ Retired officer	D.O.B.
Sarvasri		
1.	A.V. Joseph	05-08-1956
2.	P. Rajendranath	10-08-1953
3.	M. Mohan Rao	12-08-1952
4.	L.R. Sekhar	13-08-1953
5.	P.S. Srinivasa Murthy	14-08-1962
6.	K. Suryanarayana	15-08-1952
7.	V. Kishan	16-08-1950
8.	M. Pradyumna Reddy	23-08-1955
9.	Dr. N.V. Jayanth Babu	23-08-1953
10.	A. Sudhakar	24-08-1948
11.	D. Basavasankar Rao	25-08-1955
12.	P. Vishweshwaraiah	27-08-1951
13.	C. Muralidhar Rao	28-08-1941
14.	P. Ranga Raju	30-08-1952
15.	M. Narasimha Reddy	02-09-1954
16.	B. Srinivas	02-09-1962
17.	Dr. K. Tulsi Rao	03-09-1954

S.No.	Name of the Serving Officers	D.O.B.
Sarvasri		
01.	V. Ram Mohan	06-08-1967
02.	Ananth Shankar	07-08-1988
03.	Syed Maqsood Hussain	07-08-1967
04.	A. Narsimha Reddy	08-08-1983
05.	Smt. M. Revathi	09-08-1970
06.	T. Venu Babu	09-08-1969
07.	A. Rama Murthy	10-08-1969
08.	P.B. Narayana Kumar	13-08-1979
09.	Smt. I. Pushpa Sowjanya	13-08-1981
10.	S. Venkatesh	15-08-1977
11.	Smt. P. Sunitha	15-08-1980
12.	M. Venu Madhav Rao	16-08-1967
13.	D. Veena Vani	16-08-1981
14.	Ch. Sivaiah	20-08-1967
15.	S. Rajasekhar	20-08-1970
16.	I. Kasi Viswanatha Raju	20-08-1967
17.	Sivala Ram Babu	21-08-1980
18.	Smt. P.N. Adilakshmi	23-08-1970
19.	Smt. E. Harika	24-08-1984
20.	S.Srikanthanatha Reddy	25-08-1974
21.	Smt. Sunita Bhagwat	26-08-1970
22.	P. Anil Kumar	30-08-1965
23.	K. Ashok Kumar	31-08-1976
24.	N. Siva Kumar Sangala	31-08-1975
25.	M. Ravi Prasad	04-09-1966

- Secretary

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



Striking a balance between Growth & Green Priorities:

No Longer the Climate Change is a future threat : it's a Reality!

"The Right to Clean Environment is Intrinsic to Right to the Life (under Art. 21)" - Supreme Court.

"Patriarchy is the cause for Climate Change ---- men having driven it, and becoming entirely responsible for the chaos unleashed on the world, compelling people to experience everywhere"

Dr B Raghotham Rao Desai

Exordium:

Yes, **Climate Change is a real and significant threat,** as confirmed by overwhelming scientific consensus and observed impacts (like extreme weather, rising sea-levels, food/ water insecurity, and health risks), **intensified by human activities** and posing major risks to global stability, human security and development ---- **evidence of the said threat** being observed in **(a) Extreme Weather** (More intense heatwaves, stronger hurricanes, severe droughts , and foods becoming common; leading to deaths and displacement), **(b) Health Impacts** (worsening air pollution, spreading vector-borne diseases, Increasing heat-related deaths, and threatening mental health), **(c) Human Security** (Resource, Scarcity of food and water, fuel conflict, mas migration, and political instability invulnerable region especially, and **(d) EnvironmentalDegradation** (Rising temperatures melt glaciers, raise Sea-levels, and alter rainfall-patterns: impacting water availability and ecosystems). The question of **where the environment fits within development-policy becomes more urgent in the light of accelerating climate change** ---- it being **no longer a 'future threat',** but **it is a reality':** its impacts having been visible across the regions in diverse ways, Beyond spatial diversity, **climate change carries a strong environmental justice dimension:** poorer and marginalised communities (like the landless, the homeless, the women, and the transgender persons) bear a disproportionate share of climate impacts despite contributing least to environmental degradation ---- these unequal burdens deepening already existing social and economic divides: this reality raising a critical concern, when the **right to a clean environment is constitutionally guaranteed,** who truly benefits from it? Without conscious policy-making, the right may become a privilege solely of those with economic social capital. Addressing this inequity requires a reorientation of environmental governance towards inclusion and fairness.

Narration of facts and figures:

The questions assume significance ---- the constitutional right to a clean environment **(under Article 21), now expanded to include protection from adverse climate change, and hence the environmental justice for the unequal** & increasing impact of climate Change across social and economic groups! **The right to a clean environment** ---- covering air, water, sanitation, and freedom from adverse climate impacts ---- **has been recognised as intrinsic to the right to life** (this recognition being largely the result of an activist judiciary that has read socio-economic rights, originally enshrined in the Directive Principles of State Policy, into the domain. of fundamental rights!!

Some changes (such as droughts, wildfires, and extreme rainfalls) **are happening faster than scientists assessed previously ---- some of these changes being irreversible ones the next hundreds to thousands of years**. Global temperatures are bound to rise continuously for many decades, mainly due to greenhouse gases produced by human activities: such emissions having already warmed the climate to nearly 1.1°C since 18501900, the global average temperature being expected to reach or exceed 1.5°C within the next few decades, affecting all regions of Earth. If we can reduce emissions, we may avoid some of the worst effects. **The scientific evidence is unequivocal:** climate change is a threat to the human wellbeing and the health of the planet ---- any further delay in concerted global action will miss the brief, rapidly closing window to secure a liveable future, Sea level is rising because of added water from melting land ice and the expansion of sea water as it warms.

Warming temperatures have extended and intensified wildfire season ---- long-term drought in the region having heightened the rick, human-caused climate change having doubled the area of forest burned in recent decades, climate change is further having an uneven effect on precipitation (rain and snow), The length of 'frost-free season', and the 'corresponding growing season' has been increasing. Sea ice cover in the Arctic ocean will very likely become essentially ice free before mid-century in late-summers if current projections hold.

Conclusion:

Development is inevitable in a growing nation, and environment has long been used as a resource supporting that growth ---- but use must not lead be exploitation. A balance between development and environmental protection is necessary. Developmental policies must therefore adopt a frame work of just sustainability: one that integrates environmental protection with social and economic justice, Environmental measures will remain ineffective if underlying inequalities are ignored, especially since vulnerable communities are the least equipped to adopt to environmental changes or finance the transition to clean or energy technologies with state support.

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

Continue to Evolve

No one is born a good citizen; no nation is born a democracy; rather, both are processes that continue to evolve over a lifetime. Young people must be included from birth. A society that cuts off from its youth severs its lifeline

-Kofi Annan



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

R. Hemanth Kumar

(Continued from July 26)

7.Amotz Zahavi: The Handicap Principle and Honest Signalling

Amotz Zahavi (1928–2017) was an Israeli evolutionary biologist and ornithologist best known for formulating the handicap principle, a landmark idea in behavioral ecology that explained how costly traits function as honest signals of fitness.

Zahavi first proposed the **handicap principle** in 1975 to resolve a central paradox of sexual selection: why evolution maintains traits that appear disadvantageous to survival, such as the peacock's extravagant tail. He argued that **these features act as reliable indicators of genetic quality precisely because they are costly; only individuals of superior fitness can afford to produce and sustain them.** Initially controversial, the concept became a cornerstone of modern **signalling theory** and reshaped research on animal communication, mate choice, and social behaviour.

By the 1990s, Zahavi's insistence that effective communication depends on cost and honesty had become central to evolutionary biology. His book ***The Handicap Principle: A Missing Piece of Darwin's Puzzle (Oxford University Press, 1997),*****co-authored with Avishag Zahavi,** consolidated decades of theoretical and empirical work, cementing his reputation as one of the most influential thinkers in the study of sexual selection and signalling.

8. Ronald A. Fisher: Runaway Sexual Selection

Ronald A. Fisher, in ***The Genetical Theory of Natural Selection (1930)***, expanded Darwin's ideas by introducing the concept of **runaway sexual selection. Fisher argued that once females develop a preference for a particular male trait, such as longer tails, this preference can initiate a self-reinforcing feedback loop. Males with the favoured trait gain more mates, passing on both the genes for the trait and the genes for female preference. Over successive generations, the trait becomes increasingly exaggerated, often beyond its survival utility, sometimes to extreme levels.**

This model provided a compelling explanation for the evolution of extravagant ornaments such as the peacock's tail or the elaborate plumage of birds-of-paradise. Fisher's theory emphasized the genetic correlation between trait and preference, showing how sexual selection could drive rapid evolutionary change independent of ecological pressures. Importantly, he offered a mathematical framework for understanding how female choice shapes male traits, laying the foundation for later quantitative models in evolutionary biology.

While runaway selection is not the sole explanation for ornament evolution, it remains a powerful concept. **Fisher demonstrated that reproductive success can outweigh survival costs, illustrating the paradox at the heart of sexual selection: traits that hinder survival may persist and even flourish if they confer a decisive reproductive advantage.**

9. Richard D. Estes: Ethologist of African Ungulates

Richard D. Estes is an American wildlife biologist and ethologist renowned for his pioneering field research on African mammals, particularly antelopes and other ungulates. His work has been instrumental in advancing the understanding of animal social organisation and behaviour in natural ecosystems across Africa.

Beginning in the 1960s, Estes conducted long-term studies in national parks such as **Serengeti (Tanzania) and Etosha (Namibia). His meticulous observations of wildebeest, impala, and other ungulates established foundational knowledge on mating systems, territoriality, and migration.** By combining patient field observation with ecological theory, Estes helped define behavioural ecology as a discipline within African wildlife science.

His best-known book, ***The Safari Companion,*** distils decades of research into a detailed field guide to the behaviour of African mammals, widely used by naturalists, guides, and biologists. In addition to numerous scientific papers, Estes authored popular works that explained animal social systems and the evolutionary basis of cooperation and competition. His documentation of species' behavior has been invaluable for wildlife management and conservation planning across sub-Saharan Africa.

Ungulate Lekking and Wildebeest Ecology: Through ***The Behaviour Guide to African Mammals (1991) and The Gnu's World (2014)***, Estes brought sexual selection theory into the African savanna. **He documented lekking in ungulates such as kob, topi, and wildebeest, providing detailed field evidence of males clustering in arenas and competing through vocalisations, scent-marking, and visual displays. His groundbreaking research on wildebeest rutting behaviour proposed that female estrus could be triggered by the males' rumbling "love call," linking physiology directly to behaviour.**

Estes emphasised the **energy trade-offs** inherent in lekking: **males sacrifice foraging opportunities and increase predation risk yet gain disproportionate reproductive success.** His work bridged theory and vivid field observation, showing how sexual selection operates in real ecosystems and shapes population dynamics. He also highlighted conservation implications, noting that lekking species are particularly vulnerable to habitat fragmentation, which disrupts display arenas essential for reproduction.

By grounding sexual selection theory in African mammal ecology, Estes enriched both evolutionary biology and wildlife management. His legacy lies in making complex theory accessible through vivid field observation, ensuring that sexual selection is understood not only in abstract models but in the living drama of the Serengeti.

10. Eric Lee Charnov: Architect of Optimality and Life-History Theory

Eric Lee Charnov (born 1947) is an American evolutionary ecologist and theoretical biologist whose work has profoundly shaped modern understanding of how organisms allocate time, energy, and reproductive effort under ecological constraints. A long-time professor at the University of New Mexico, Charnov is best known for foundational contributions to **optimal foraging theory, sex allocation,** and **life-history evolution.**

Charnov pioneered quantitative models that explained how organisms optimize ehaviour and reproduction in changing environments. His **marginal value theorem (1976) remains a cornerstone of optimal foraging theory, predicting when an animal should leave a resource patch to maximise efficiency.** He later unified patterns across species through **life-history invariants,** revealing statistical regularities among body size, age at maturity, and reproductive output.

His 1982 book, *The Theory of Sex Allocation,* provided a general evolutionary framework for understanding why species produce different sex ratios and how hermaphroditic organisms balance male and female investment. These models influenced diverse fields, from behavioural ecology to fisheries science, offering predictive tools for both theory and applied management.

In collaboration with ecologists such as James **H. Brown and Geoffrey B. West,** Charnov extended evolutionary theory into **metabolic ecology,** linking body size and temperature to growth rates, reproduction, and lifespan across taxa. This work helped establish universal scaling laws that integrate physiology, ecology, and evolution.

Charnov's legacy lies in his ability to distil complex ecological and evolutionary processes into elegant mathematical frameworks. By focusing on optimisation and invariance, he provided unifying principles that continue to guide research in behavioural ecology, evolutionary biology, and conservation science.

11. Stephen C. Stearns: Life-History Evolution and Evolutionary Medicine

Stephen C. Stearns (born December 12, 1946) is an American evolutionary biologist and Professor Emeritus at Yale University, widely recognized for pioneering work in **life-history evolution and evolutionary medicine. His research integrates ecology, genetics, and human health to explain variation in life cycles and disease susceptibility across species.**

Stearns helped establish **life-history theory as a cornerstone of modern evolutionary biology, demonstrating how trade-offs among survival, reproduction, and growth shape the diversity of life strategies.** By highlighting the evolutionary constraints that organisms face, **he provided a framework for understanding why species differ in age at maturity, reproductive output, and lifespan.**

His later work extended these ideas to humans, laying the conceptual foundation for **evolutionary medicine.** Stearns showed how evolutionary processes leave humans vulnerable to certain diseases, reframing medical challenges in terms of adaptation, trade-offs, and evolutionary history.

An influential author, Stearns has written several landmark books, including ***The Evolution of Life Histories and Evolutionary Medicine***. These works continue to guide research and teaching, bridging theory with practical insights into ecology, health, and human biology.

12. Jakob Bro-Jørgensen: Communication, Conflict, and Sexual Selection in Ungulates

Jakob Bro-Jørgensen is a Danish behavioural ecologist whose research focuses on the evolution of animal communication, sexual selection, and conflict mediation in social species. **He is particularly noted for pioneering studies of mating systems and signalling behaviour in African ungulates such as topi and gazelles.**

Bro-Jørgensen's work **integrates long-term behavioural observations with evolutionary theory to explore how competition and cooperation shape animal societies.** His field studies in the **Masai Mara** have revealed **how antelopes employ both visual and acoustic cues in complex social negotiations, challenging simplified models of dominance and mate choice. He has also examined how environmental pressures influence the evolution of multimodal signalling, demonstrating how ecological context shapes communication strategies.**

His findings have advanced understanding of **lekking systems**, conflict resolution, and the energetic costs of signalling in wild populations. **By documenting how antelopes balance competition with cooperation, Bro-Jørgensen has contributed to broader debates on animal cognition and the ecological constraints underlying communication.** Beyond academia, his work informs wildlife management in East Africa, highlighting behavioural factors critical to species conservation.

Through his combination of rigorous fieldwork and theoretical insight, Bro-Jørgensen has enriched the study of sexual selection and communication, showing how signalling systems evolve in response to both social dynamics and ecological

pressures.

Here's a refined version of your text on David Lack, polished for clarity, flow, and scholarly tone while emphasizing his contributions and legacy:

13. David Lack: Linking Ecology and Evolution in Birds

David Lambert Lack (1910–1973) was a British ornithologist and evolutionary biologist whose work helped establish the field of **population ecology.** He is best remembered for demonstrating how ecological factors, particularly food availability, shape reproductive strategies in birds, and for his influential studies of natural selection in wild populations.

Lack's research on **clutch size** in birds revealed how reproductive output is constrained by ecological conditions, notably food supply. His expedition to the Galápagos Islands in 1938–39 inspired his seminal book ***Darwin's Finches***, which provided compelling evidence of natural selection in action and helped cement the finches as a classic model of adaptive radiation.

In ***The Natural Regulation of Animal Numbers*** (1954), Lack argued that **population density**, rather than weather or other external factors, primarily determines species abundance. **This perspective shifted ecological thought toward intrinsic regulatory mechanisms, influencing generations of ecologists and evolutionary biologists.**

Through his integration of field observation and ecological theory, Lack laid the foundations for modern behavioural ecology and evolutionary ornithology. His legacy endures in the way ecologists study the interplay between environment, reproduction, and population dynamics.

14. R. Haven Wiley: Acoustic Communication and Behavioural Ecology

R. Haven Wiley is an American ornithologist and behavioural ecologist best known for his influential work on animal communication, particularly acoustic signalling in birds. His research has illuminated how environmental conditions shape the design and evolution of communication systems.

Wiley's studies of species such as wrens and doves clarified how vegetation density, background noise, and acoustic interference affect signal structure, transmission, and detection. He developed key concepts such as **communication distance** and **receiver psychology**, which explain how animals optimise signals for specific ecological contexts and how receivers process information under environmental constraints.

His work helped establish animal communication as a central field within behavioral ecology. Through collaborations and theoretical syntheses, Wiley influenced research in **bioacoustics, sensory ecology, and evolutionary biology,** extending the relevance of his ideas well beyond ornithology. His insights into information transfer and environmental constraints continue to inform studies of animal cognition and communication systems across taxa.

By linking ecological context to communication strategies, Wiley provided a framework that remains foundational for understanding how signals evolve, are perceived, and mediate social interactions in the natural world.

After outlining the energy trade-offs in sexual selection, The Cost of Attraction: Energy Allocation and the Evolution of Sexual Traits, this discussion sets the stage for a deeper exploration of how these dynamics manifest in specific mating systems. In my next article, I will turn to the fascinating phenomenon of lekking behaviour in ungulates, examining how collective displays, spatial organization, and female choice converge to shape evolutionary outcomes.

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Roar of the Recovery: The Six Best Practices Driving India's Tiger Conservation Triumph

Dr. D. Nalini Mohan

India's strategic tiger conservation initiatives have successfully restored wild tiger populations to approximately 3,682 individuals, representing nearly 75% of the global wild tiger population. This remarkable turnaround, overseen by the National Tiger Conservation Authority (NTCA), offers critical lessons in balancing apex predator preservation with human development in one of the most densely populated nations on Earth.

Once teetering on the edge of extinction, the Royal Bengal Tiger has staged a dramatic comeback over the last two decades. By transitioning away from standard protection towards evidence-based, scientifically audited frameworks, India's forestry and wildlife departments have generated deep institutional frameworks that safeguard entire ecosystems. As forestry professionals and conservationists globally look to scale up biodiversity preservation, India's success stands out. The recovery relies on six foundational best practices that have consistently yielded positive ecological, structural, and social outcomes across India's tiger reserves.

1. The Core-Buffer Landscape Strategy

The operational design of India's tiger reserves relies on a strict dual-zoning framework established under the Wildlife Protection Act. This structural division separates reserves into two distinct management areas: the inviolate core zone and the peripheral buffer zone. This clever zoning design effectively balances intensive wildlife preservation with the socioeconomic requirements of nearby human populations, preventing the total exclusion of local communities while ensuring the tiger has room to behave naturally.

Securing Breeding Strongholds

Core zones are legally mandated, strictly managed forest tracts where human presence and resource extraction are legally restricted. They are inviolate areas. This policy creates undisturbed habitats where tigers can successfully reproduce and rear cubs without human stress. Research conducted by the Wildlife Institute of India (WII) demonstrates that approximately 85% of India's breeding tiger populations reside within these high-productivity source areas. Eliminating logging, infrastructure projects, and livestock grazing within the core preserves the canopy cover and undergrowth vegetation required for apex ambush predators to stalk their prey effectively.

Absorbing Shockwaves in the Buffer

Surrounding the core, buffer zones absorb human-wildlife friction. Land-sharing models in the buffer allow for controlled eco-tourism, regulated non-timber forest product harvesting, and community forestry. This approach restricts development to keep landscapes connected while allowing adjacent farming communities to retain access to vital resources. By managing the buffer zone as a multi-use transition space, the forestry department prevents sudden edges where wilderness directly hits dense agricultural zones, significantly lowering instances of livestock depredation and human encounters.

2. Advanced Digital Patrol Monitoring (M-STrIPES)

Traditional foot patrols which were once difficult to verify and map, have been entirely replaced by data-driven law enforcement via the M-STrIPES (Monitoring System for Tigers-Intensive Protection

and Ecological Status) platform. This sophisticated software combines mobile field data collection with geographic information systems (GIS) to monitor frontline patrol efforts, creating an unbroken chain of field intelligence from the ground up to the field director's office.

3. Regular Management Effectiveness Evaluation (MEE)

Conservation programs can suffer from administrative stagnation and data manipulation without independent oversight. To prevent this, the NTCA enforces a mandatory Management Effectiveness Evaluation (MEE) cycle every four years across all declared tiger reserves. This evaluation is built upon four primary assessment pillars that measure every aspect of a reserve's health.

The first pillar is Context and Planning, which assesses the legal status of the reserve, its threat vulnerability, and its broader landscape connectivity. The second pillar focuses on Inputs and Resources, analyzing financial allocations, staff capacity, and the availability of modern field equipment. The third pillar investigates Process and Operations, closely grading anti-poaching enforcement, active habitat management, and human-wildlife conflict mitigation strategies. Finally, the fourth pillar measures Outputs and Outcomes, looking directly at prey density trends, vegetation recovery rates, and community engagement success.

Independent Scientific Audits

The MEE framework avoids internal bias by deploying independent panels of retired forestry professionals, wildlife scientists, and non-governmental organization (NGO) stakeholders. Adapted from the World Commission on Protected Areas (WCPA) guidelines the system scores reserves across 33 distinct indicators. Reserves receive performance ratings ranging from "Poor" to "Excellent," allowing the ministry to optimize budget allocations based on management quality rather than political pressure.

Instilling Operational Accountability

The public reporting of MEE scores (2023) fosters friendly institutional competition among state forest departments. High-performing reserves, such as Periyar and Satpura, serve as structural benchmarks for the rest of the nation. Meanwhile, low-scoring locations receive targeted financial aid, technical expertise, and management updates to resolve systemic bottlenecks before they trigger wildlife declines or severe habitat degradation.

4. Science-Driven Habitat and Prey Recovery

Tiger recovery cannot occur without healthy, thriving populations of wild ungulates. Recognizing that large carnivore numbers are strictly limited by prey availability, Indian forest managers implement targeted habitat engineering programs rather than leaving forest succession entirely to chance.

Restoring Native Grasslands

Many reserves suffer from forest degradation driven by aggressive invasive flora like Lantana camara and Parthenium, and Mesosphaerum suaveolens which suppress native grasses and turn fertile meadows into woody, inedible scrubland. Through systematic uprooting, community clearing programs, and controlled burning, forestry teams convert weed-infested areas back into productive grasslands. This clear progression—moving from an invasive weed infestation that suppresses native flora, through active uprooting and grass reseeding, to a high-yield native pasture—successfully boosts the ungulate carrying capacity of the land, supporting larger populations of key prey species, including chital, sambar deer, and gaur.

Water Harvesting Initiatives

To minimize seasonal wildlife migrations out of

protected core areas and into dangerous human settlements, reserves invest heavily in solar-powered borewells, check dams, and contour trenches. These water-harvesting networks maintain surface water access during dry summer months. Distributed water holes prevent animal crowding, which helps lower pathogen transmission and limits poaching vulnerability along vulnerable boundary lines where wild animals would otherwise gather in search of a drink.

5. Voluntary Village Relocation with Compensation

As human and livestock populations expand around wildlife areas, habitat fragmentation poses an ongoing threat to large mammals that require vast ranges. India addresses this sensitive issue through structurally organized, voluntary village relocation programs designed to create continuous, human-free wilderness areas. Transition from conflict to coexistence is also being tried in many tiger reserves.

Defragmenting Ecosystems

Human settlements within deep forest interiors often spark conflict through livestock grazing, retaliatory poisonings of carnivores, and accidental encounters on forest paths. Relocating these interior hamlets expands contiguous core areas without adding more land boundaries. In reserves like Kali and Bhadra, this approach has reconnected fragmented corridors, allowing tigers to claim abandoned agricultural lands as hunting grounds, which rapidly reforest through natural ecological succession.

Fair Compensation Models

The relocation policy emphasizes community consent and structured compensation packages. Families choose between direct cash compensation or alternative land allocation with built-in civic infrastructure, including schools, health clinics, and access to the power grid. This dual-option approach ensures that forest-dwelling communities can voluntarily transition toward mainstream economic opportunities, reducing their direct economic reliance on forest resources and turning former interior conflicts into outside opportunities.

6. Community Integration and Eco-Develop -ment

Fortress conservation strategies that exclude local human populations often spark long-term resentment, local hostility, and non-cooperation with forest authorities. To build local investment in conservation, India uses Eco-Development Committees (EDCs) and Tiger Conservation Fund Concept to share economic benefits directly with fringe communities and give them ownership of the tiger conservation efforts. The economic model is straightforward and transparent. The park entry fees and lodge/resort levies generate immediate revenue, which is channelled directly intoEDC. Linking community development to park revenue transforms the tiger into a highly valued community asset.

Creating Green Livelihoods

Reserves prioritize hiring local community members as safari drivers, professional nature guides, anti-poaching camp cooks, and tracking staff. Former poachers and traditional hunters have been successfully retrained as conservation workers. Their field tracking skills are redirected into protecting forests rather than exploiting them, turning them into the frontline defence of the ecosystem.

Measurable Ecological and Economic Outcomes

These combined best practices have delivered tangible ecological, climate, and hydrological benefits that extend far beyond simply counting animal populations.

Contd.. on page No. 45



The Tiny Architects and Engineers in nature: That Are Rewriting Our Buildings, Wood, and Science

Dr.H.S.Gupta



Look up at the next skyscraper you pass. It may have been designed by engineers, but its deepest lessons came from a creature barely two centimeters long: the termite. While we often dismiss these insects as pests, they are in fact master engineers, material scientists, and climate controllers whose solutions are now reshaping modern wood technology, building design, and even bio-energy. The story of termites is not just about survival; it is about how the smallest architects on Earth are quietly rewriting the rules of human innovation.

The Great Misunderstanding: Termites Are Not "White Ants"

The first thing to unlearn is the name. "White ants" is a myth. Termites and ants belong to entirely different insect orders. Ants are closer to wasps; termites are essentially highly evolved, social cockroaches . That distinction matters. When engineers and material scientists look for nature-based solutions in wood, soil, and climate control, they skip ants and go straight to termites, because termites have spent hundreds of millions of years perfecting exactly the skills humans now struggle to master: building with dirt, digesting wood, and cooling structures without electricity.

Termites first appeared around 250 million years ago, before the dinosaurs, giving them an evolutionary runway that allows them to outdesign us in some of the most fundamental ways . They are not just surviving; they are engineering.

Termite Mounds: Nature's Breathing Buildings

The most breathtaking example of termite-inspired technology is their mounds. These towering earthen structures are not random piles of dirt. They are climate-controlled ecosystems, designed to regulate temperature, humidity, and gas exchange for the colony inside.

A termite mound works like a giant lung. It inhales oxygen and exhales carbon dioxide through a complex network of internal air passages, while

its high thermal mass walls help keep the interior temperature stable despite extreme external heat or cold . The structure literally “breathes,” cycling hot and cool air automatically as temperatures rise and fall during the day.

Human architects have taken this idea and turned it into one of the most famous examples of biomimetic architecture on the planet: the Eastgate Centre in Zimbabwe. Designed by architect Mick Pearce, the building uses 90% less energy for climate control than a conventional office complex of similar size . Instead of sealing the building in glass and fighting nature with massive air-conditioning systems, the Eastgate Centre uses low-level air intake vents and 48 natural convection chimneys that mimic the termite mound’s ventilation system. Hot air rises and escapes, cool air is drawn in, and the building regulates itself with minimal electrical input.

This is not a niche experiment. It is a blueprint for the future of sustainable construction. As climate change intensifies and energy costs rise, more architects are asking: why fight the climate when you can design with it, like a termite?

From Mounds to Materials: Programmable Wood and Construction

Termites do not build with precision tools or a master blueprint. Theyoften build with chaos. A mound is made from a messy mix of sand, clay, and saliva, assembled by thousands of individuals following simple local rules rather than a global plan . Yet the result is astonishingly robust, resilient, and long-lasting.

Researchers at the California Institute of Technology (Caltech) realized that these “disordered growth rules” could be turned into algorithms. They modeled how termites add material, pack it, and reinforce weak spots, and then used those rules to guide 3D printers . The outcome is a new class of “programmable materials”: acoustic blocks, synthetic lumber, and building panels that can be designed to have localized strength, damping properties, or flexibility exactly where needed.

Imagine a floor that is stiff where people walk but flexible under heavy equipment, or a wall that is dense where sound must be blocked but porous where ventilation is needed. Instead of machining each part differently, you can “grow” the structure using termite-inspired algorithms that decide where to add or remove material based on local conditions. This is not just a change in manufacturing; it is a change in how we think about structure itself.

For wood technology, this is transformative. Traditional lumber is uniform by default, optimized for strength but not for varied performance. Termite-inspired methods allow engineers to create “smart wood” and synthetic timber that can be programmed to bend, absorb sound, or resist cracking in specific zones. In a world where sustainable materials are critical, turning chaos into controlled complexity is a powerful new paradigm.

Listening to Wood: Acoustic Detection of Termites

Termites are blind. They cannot see the wood they eat, the tunnels they dig, or the walls they build. Instead, they rely on sound. Worker termites use vibroacoustic signals to communicate and to evaluate the thickness and size of the wood they are consuming . Soldiers, when threatened, aggressively drum their heads against tunnel walls, creating ultra-low frequency vibrations that act as an alarm system for the entire colony.

Humans have turned this biological warning system into a high-tech detection tool. Wood conservationists and pest control engineers now use advanced, AI-supported microphones to listen inside structural timber, floor beams, and expensive furniture for the subtle “drumming” patterns of drywoodtermites . These signals can

reveal an infestation deep inside a beam long before any visible damage appears on the surface.

This is a rare case where technology is not just fighting nature but learning from it. Instead of waiting for termites to destroy a building, we can now hear them before they even start. The same acoustic principles are being adapted to detect other hidden threats in wood structures, such as moisture pockets, fungal decay, or voids that could compromise safety. In heritage buildings, where replacing timber is often impossible, these non-invasive detection methods are invaluable.

The lesson is clear: the smallest vibrations can carry the loudest warnings, and listening to wood is now a science.

The Bioreactor in the Gut: Turning Wood Into Fuel

Perhaps the most revolutionary termite-inspired technology is hidden inside their guts. Termites are among the few animals capable of digesting wood, thanks to a dense community of microbes and specialized enzymes that break down lignin and cellulose—the toughest components of plant material . For centuries, this was seen as a biological curiosity. Now, it is a foundation for industrial bio-refining.

The termite gut is essentially a tiny, self-contained bioreactor. Inside, host-derived enzymes and microbial symbionts work together to convert raw wood into simpler compounds that the insect can use for energy. Scientists have mapped these enzymes and the microbes that produce them, and they are now replicating the process at industrial scale . The goal is to turn wood waste—sawdust, forestry residues, even toxic wood contaminated with chemicals—into advanced biofuels and biochemicals without using harsh, toxic solvents.

This has enormous implications for the circular bioeconomy. Instead of burning wood waste or sending it to landfills, we can use termite-inspired enzymatic systems to convert it into renewable energy and high-value products. In some systems, termite-gut yeasts and microbes are being engineered to not only break down lignocellulose but also to produce biodiesel and remove pollutants at the same time, achieving dual bioremediation and biofuel production .

Researchers have even found that some of the same microbes in termite guts that help digest wood can also break down coal and release methane, the main ingredient in natural gas . While this is not a solution to replace renewables, it offers a cleaner way to use existing fossil resources by reducing their harmful emissions through bioconversion.

Blueprint for sustainable industry. In short, the termite gut is not just a digestive system; it is a blueprint for sustainable industry.

Termites as Teachers of Emergence and Self-Organization

Beyond specific technologies, termites are teaching us something deeper: how to design systems that self-regulate, adapt, and emerge from local interactions rather than centralized control. A termite mound is not built by a single architect drawing a plan. It emerges from the actions of thousands of individuals, each following simple rules: pick up a pellet, place it somewhere, reinforce weak spots, respond to local signals.

Research from the Indian Institute of Science has shown that termites do not rely on specific materials. Give them soil, glass beads, metal particles, even paper—if they can chew it and move it, they will build with it . Different castes create different-sized building blocks, packing them together with precision, like a living construction system optimizing strength without ever “knowing” the full design.

This is the essence of emergence: complex, robust structures arising from simple, local rules. In human terms, it challenges the idea that every

building, every product, every system must be fully designed and controlled from the top down. Instead, we can design systems that adapt, learn, and self-repair, guided by local feedback rather than global commands.

For urban planning, this is transformative. Imagine cities where infrastructure responds to local conditions: roads that reroute traffic based on congestion, buildings that adjust ventilation based on occupancy, energy grids that balance supply and demand through decentralized signals. These are not just engineering problems; they are organizational problems, and termites have already solved them.

From Pest to Partner: Changing the Narrative

The greatest challenge in adopting termite-inspired technology is not technical; it is cultural. Termites are still widely seen as pests, as destroyers of homes and furniture. This perception blinds us to their role as teachers, innovators, and partners in sustainability.

Changing this narrative is essential. Termites are not just eating wood; they are processing it, recycling it, and turning it into energy. They are not just building mounds; they are creating self-regulating ecosystems that breathe, adapt, and survive heat, rain, and time . They are not just insects; they are engineers of the earth.

In many traditional societies, especially in forest-adjacent communities, termites have long been part of the ecological story, sometimes even integrated into local knowledge systems about soil, water, and land use. Integrating this traditional wisdom with modern science can lead to more context-sensitive, culturally rooted solutions for building and resource management.

The future of wood technology, sustainable architecture, and green industry may depend on our ability to see termites not as enemies, but as colleagues.

A New Era of Design: Learning from the Smallest Builders

We are entering a new era of design, one where the most powerful ideas come not from grand laboratories alone, but from the humblest corners of nature. Termites, with no leader, no plan, and no blueprint, build towering mounds that can last for decades . They create structures that breathe, adapt, and survive. They turn wood into fuel, and waste into value. They teach us how to listen to materials, how to build without control, and how to live with the climate instead of against it.

The next generation of buildings may not look like termite mounds, but they will think like them. The next generation of wood products may not be made by termites, but they will be programmed by the same rules termites follow. The next generation of biofuels may not come from termite guts, but they will be powered by the same enzymes and microbes that termites have refined over millions of years.

In the end, the story of termites is a story about humility. It is a reminder that perfection does not require a master plan. It emerges from small actions, local rules, and a deep connection to the environment. As we face the challenges of climate change, resource scarcity, and unsustainable growth, we must look not only to the stars for inspiration, but also to the soil, to the mounds, and to the tiny architects who have been building the future long before we arrived.

Because nature doesn't need a master plan to create perfection. It only needs time, cooperation, and the willingness to learn.

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Forty Years of Forest Fraternity...

...SFRC 1986 Ruby Reunion Alumni meet @Coimbatore..

Kazipeta Purushottam

Mens Sana In Corpore Sano -- a sound mind in a sound body .40 years ago this timeless epitaph of SFRC(Southern Forest Rangers College,Coimbatore) was not just a motto,it was a way of life hammered into the very souls of SFRC Coimbatore 1986 batch . Four decades later ,having protected the eco-wilderness & Returned as Senior forest officers and veterans, revisited our career birth place of renowned discipline, wherein the campus now is evolved into TNFA ,Tamilnadu state Forest Academy.. The celebration of shared legacy started on 14 June,2026 in the noon at an elite hotel where old stories, laughters, nostalgic sweet memories shared amongst our batchmates.Yet the moment was heavily laced with a tearful stillness looking across the ranks we acutely felt the silence of our beloved departed batchmates: TS Mukherjee, Katua, Magadaiah, BasavaRajaiah, Md.Ilyas Pasha,Jalihal, Sridhar Nayak, R.Mallappa, Ch.BapuRao, P.Ramesh and Chaddiram..The interactive gathering session was chaired by Dr.G. Narsaish, IFS Rtd CF and our Mentor; the then House Tutor Sri K.JudeSekhar ,IFS(1976,Orissa cadre), Rtd DG forests & Spl. Secretary,GOI was our chief guest. He was accompanied by our the then Survey and Engineering lecturer Sri Saravanan sir, PET Dinesh jiand a symbolic cake cutting by our chief guest. He was the one who shaped our lives with discipline and forestry knowledge,life skills and moved ,mingled warmly with us as an elderly brother .In an emotional speech that touched every heart Sri Jude sekhar Sir confessed that the 1986 SFRC batch has always been an absolute favourite and always remains close to his heart. After felicitation to our old facultywe had an interactive lunch together.. Accompanied by life -partners,who stood as pillars of strength through decades of remote challenging jungle postings,the veteran officers stepped back into the glorious golden past.Standing together for an emotional group photo session in front of majestic,historic and heritage building, we wondered how four decades of time simply melted away. Nostalgic sweet memories of Class room by recollecting those 1986 training days & seats occupied was a thrilling moment for us and our families.. Next day, under the able guidance of Sri K.KadarBhasha, DCF Rtd,..AP.., the reunion with nearly 20 couples moved from banquet halls back out into the wild canopies where our nostalgic forestry exposure visits at Top Slip,KarianSholaa,Kannemarai ,the largest teak tree and perambikulam tiger reserve and intact biodiversity heritage, recollecting old memories.. Finally,on the concluding day we moved to Sadivayal,our old camp site of orientation exercise & elephant camp. Enroute, we had a spiritual pause at Isha foundation and relaxed mentally for a while.. This 40 years Ruby Reunion Alumni meet milestone was far more than a simple gathering of Telangana ,AP,Karnataka,Kerala,UP batchmates but stood as a profound salute to our roots , a tender tribute to our fallen brothers and an unbreakable testament to a forest fraternity that time can never fade. *VRIKSHO RAKSHATHI RAKSITHA* (Gruop Photo @ Page No: 29)

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Office bearers of association calling on new PCCF (HoFF) Sri Vinay Kumar, IFS





Felicitation to Dr.C.Suvarna, IFS, PCCF(HoFF) on her superannuation





SFRC-1986 RUBY REUNION : 40 YEARS ALUMNI MEET 14-16 JUNE 2026, COIMBATORE



Fossil Rim Wildlife Center, Glen Rose; Texas

V. Santhaseela Babu



Emu



Black buck



Fallow Deer



AOUDAD



Cheetah



Roan Antelope



Southern White Rhinoceros



Giraffe



Hartmann's Mountain Zebra

Workshop by iFocus



SAHAS awareness session by SHE Teams



International Yoga Day 2026





Motivational and Interactive Session





పర్యావరణహితం

సింగరేణి అభిమతం



డోర్లి ఓసీ డంపుపై పెరిగిన ప్లాంటేషన్



బ్లాక్ ప్లాంటేషన్



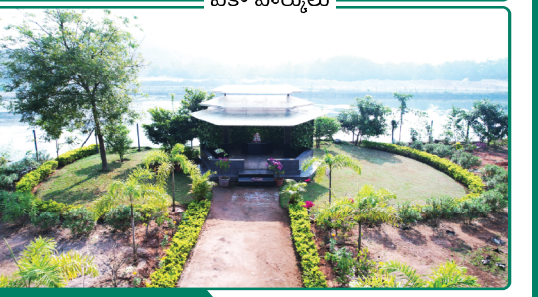
సింగరేణి ఆధ్వర్యంలో నిర్మించిన చెరువులు



అవెన్యూ ప్లాంటేషన్



ఎకో పార్కులు



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(ప్రభుత్వ రంగ సంస్థ)



How to Reduce Import of Teak Timber in India: A National Strategy for Import Substitution and Rural Prosperity

R. K. Sapra

Present Status

India is blessed with one of the richest teak (Tectona grandis) resources in the world. Nearly 44% of the world's natural teak forests occur in India, spread across Madhya Pradesh, Maharashtra, Chhattisgarh, Odisha, Gujarat, Telangana, Andhra Pradesh, Karnataka, Kerala and Tamil Nadu (ITTO, 2022; FSI, 2023). Scientific teak plantation forestry started in 1842 at Nilambur (Kerala), making India the pioneer of managed teak plantations (Troup, 1921). During the last 180 years, State Forest Departments (SFDs) have established lakhs of hectares (ha) of teak plantations, while farmers have increasingly raised teak plantations under agroforestry systems. According to the India State of Forest Report (ISFR) 2023, teak is the second most important tree species in Recorded Forest Areas (RFAs) with a growing stock of 1996 lakh m^3 (FSI, 2023). Under agroforestry, teak has shown one of the fastest rates of expansion, with the number of trees increasing from 752 lakh in 2013 (10th rank) to 2543 lakh in 2023 (6th rank), while its growing stock more than doubled from 113 lakh m^3 to 233 lakh m^3 during the same period (FSI, 2023). These figures clearly indicate that India possesses a strong biological resource base for becoming self-reliant in teak timber.

Import of Teak Timber

Ironically, despite this enormous resource base, India imports 10 lakh m^3 of teak logs and sawn timber annually, making it the world's largest teak importer (DGCI&S, 2023–24; ITTO, 2023). Imported teak is primarily used for furniture, doors and window frames, flooring, interior paneling, staircases and decorative joinery, housing projects, plywood and veneer industries. Most imports originate from Myanmar, Ghana, Togo, Nigeria, Tanzania, Ecuador, Costa Rica and Panama (ITTO,2023). Their success lies not in superior quality timber but in lower production costs. Teak plantationsin Africa and Latin America are generally harvested on 20–30 year rotationusing genetically improved planting stock, intensive silviculture, mechanized harvesting and integrated supply chains. Consequently, imported plantation teak often reaches Indian markets at ₹1,500–2,500/cft, whereas teak sold through SFD depots commonly ranges from ₹ 2,500–6,000/cft, with premium grades commanding much higher prices. Thus, the challenge is not the quality of Indian teak but its cost competitiveness and market orientation. The annual import bill for teak is estimated at US$350–700 million ₹3,000–6,000 crore). This represents a significant outflow of foreign exchange for a commodity that India has the ecological capacity to produce domestically.

Strategy to Reduce Import of Teak Timber

The following strategy may be adopted to enhance the productivity of teak plantations in India.

A. Forest Lands

Teak plantations on forest lands may be managed under following production categories.

Premium Teak Production by State Forest Departments

A differentiated management strategy should be adopted for the SFDs, with the primary objective of producing premium-quality teak for high-value domestic and export markets. The traditional rotation period of 80–100 years may be rationalized to about 60–70 years through scientific silvicultural interventions, while still producing large-diameter, high-quality timber. Within forests, SFDs should concentrate on the production of premium-grade

teak suitable for luxury furniture, decorative veneers, and other high-value applications.

Industrial Teak Production by Forest Development Corporations

Forest Development Corporations (FDCs), being the commercial organisations, should focus on the production of industrial-grade teak to substitute imported teak. A rotation period of 25-35 years may be adopted to produce medium-diameter timber suitable for the domestic furniture, joinery, plywood, and construction industries. This strategy would enable faster harvesting cycles, improve financial returns, and reduce India's dependence on imported teak.

Future plantations in both categories should utilize genetically improved planting material developed from clonal seed orchards and superior seed production areas. Scientific silvicultural practices—including intensive pruning, systematic thinning, balanced nutrient management, soil moisture conservation, and periodic stand improvement—should become standard management practices. The traditional approach of planting teak must be replaced by a scientific production model based on site-species matching, quality planting stock, timely silvicultural interventions, and productivity enhancement.Simultaneously, timber marketing systems require modernization through e-auctions, timber exchanges, certification, and long-term supply agreements with wood-based industries (WBIs). With the adoption of improved genetics and scientific management practices, the productivity of teak plantations can potentially increase from the present 4–8 m^3/ha/yr to 12–15 m^3/ha/yr. Such productivity levels have already been demonstrated under intensive plantation management in tropical countries (ITTO, 2022; FAO, 2020).

B. Trees Outside Forests

The greatest opportunity for reducing teak imports lies in expanding teak plantations under Trees Outside Forests (TOF). Recent assessments indicate that TOF already contribute the major share of industrial wood production in India (ICFRE, 2025; EAC-PM, 2024).

National Teak Development Mission

The major opportunity for import substitution lies outside forests. The Economic Advisory Council to the Prime Minister has similarly emphasized that agroforestry represents India's largest untapped opportunity for increasing domestic wood production (EAC-PM, 2024). Farmers can produce medium-rotation teak in 20 to 30 years much more economically than FDCs because of lower establishment costs, better supervision and integration with agricultural operations. A National Teak Development Mission should, therefore, target the establishment of approximately 10 lakh ha of teak-based agroforestry by 2040. This would require an annual expansion of about 70,000 ha. This level of annual plantation expansion is well within India's demonstrated capability under existing agroforestry programmes (National Agroforestry Policy, 2014). Such plantations can gradually substitute a substantial share of present imports.

However, farmers will adopt medium rotation teak only if it becomes financially competitive with other species like poplar, eucalyptus, casuarina and Malabar neem. The Government should, therefore, introduce a comprehensive package of incentives, including: (i) 75% subsidy on certified clonal planting material; (ii) establishment assistance of 50% during first three years; (iii) long-term plantation credit with interest subvention; (iv) subsidized tree insurance against fire and pests (v) annual payments for ecosystem services and carbon sequestration; and (vi) simplified transit regulations as done by Maharashtra. Similar policy support has enabled China and Brazil to increase productivity of timber through subsidized planting material, concessional credit, research support and strong industry participation (FAO, 2020; ITTO,

2022).Research institutions should complement these policy measures by developing high-yielding teak clones. International experience shows that genetic improvement combined with intensive silviculture can increase productivity by 20–40% over conventional plantations (FAO, 2020). Research priorities should include increasing heartwood formation at younger ages, improving bole straightness, optimizing spacing and thinning regimes, and enhancing wood density. The objective should be to produce uniform plantation teak comparable in quality, dimensions and price to imported teak.

Benefits of Substitution of Imported Teak

The economic benefits of import substitution are substantial. Establishing 10 lakh ha of teak under agroforestry could generate an estimated 400–500 lakh person-days of employment annually during nursery raising, planting, maintenance, harvesting, transport and wood processing. Similar employment multipliers have been reported for commercial plantation forestry in Brazil and China (FAO, 2020). More than 10 lakh farm families could derive long-term income from teak plantations. SFDs would earn significantly higher revenues by concentrating on premium-quality timber rather than competing in the low-cost segment. Expansion of domestic timber production would stimulate investments in sawmills, seasoning plants, furniture industries, veneer manufacturing and value-added wood products, creating a vibrant rural wood economy and export potential of quality teak and its products.

The Ministry of Environment, Forest and Climate Change should, therefore,consider launching a National Teak Development Mission with a clearly defined objective of making India substantially self-reliant in teak timber by 2047, coinciding with the centenary of Independence. This objective is also consistent with the vision of Viksit Bharat@2047, the National Agroforestry Policy (2014) and recommendations of the Economic Advisory Council to the Prime Minister (2024). The Mission should integrate production forestry, agroforestry, research, financial incentives, market reforms and industrial partnerships under a single national programme. The mission may initiate an All India Coordinated Research Project on Teak under ICFRE. Success should be measured not merely in hectares planted but in reduction of imports and foreign exchange saved. India possesses one of the world's largest natural teak resources, a strong scientific base and lakhs of enterprising farmers. The challenge today is no longer one of growing more teak, but of producing the right quality of teak at the right price. A market-oriented Mission can transform India's annual import of10 lakh m^3 of teak from a recurring economic burden into strategiceconomic opportunity-generating rural employment and prosperity, stimulating WBIs,achieving self-reliance in quality timber, and ultimately positioning India as a globally competitive exporter of teak.

Conclusion

India led the world in scientific teak plantation forestry in 1842 (Troup, 1921). Nearly two centuries later, it is paradoxical that the country remains the world's largest importer of teak timber (DGCI&S, 2023–24; ITTO, 2023). A National Teak Development Mission should therefore become an integral component of Viksit Bharat@2047, aiming to transform India from the largest importer of teak into a globally competitive producer and exporter of sustainable, high-quality plantation teak. Such a mission would not merely reduce imports; it would simultaneously enhance farmers' incomes, strengthen revenue of SFDs, create rural employment, conserve foreign exchange,unlock export potentialand contribute to a more self-reliant Indian economy.

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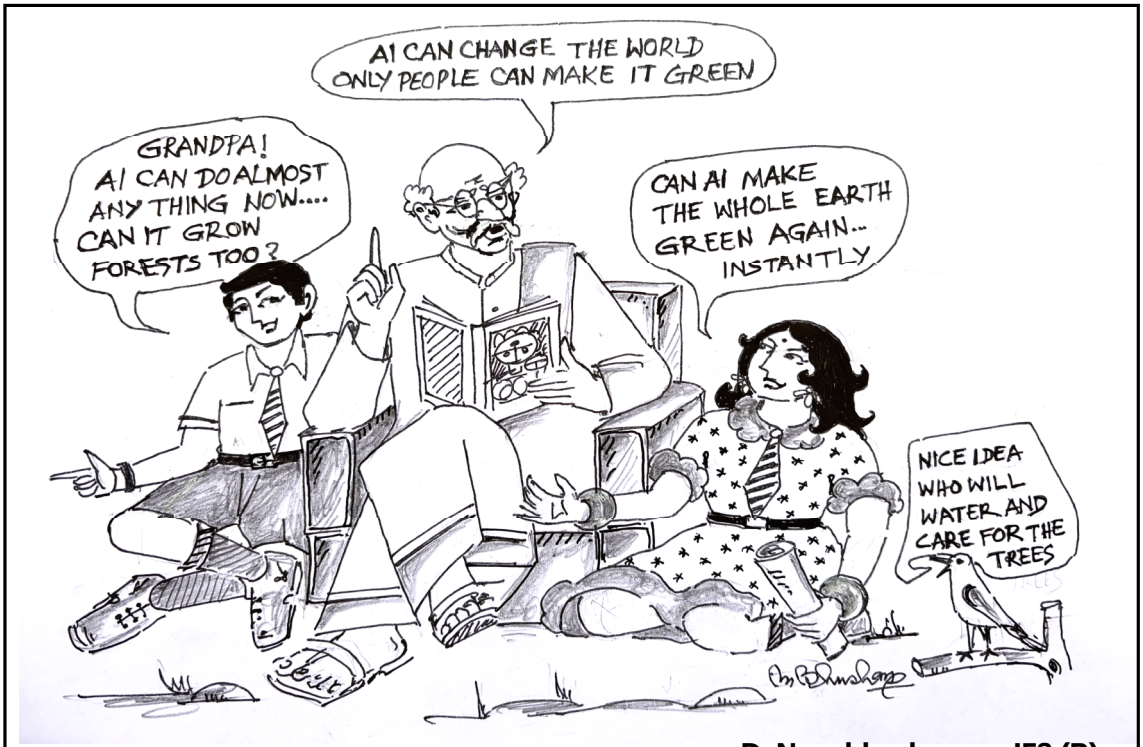


- D. Nagabhushanam, IFS (R)



A Zealot as a Trainer

Anirudh Kumar Dharni

I had an interesting tenure of four years from 1998 to 2002 in State Forest Service College (SFSC), Dehradun as a lecturer where young recruits in forest service were trained. In fact, I was already working as Registrar, Kerala Agriculture University, therefore, joining SFSC as a lecturer appeared to be a comedown to my wife and others who were not familiar with either system. My hair had started greying and I appeared to be a fit mentor for teaching and guiding- maybe, not by knowledge and experience but at least by looks.

I recall clearly my first day in the training college that still has a beautiful building with a row of old and magnificent *Ficusbenjamina* trees standing like guards between the college and the sprawling football field that turns lush green with every rain. I met four faculty colleagues in ShriArun Singh Rawat's room and was surprised by a remark passed smilingly by Ms. Archana Sharma. She gave me a look over after a small chat of introduction, "Different shades of brown." It was only then that I noticed that I was careless enough to wear almost everything brown from top to bottom- frame of the glasses, pant, shirt, shoes and obviously socks too.

I then called on the Principal of the college, ShriJarnail Singh, in his chamber who welcomed me warmly. As soon as he came to know about my interest in *shayari*, he smiled and fished out his own recently written book, *Lehren*, from his drawer and gifted to me. Later I learnt that he was also invited occasionally for *mushayara* to recite his ghazals in public.

Among the teaching staff we had one permanent member, Shri Nandi, who taught engineering and survey to the trainees. He wore a muffler nearly all the year round and a monkey cap in winter with most of his face covered. He walked with bow legs and a hunch. Seeing him always in his thick glasses with a dead serious demeanor and a perpetual old bearing, I could never imagine how he might have looked in his younger days. He was a walking encyclopedia not only of all the former principals and faculty members who came on deputation to the college earlier and had left. All body ailments that he had ever suffered in his life- even minor flu and stomach upsets- were recorded in his memory indelibly and he used to justify his eccentric precautions citing those mishaps year wise in vivid details. He had lived in the same house near the college for so many years that I used to wonder that he could probably walk from his residence to office with his eyes blindfolded.

There was a sports officer, ShriSukumar, who belonged to Tamilnadu but he could speak Hindi just the way a Tamilian can manage to speak the language bringing comic effect unintentionally by failing to distinguish between genders- a nuance that South Indians cannot grapple with even after spending years in North India. He was a fitness freak and worked on the trainees really hard. On the field and off the field he was a very jolly fellow always exhorting the young trainees for putting in all effort in sports activities. I recall his pet dialogue to the trainees on the field during morning exercises, "जिसस्पीडसेडाइनिंगटेबलपरचिकनलेगउठाताहै, उसीस्पीडसेदौड़मेंअपनालेगउठाओ।" (Lift your leg while running with the same enthusiasm and speed that you show while lifting a chicken leg in the dining hall.)

ShriSukumar had a black Labrador and I could often see it in college in the evening. After the mandatory sports hour marking the culmination of day's activities for the trainees, Sukumar used to go for cycling while the fat Labrador, Rambo, followed him as a part of its daily exercise. Once he told me that Rambo was an executive dog and when I looked at him questioningly for more details he informed, "When somebody, even a stranger, comes to my house, my dog is least disturbed and never barks but keeps resting the head on its paws in front of the house with closed eyes in a contented way. Rambo demands to be cared and served food regularly- all the necessary attributes of a high ranking executive!"

After six months of joining the college I was made the Course Director (CD) for a batch of trainees from Andhra Pradesh and J & K. On my first day of interaction I gave them a pep talk, welcoming them to Forest Service and retelling them what I had been told during my probation in an address to our batch by Shri T. N Seshan, Forest Secretary, and later Cabinet Secretary and Chief Election Commissioner. ShriSeshan had told us in his usual boisterous style that he did not join government service for money because he could have earned much more by running a *paanshop* if that was his priority.

I also shared with the trainees that indeed working in forests is a pleasure. To illustrate my point, I talked about a scene in a Hindi movie, *Papiha,* directed by Sai Paranjpe. The hero of the film, Anant Nag, is accosted by the heroine who asks him, "Howcome you are going to forest on a holiday?" The hero replies, "Visiting forests is not just my duty. I love being in forests."

CD's job was mainly to arrange and coordinate all activities – classroom teaching, hostel affairs, field exercises, educational trips, examinations, swimming and driving lessons, resource persons- for successful training of two- year duration. The relationship between trainees and CD is an interesting one in the sense that the latter has to be approachable at all times for resolving issues and also to maintain discipline. All sorts of official and personal issues were brought to the CD by the young trainees- many of whom had left their home for the first time.

Just after a month from the commencement of the course the three lady trainees in the batch came to my residence one evening. After the usual exchange of pleasantries, I observed that they wanted to tell me something but were not very comfortable. They were exchanging glances and two of them were prodding the third one with discreet gestures to talk to me openly. I waited patiently like a Zen master for the cat to be out of the bag though I was keenly aware that my wife was lurking in the background, being more curious than I was about the mission of the all-female delegation.

It was only after overcoming the initial hesitation that the third lady revealed that she was pregnant but did not know about it when she had come to join the course. Considering the hectic physical routine of the course it was evident that she would not be able to cope up with the minimum requirement. She asked me innocently whether she should go back to her husband for delivering the baby. In case she did, she wanted to know as to what would happen to her inter-se seniority in the batch.

I asked her whether it was her first pregnancy to which she replied in the affirmative. I advised her that in that case there was absolutely no doubt that she should drop the course temporarily, deliver the baby in her native place and resume the course after a gap with the junior batch. I informed her that her inter-se seniority would be determined according to state rules and normally she would

be placed at the bottom of her batch because she would be the last in the batch to complete the course requirement. I advised her that she should not be unduly perturbed regarding her seniority but delivering a safe and healthy child should be given the first priority.

This advice seemed to bring a lot of relief to her and all three ladies returned apparently satisfied though I knew that resuming the course later with an infant would not be an easy task either. I looked at her retreating figure sympathetically knowing fully well how difficult it would be for her to balance her career with her training next year. With that encounter I realized once again with greater conviction that providing a level field for career development for women would always prove to be a mirage. Kudos to all those ladies, who keep doing well in various organizations, despite all their natural handicaps.

For many trainees it was their first job and their enthusiasm to do well was understandable. I had already put in eleven years of service but I was the CD for the first time.Therefore, my enthusiasm as a trainer was also sincere and, many times overboard. There was a strict code of uniform for the trainees- one set for morning PT, jogging and evening games and another set for attending classes in the college. For the boys the college uniform was white pants, full sleeve shirts and a tie while for ladies it was white *salwaar* and white top with a white *dupatta*. The trainees could wear casual clothes only after college hours or during holidays.

In order to familiarize the trainees with basic forestry, I directed them to prepare seed beds with their own hands. I got them a trolley full of soil and spades so that they could make beds for sowing seeds just like a field laborer would do. I procured seeds of local trees from Forest Research Institute nursery for the trainees to sow in the seed beds after pre-treatment.

It was a sight to see them clad in their whites and ties dangling, sweating copiously, while they used the spades to spread the soil. They must had cursed me profusely and called me names under their breath because, historically there was no such tradition in the college in previous years for the trainees to soil their hands. They must have presumed that it was sufficient to learn the theoretical knowledge only and pass the examinations. However, as admitted earlier, I wanted to make them practical forest officers in my fresh zeal of a first time CD.

In every batch a special bond develops over a period of time between CD and trainees. Even years later, all trainees would remember their CD even if they forget other faculty members because of the constant interaction over the course duration. One day while I was busy taking a class for senior in-service officers who had come for a refresher course, there was a phone call from my wife to the office complaining about her severe abdomen pain with a request to convey the news to me. (There were no mobiles then.) The news spread in the closely knit office very fast and even before I could reach my house, the lady trainees were already there attending to my wife. They had rushed straight from their class to my residence in the campus without my knowledge. When my neighbor's wife came to inquire about my wife's welfare she got mighty impressed by the presence of three ladies moving around in white dress and taking care of the lady of the house. However, she mistook them as nursing staff of the campus hospital and started asking about the nature of my wife's ailment! The comedy of errors, apparently because of the white uniform, went on for some time till the ladies informed her that they were not the nursing staff but forest service trainees of the college.

After the first month of the training program, I told Sukumar that all the trainees would be hiking to Mussoorie from Rajpur on the following Sunday with packed lunch. The idea was to familiarize them with the local flora, geology, landscape elements and to make them hardy for the field job. I had done this hike a couple of times in school with my classmates but I was not sure whether I remembered the trekking route. As a measure of abundant precaution I took along another ICFRE scientist, Dr. Harish Sharma, a Doonite who claimed he knew the route as the back of his hand.

On the appointed day we all boarded the institute's bus and got down at Rajpur to begin our trek with a lot of energy and merriment as it was a big relief from the classroom setting for the trainees. Sukumar was his usual jovial self, cutting jokes and keeping things light while the trainees strained to walk up the steep slope stopping in between at numerous locations when I was pointing out few trees and shrubs to them.

There are many narrow and winding bridle paths used by the locals every day to move from Rajpur to different villages, including the famous Jharipani, en-route to Mussoorie. One should normally reach the destination just by sticking to any one route if one keeps ascending the slope. However, that day we made a wrong turn somewhere and got lost. At one point no paths were seen as we were surrounded by thick bushes all around and were stranded on a slope. There was no option but to crawl on our hands and feet to move ahead but it was becoming increasingly difficult. The thorny bushes sometimes caught our clothes and caused small cuts too. I looked at my 'guide' but he had no clue about the way!

The initial fun and frolic that we had started with got evaporated soon. The slow crawl on our hands and feet was not only tiring but frustrating too with no clarity when we would hit the right path. A lady trainee got so tired and fed up that she started weeping when she found herself unable to move under the bushes. It was time for me to get worried as CD because it could become a chain reaction for other two ladies too. I had never experienced such a situation during school trips when the same trek appeared like a cakewalk in those days.

Instead of moving the entire group randomly in search of the right path and direction, I asked everyone to stay put while I moved ahead with three young boys for further exploration. Fortunately, we could locate a local villager after half an hour who guided us properly. We came back to the same spot where we had left our group and to everyone's relief we came out of the thicket with the path up to Mussoorie clearly in sight. We reached Jharipani where we had a tea break and then climbed to Mussoorie without any more misadventure.

After taking lunch at Mussoorie, I announced generously that the return hike to Rajpur was optional. The trainees were given a choice to take the public bus from Mussoorie and get down at Rajpur where the institute's bus would be still waiting for them to take them back to hostel. I wanted to know as to how many trainees would join me and Dr. Harish Sharma who was anyway going to walk back with me. All the trainees, except for one, played safe and opted for a bus ride to Rajpur. Ultimately, only four of the original party trekked back again to Rajpur, where we reached by late evening. I mention this fact specifically to make another point.

When the two-year course ended in 2001, I decided to have another hike with the trainees to Mussoorie. I was not shy to bite the bullet once again despite the last hiking experience. By this time the drill was known to all- carry packed lunch, board the institute bus, start the trek from Rajpur and climb to Mussoorie. Fortunately, there was absolutely no hassle on this occasion even when

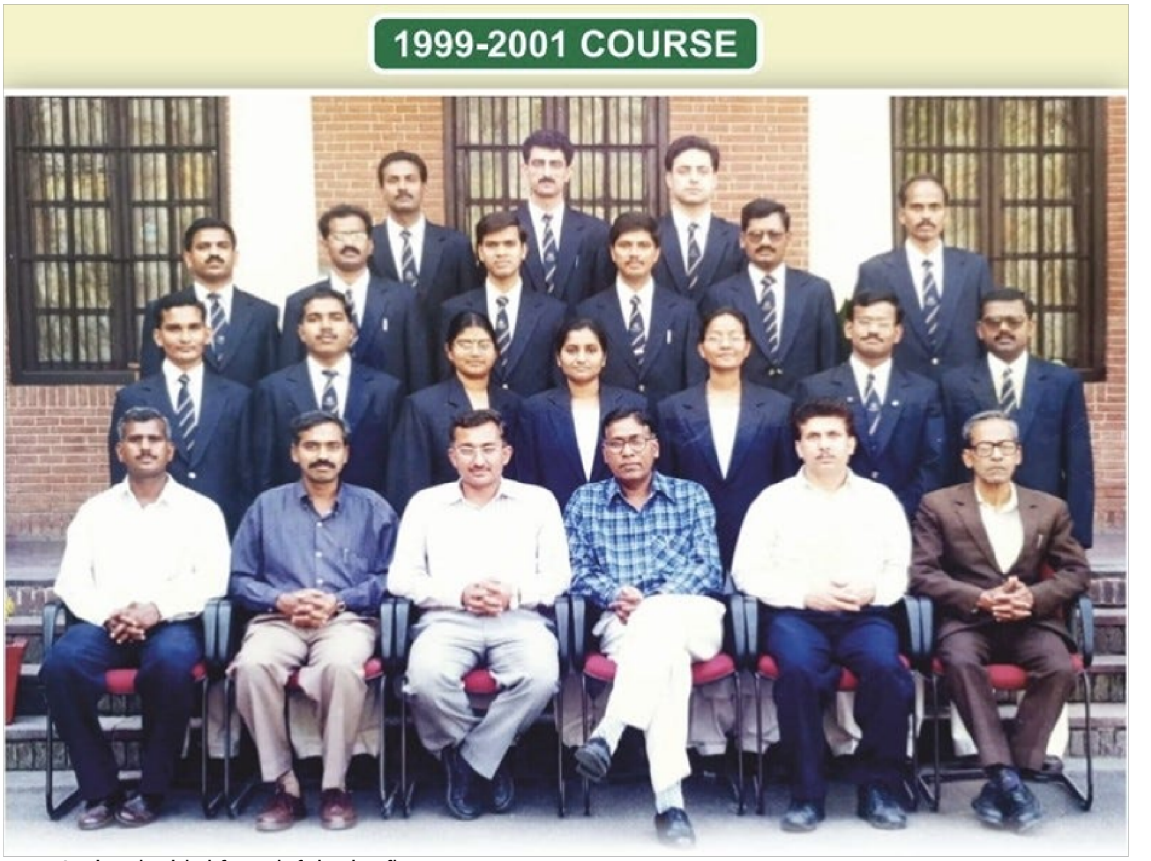
we were devoid of the company of the expert 'guide', Dr. Harish Sharma, this time.

All the trainees trekked up to Mussoorie and back to Rajpur with hardly any fatigue. There was another significant difference too. All the young trainees, including the ladies, walked much ahead of me though I prided myself on my own fitness owing to constant outdoor life. I felt happy that even If everything else was discounted in the two- year training program, as trainers we were successful in fulfilling at least one requirement specified by Dr. Dietrich Brandis* to Viceroy of India while recruiting young forest officers for Imperial Forest Service for the British government: such officers should be strong in legs. The physical training given by Sukumar moved up the general fitness of the entire batch by many notches and it would stand them in good stead later in life.

Footnotes

ShriArun Singh Rawat retired as Director General Indian Council of Forestry Research and Education (ICFRE)

Ms. Archana Sharma went to back to her cadre, Himachal Pradesh, on completion of her deputation tenure and retired as PCCF (HoFF).



Author is third from left in the first row

Author is a member of the Indian Forest Service and a former PCCF, Kerala. M-82239 94111



Cyber Security & Digital Forensics in Forestry and Wildlife Crime: An Exposure for Forest Officers of Andhra Pradesh

Sri.B. Vijaya Kumar, IFS

Introduction: The rapid digitisation of criminal activity has transformed wildlife and forest offences. Today, a poacher in Seshachalam may coordinate a red sanders deal on WhatsApp, a trafficker may advertise pangolin scales on Facebook Marketplace, and a syndicate may move money using crypto via Tor. For Andhra Pradesh's forest officers, technical literacy is no longer optional. Understanding cyber security and digital forensics is essential to protect the State's biological diversity, secure evidence, and ensure convictions under the Wildlife Protection Act, IT Act, and related laws. This article explains key concepts with real-world examples and gives a practical procedure for reporting online wildlife crime.

Core Concepts and Tools for Forest Officers – With Examples

1) Hack 5: What it is: Hak5 is a platform that demonstrates pen-testing tools like the "Rubber Ducky" – a USB device that looks like a pendrive but can inject malicious keystrokes.

Example: During a raid, officers found a Rubber Ducky plugged into a seized laptop. It had a script to auto-copy wildlife trade chat logs to a hidden folder. Officers must treat unknown USBs as potential attack tools and seize them forensically.

2) Dark Web + Onion Router (Tor): What it is: Tor bounces internet traffic through multiple nodes, hiding the user's IP. The dark web uses ".onion" sites not visible on Google.

Example: WCCB recently tracked a .onion forum where buyers listed "tiger claws" and "ivory bangles". Officers cannot browse such sites without authorisation, but noting a suspect's Tor usage in CDRs is a red flag for deeper investigation.

3) VPN Use:

What it is: A VPN masks the real IP by routing traffic through another server.

Example: A suspect arrested for sandalwood smuggling had NordVPN installed. Call records showed heavy data use, but his real location was hidden. Investigators had to request logs from the VPN provider under Sec 91 CrPC to confirm his activity timeline.

4) GitHub:

What it is: A code-hosting site. Criminals use it to store phishing kits and malware.

Example: A fake "AP Forest Permit" app circulated on WhatsApp. Virus Total traced its code to a public GitHub repo titled "forest-permit-apk". GitHub later took it down after WCCB reported it.

5) Temporary/Disposable Mail:

What it is: Sites like http://temp-mail.org create emails that self-delete in 10 minutes.

Example: A Facebook seller of deer antlers used temp-mail to create 5 fake profiles. Forensics matched the same IP and device fingerprint across all 5 accounts, proving common control.

6) BSE Modus Operandi:

What it is: Fraudsters impersonate BSE/SEBI to push fake investment schemes.

Example: A WhatsApp group called "AP Forest Investment Club" sent messages claiming "Invest in red sanders futures via BSE". It was a phishing link to steal bank OTPs. Officers must warn informants not to click such links.

7) Virus Total Uses:

What it is: Upload a file hash to check if 70+ antiviruses flag it as malware.

Example: A suspect sent an APK "AP Forest ID". Instead of installing it, the officer uploaded its hash to VirusTotal. 42 engines flagged it as spyware. The file was then seized for forensic imaging.

8) Alert on http://trycloudflare.com :

What it is: Cloudflare Tunnel creates temporary links like http://abc123.trycloudflare.com.

Example: A Telegram message promoting "live leopard sale" had a trycloudflare link. These links expire in hours. Officers must screenshot and report immediately – waiting means the page vanishes.

9) Bitdefender:

What it is: Antivirus that logs blocked threats and app execution.

Example: On a seized phone, Bitdefender logs showed repeated blocking of "com.wildlife.trader" app and attempts to access the camera. This helped establish intent to record and share wildlife locations.

10) Data Production – Collection & Handling of Electronic Data:

What it is: Digital evidence must be copied forensically without altering the original.

Example: A Range Officer found WhatsApp chats on a phone. He powered it off, kept it in flight mode, and handed it to the cyber cell. The cell created a forensic image and calculated MD5 hash before analysis. The court accepted it because chain of custody was intact.

11) Privacy Settings in Mobile WhatsApp:

What it is: Controls to limit who sees your profile and messages.

Example: An officer investigating a trade syndicate set WhatsApp "Last Seen" to Nobody and turned on biometric lock. This prevented suspects from knowing when he was online and accessing his chats if the phone was snatched.

12) 5SIM:

What it is: Service selling virtual numbers for OTP.

Example: A suspect registered 20 Facebook accounts using 5SIM numbers to sell turtle eggs. CDRs showed no physical SIM linked to those OTPs, but device ID matched across accounts, proving one operator.

13) SS7:

What it is: Telecom protocol with known vulnerabilities for SMS interception.

Example: A trafficker's SMS OTP for a bank transfer was intercepted via SS7 attack. Mitigation: officers should use Google Authenticator or WhatsApp 2FA instead of SMS for sensitive logins.

14) Mail Verification OTP:

What it is: OTP sent to email for account verification.

Example: A fraudster used temp-mail + email OTP to create a fake "AP Forest" Gmail and phished informants. Officers should advise informants to check sender domains carefully: real govt emails end in @apforest.gov.in.

15) BIN:

What it is: First 6-8 digits of a card showing issuing bank.

Example: A seized card used to buy night-vision gear had BIN 5244xx, tracing to SBI. This helped link the financial trail to a specific branch and account holder.

16) IT Act 2000 – Key Sections for Cyber Offences:

- Sec 43: Damaging data – e.g., deleting GPS coordinates of a crime scene from a phone.
- Sec 66: Hacking – e.g., unauthorised access to Beat Guard's login to change patrol routes.
- Sec 66C: Identity theft – e.g., creating fake "DFO Rajahmundry" Facebook to solicit bribes.

➢ Sec 66D: Cheating by impersonation – e.g., calling beat staff posing as DFO to demand money.

➢ Sec 67: Publishing obscene material – rarely used, but relevant if wildlife kill videos are circulated.

➢ Sec 69: Power to intercept – allows authorised officers to request Meta/Google data.

17) DPDP Act 2023 – Masking Aadhaar, PAN & KYC:

What it is: Law requires masking sensitive ID data.

Example: When submitting a seizure memo, the officer masked Aadhaar as XXXX-XXXX-1234. Sharing full Aadhaar in FIR annexures risks identity theft and violates DPDP Act.

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Case Study: How Foresters Should Report Wildlife Crime on Facebook/Social Media – A 4-StepProcedure

Why This Matters: Last month, a Facebook post offering "sambar horn powder" was deleted 2 hours after a beat guard commented on it. The suspect vanished. Fast action preserves evidence.

Step-I : Document the Evidence

✓ Put the seized phone in flight mode to stop remote wiping.

✓ Screenshot the post with date, time, and profile name visible.

✓ **Copy the URL:** e.g., https://www.facebook.com/groups/xxxx/post/12345

✓ Note phone number in caption: +91 98xxxxxx10

✓ Record: Found on 06.10.2026 at 10:30 AM.

✓ Do not comment or message the seller.

Step-II : Report Directly on Facebook

✓ Click (…) → "Find Support or Report Post" → "Sale of illegal or regulated goods" → "Wildlife products". This flags it to Meta and creates a report ID.

Step-III: Report to Law Enforcement

Escalate to:

✓ WCCB: wccb-moef@nic.in + attach screenshots

✓ State Forest Dept: Submit written complaint to DFO with evidence

✓ Local Police: Register FIR under WPA Sec 9 + IT Act Sec 66

✓ TRAFFIC/WWF: For intelligence support

How Police Trace Offenders:

1. Police send Sec 91 CrPC notice to Meta → Meta gives IP, email, device info.

2. Police send IP + timestamp to ISP → ISP gives subscriber name and address.

3. Arrest under WPA + IT Act.

4. Foresters must not try to trace IP themselves – it violates Sec 43 IT Act and ruins evidence.

Step-IV: Preserve Evidence

Save screenshots in a folder named "FB_Case_06102026", unedited. Be ready to sign an affidavit stating how and when you captured them.

Relevant Legal Sections:

WPA 1972: Sec 9, 39, 48A, 49B, 51 – up to 7 years + fine.

BNS 2023: Sec 325 – mischief by killing animals.

IT Act 2000: Sec 66 – online facilitation of crime; Sec 67 – publishing harmful content.

Key Reminder: Act fast. Document first, report second. Cite WPA, IT Act, BNS in complaint.

Contact Quick Reference:

- WCCB: http://wccb.gov.in | wccb-moef@nic.in
- State Forest Dept: Contact local RO/DFO
- Cyber Crime Police: Contact local Police Station

Personnel Protection Measures for Forest Officers

Officers are also targets. Use these safeguards:

- Aadhaar Locking: Lock biometrics on UIDAI portal to stop misuse in fake KYC.
- Check SIMs in Your Name: Use DoT's Sanchar Saathi portal to see if fraudsters issued SIMs in your name.
- Cyber Fraud Reporting: Dial 1930 immediately if you fall for a phishing scam.
- Avoid APK Downloads: Never install "AP Forest http://Permit.apk" from WhatsApp – it's likely malware.
- 3-Finger Check for Suspicious Video Calls: On a video call with an unknown number, cover camera with 3 fingers. If the caller asks "why is camera covered?", they may be recording you.

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Conclusion: Cyber-enabled wildlife crime is the new frontline for forest protection. A beat officer who knows how to screenshot a Facebook post, preserve a phone in flight mode, and quote Sec 66 IT Act is as valuable as one who can track pugmarks. By mastering these basics, Andhra Pradesh's forest officers can bridge the gap between jungle patrols and digital investigations – and that is a direct investment in safeguarding our forests and wildlife for the future.

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In terms of ecological benefits, total tiger counts climbed from a low of 1,411 in 2006 to 3,682 in recent assessments, stabilizing the global outlook for the species and allowing for ungulate prey recovery across dozens of landscapes.

From a climate protection perspective, protected tiger forests function as critical carbon sinks. Peer-reviewed studies indicate that preventing deforestation inside these reserves has averted over one million metric tons of carbon dioxide equivalent emissions, providing tens of millions of dollars in global climate benefits by maintaining large, mature forest carbon sinks.As per the MEE reports Periyar and Satpura Tiger reserves are the top performers overall and Nagarjuna sagar and Srisailam Tiger Reserve tops in highest carbon sequestration economic value.

Regarding hydrological security, over 21,000 kilometres of domestic rivers and 33,000 kilometres of permanent streams originate within or flow through NTCA-managed reserves. These protected catchments regulate water flow, reduce downstream siltation, and secure clean freshwater access for hundreds of millions of people living in the valleys below.

Conclusion: Lessons for Global Forestry

India's tiger reserves demonstrate that landscape-scale carnivore recovery is entirely viable in developing nations when backed by political support, administrative commitment, clear scientific frameworks, and community-level economic incentives. By prioritizing core habitats, use of M-STrIPES, and working directly with local communities, India has transformed its reserves from isolated sanctuaries into resilient ecological corridors.

For forestry professionals worldwide, Project Tiger proves that protecting a single apex predator can secure extensive watersheds, capture carbon, and conserve broader biodiversity for generations to come.

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Jeep ride in Corbett

Dr. Padam Parkash Bhojvaid

The significance of Jim Corbett National Park lies in its role as a crucial habitat for a wide array of flora and fauna. It is particularly renowned for being a haven for the endangered Bengal tiger, with the park being home to a significant population of these majestic creatures. Besides tigers, the park also shelters several other species including leopards, elephants, sloth bears, deer, crocodiles, and numerous bird species. The park's diverse ecology is sustained by the Ramganga River, which flows through its core, providing water and supporting the lush vegetation and abundant wildlife. Jim Corbett National Park not only serves as a vital conservation area but also attracts a multitude of nature enthusiasts, researchers, and photographers who flock to witness its rich biodiversity and natural splendor.

It was the scorching summer of May 2001 when I embarked on a memorable journey to Jim Corbett National Park. My visit to this renowned wildlife sanctuary was made possible by the kind assistance of Sh. N.K Joshi, the incumbent PCCF and HOFF of Uttarakhand. Mr. Joshi had invited me to participate in a seminar in Nainital, where I was to deliver a talk on Medicinal Plants. I had a longstanding connection with Mrs. and Mr. Joshi, as they had visited my humble apartment in downtown Toronto back in 1999 during their official trip to North America. During their stay, I had the pleasure of showing them around the city, and we formed a genuine bond.

Sri. Joshi, aware of my passion for forestry and wildlife, spoke to Sh. Dig Vijay Singh Khati, IFS, and the park director, to ensure that my trip would be both enjoyable and fruitful. He also directed the Deputy Conservator of Forests (DCF) in Nainital to arrange transportation for my journey from Nainital to Ramnagar, the gateway to the park. Sh. Khati, an impressive figure with his dignified appearance, style, and mannerisms, welcomed me with a warm cup of tea and informed me that I would be staying in Dhikala, in the accommodation designated for the director. He assured me that necessary arrangements had been made for safaris in the park.

Accompanied by Ram Singh, a deputy ranger assigned as my escort, I embarked on the journey from Ramnagar to Dhikala in a sturdy jeep. As we left the well-paved road and entered the gate leading to the buffer zone, our pace slowed down to accommodate the rugged pathway that wound along the undulating terrain towards Dhikala. During the two-hour drive, Ram Singh enlightened me about the ecological, technical, legal, and social aspects of park management. He also shared invaluable information about the different ranges within the park, the locations of various guesthouses, and the prominent watchtowers in the vicinity of Dhikala. The park boasted diverse landscapes, ranging from the tranquil Ramganga River and expansive wetlands to dense forests dominated by Sal trees and their companions. As we ascended towards higher altitudes, I couldn't help but notice the presence of conifers adorning the far off slopes, a testament to the park's varied flora.

An intriguing and delightful sight unfolded before me as we traversed a slightly undulating yet straight inspection pathway. Numerous doves, seemingly engrossed in their search for seeds and

insects, perched right in the center of the road. I couldn't help but worry that our approaching jeep might unintentionally harm these delicate creatures. However, to my surprise and relief, each time we neared them, the doves would gracefully take flight, soaring vertically like skilled harriers, narrowly missing the rooftop of the jeep. It was a mesmerizing display of avian agility, and I couldn't help but feel a sense of wonder at the harmony between nature and human presence.

At a designated spot, known as crocodile point we made a brief stop to observe a population of the legendary masher fish in the Ramganga River. The sheer abundance of herbivores was awe-inspiring, as we encountered graceful chital, nimble hog deer, majestic sambar, and sturdy wild boar along our route. As the jeep emerged from a tunnel-like passage through a dense grove of Sal trees, we found ourselves in an open expanse known as a chaur. To our left, the Dhikala forest complex unfolded, stretching along the banks of the expansive Ramganga, which appeared more like a serene lake in that particular stretch.

The stage was set for a remarkable adventure.At Dhikala, I was warmly received by Mr. Upadhaya, the Range Forest Officer (RFO). He greeted me with a friendly smile and led me to the comfortable bedroom attached to the Director's camp office. The suite, located on the first floor, boasted a small sitting area and a cozy bedroom. After settling in, the RFO provided me with a detailed itinerary for my stay, which included an evening jeep ride and an early morning elephant ride the following day. To ensure my safety and enjoyment, he assigned a guide cum gunman named Jorawar to accompany me during the jeep ride scheduled for 4 PM.

With some time to spare before the adventure began, I enjoyed a quick lunch and decided to take an afternoon siesta. As I dozed off, the tranquility of the surroundings enveloped me. At 3:25 PM, a soft knock on the door woke me up, and to my delight, I found a hot cup of tea waiting for me in the sitting area. It was a refreshing gesture, and I savored the tea before getting ready for the expedition. Jorawar, the diligent guide, reported at 3:55 PM with a resounding salute, and we made our way to an open-air jeep—a sturdy gypsy manufactured by Maruti Suzuki.

As our journey commenced, Jorawar informed me that he had received instructions to take me to the core areas of the park, which were not accessible to regular tourists. I couldn't help but guess the source of these special instructions, and in my heart, I expressed deep gratitude to Sh. Joshi and Sh. Khati for this exceptional opportunity. The scorching summer had dried up the tall elephant grass, giving the chaur in the core area a savannah-like appearance. This, in turn, enhanced visibility, and I was treated to the breathtaking sight of a group of over 150 chital deer, spanning various ages. The young fawns sought shelter beneath their mothers' protective legs, while the alpha male exuded a sense of pride and authority, his muscular form graceful against the backdrop of the landscape.

Continuing deeper into the wilderness, we encountered a group of larger Sambhar deer that seemed slightly startled by the engine noise of our jeep. Among them, a magnificent stag held a mouthful of grass and posed with the elegance of a professional model. Throughout our journey, we spotted a diverse array of birdlife, including jungle fowls, brown and black partridges, kingfishers, falcons, and a raucous group of parakeets. Their songs and calls added vibrant colors and beauty to the landscape.

Jorawar pointed his finger in the direction of a snag—a dry, broken tree trunk with a few forked branches—and we witnessed the impressive sight

of more than 20 vultures perched upon them. Their presence indicated the proximity of a decaying carcass, heightening our anticipation of spotting a predator. Jorawar also drew my attention to fresh pug marks, suggesting that we were not far behind the elusive creature. As dusk approached, the jungle transformed, casting a golden yellow hue across the scenery during sunset.

Jorawar had sought my permission to turn back on our return journey to Dhikala. The trip would take approximately 45-50 minutes, and park rules prohibited any vehicles on the roads after 7:00 PM.Deeply immersed in the serene surroundings and overwhelmed by the musky forest air, I reluctantly nodded my head in agreement. Jorawar acknowledged my gesture and explained that this was the prime time for the movements of big cats. I suspected it was his strategy to uplift my spirits and keep me engaged in the safari.

Then, something truly extraordinary occurred. The tranquil atmosphere was shattered by the ceaseless cries of langurs in the trees and the piercing calls of sambhar deer. The excitement on Jorawar's face was palpable as he motioned for me to maintain absolute silence, placing his index finger to his lips. He stood up in the open jeep, fixating his gaze in the direction of the calls. After a few moments, he gently patted my back and pointed towards a tree. There, I beheld the silhouette of a medium-sized cat, likely a leopard, perched on a forked branch. Instructing the driver to slow down, Jorawar skillfully positioned us to face the magnificent sight unfolding before our eyes.

With utmost ease and grace, the adult male leopard descended the tree, stretching lazily and yawning upon reaching the ground. It then embarked on a leisurely stroll right in front of our jeep, seemingly unaware of our presence. It was evident that locating a vulnerable deer or a small boar was high on its priority list. The leopard veered off the jeep track, prompting us to halt whenever we heard vigilant calls from the langurs. After a few minutes, it would reappear, and we followed at a safe distance. This captivating spectacle continued for the next twenty minutes until the leopard disappeared into a deep gorge, and the alert calls subsided. Jorawar congratulated me on witnessing such a prolonged encounter with a graceful leopard—a rarity in Corbett National Park.

The rest of our drive to the resthouse was filled with Jorawar's enthralling accounts of accompanying various Indian Forest Service officers on safaris through the park's core area. By the time we arrived at the Dhikala campus around 7:30 PM, I had worked up quite an appetite. After a quick dinner, I retired to my room, where I discovered a written message left by the Range Forest Officer (RFO) regarding an elephant safari scheduled for the next morning. The bearer assured me that morning tea would be served promptly at 5:00 AM.

As I exchanged goodnight pleasantries with Jorawar, I entered the bedroom, pleasantly surprised by the comfortable temperature provided by the split air conditioning unit. Exhausted from the day's adventures, I fell asleep immediately, only to awaken promptly at 5:00 AM, still dreaming of my mesmerizing encounter with the leopard.



The author is a former PCCF (HoFF), Haryana. M-70879 56657



Can a humanbeing become a monster?

V.V.Hariprasad

Alas "Those golden days were gone"
When there were full of natural resources
The earth was spread with fecund crops
And a farmer felt satiated
Though he did not have a complacent bone in his body

All those days to enjoy a pleasant summer
So as to embrace a warm one
Were also gone
Whereas unpredictable heavy downpours
Have been causing havoc
By causing millions of impecunious masses
To become indigent. ***"Are you evolved Frankenstein's monsters?****",*

Earth's vital systems are getting deteriorated
Due to heavy floods or intense droughts
The life of an average joe eventually
Becomes an unbearable hell on earth
Every now and then
And the earth is in perpetual pain
*Which is resulting in "****solastalgia****".*
Human evolution
Spanning millions of years
Resulted the modern first human being
To appear on earth

The neolithic revolution initiated by him
Devastated the green forests on earth
The industrial revolution a curse on people
Witnessed the aftermath of
Severe climate change which was
Thrusted on the posterity
By the homo sapiens
Who cared two hoots
For the then coming generations.

As a result the earth is crying with agony
Questioning the homo sapiens thus
Or ***"Ruthless fiends?".***
Such being their pathetic plight
The homo sapiens are left with
The ***Hobson's choice*** *of*
Taking the pledge to expand greenery
Rapidly on earth their only home
So as to protect themselves
And their posterity inhabiting on earth
From the ramifications of
Climate change at all costs
Come what may!!

(The author is a retired Dy. Conservator of Forests and a practicing Advocateand a guest faculty on laws. Mobile no.7893673767)



BOOK REVIEW

K. Buchiram Reddy

Name of the Book : Whispers from the Canopy

Name of the Author : J.V. Sharma

Number of pages : 372

Publisher : J.V. Sharma, at -Aparna Serene Park,

Block B G4, SBI Officers Quarters,

Majid Banda, Kondapur, Hyderabad – 500 084

Mobile Nos. **97055 28454; 94413 19151**

Price : 250/-

The author of the book, Sri JayanthiVenkateshwara Sharma, popular as J.V.Sharma, is a well-known person in the State of Andhra Pradesh and on its reorganization in the State of Telangana. He did his B.Sc. from Osmania University in 1953 and wanted to earn a degree in Law but had to discontinue because of his choice of forestry as a career; and yet he continued to evince interest in Forest law as also other laws connected to the forestry.

This book: 'Whispers from the Canopy' is the result of his hard work in the various duties he performed in the pursuit of forestry as a career over a long period of 35 years holding several posts as Forest Ranger, Assistant and Deputy Conservator of Forests in the State Forest Service and finally promoted to the Senior Scale of Indian Forest Service before retirement in 1990.

The great qualities of Sharma have been eulogized in the Preface to the book by Sri S.D. Mukherji, I.F.S. (Rtd), former PrincipleChief Conservator of Forests of Andhra Pradesh State. The book is moderately priced so as to make it available for all young and old.

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

The author is Dy.C.F (Rtd). He is on Phone 966 609 7788; and E-mail ID ; keesrabuchiram@gmail.com

Tree as Guru

Trees are sanctuaries. Whoever knows how to speak to them; whoever knows how to listen to them, can learn the truth. They do not preach learning and precepts, they preach undeterred by particulars, the ancient law of life

- Herman Hesse

BOOK REVIEW

C. Madhukar Raj

Name of Book: Foot Prints in the Forests.

Name of the Author : P.K.Sharma, I.F.S (Rtd)

Number of Pages : 282

Price : Rs. 459.00

Publisher : SRAS Publications Hyderabad

Ph: 91 98490 08016; Email:sraspublish9@gmail.com

"Foot Prints in the Forest" is the true life story of Mr. Paresh Kumar Sharma, covering over a span of time, from his school days to the college and then embarking over a long journey of career in the Indian Forest Service, for 36 years.

The narrative of his rich experience as a Forester in this book will certainly help many young persons; those who love nature are concerned about the Conservation of the Forests, Bio-Diversity and Global Warming factors to make Forest Service, a choice of their career.

In the initial years of sevice, he had the good fortune of working in theerstwhile undivided AP districts of Adilabad, Karimnagar, Warangal and Khammam. The area in all these districts forms a catchment to the mighty river Godavari, draining large amounts of water into it during the rainy season. These forests are rich in biodiversity and constitute a good composition of trees like Teak, Rosewood, Bijasal and Bamboo and Minor Forest Products like Beedi leaf, Katha, Gum karaya etc.

Incidentally, working in these forests, throws a big challenge in Forest Protection and Conservation ie, preventing smuggling and poaching of wild animals and preventing encroachment into the forest lands, all in the backdrop of intense Naxalite activity. In later years of service, Mr. Sharmahad played a key role in the vigilance wingand in the Information Technology Wing in the State Headquarters, where he had vastly contributed in the field of Geomatics, Forest Cover Change Mapping and State of Forest Reports, in undivided Andhra Pradesh State before heading the Forest Department of Telangana.

Being his colleague, at times in the districts and later at the Headquarters, I could see in him a strong Character of Integrity, Hardworking Nature and Unwavering Commitment to the Forest and Wildlife Conservation, setting a role model of himself at all levels of the administration.

To others who are not in the Forestry Profession or in Public Service, this book makes a good reading, depicting how a young lad from a small remote town in Rajasthan, which is devoid of good forests, could make it to the Civil Services, then joining the Indian Forest Service and ending at the top of the ladder in administration.

C. Madhukar Raj, IFS (Retired)
Former P.C.C.F and H.o.F.F

GREEN NEWS

Climate and Weather Events

Monsoon Extremes: India faced heavy downpours and red alerts in states like Maharashtra, Gujarat, and Rajasthan, alongside severe floods in Assam affecting hundreds of villages.

Temperatures: India reported maximum temperatures crossing 45°C in parts, though Parliament briefings noted no unprecedented nationwide severe heatwave anomalies overall.

Global Policy and MonitoringMethane Tracking: The UN Environment Programme reported that while satellites can detect major methane leaks in days, only 13% prompt government or corporate action, spurring a new push to fix 80% of leaks by 2030.

Urban Resilience: The High-Level Political Forum on Sustainable Development (HLPF 2026) reviewed Sustainable Development Goal 11, noting that natural disasters and climate mobility have become dominant challenges for sustainable city planning.

India and the Bonn Challenge:

India has brought 21.76 million hectares of degraded and deforested land under restoration, achieving nearly 84% of its national target of 26 million hectares by 2030 under the Bonn Challenge.

India's Bonn Challenge TargetsInitial Pledge: Committed to restore 13 million hectares by 2020 and an extra 8 million hectares by 2030.

Enhanced Pledge: Raised the total target to 26 million hectares by 2030 during the UNCCD COP14 in 2019.

Current Status: Reached 21.76 million hectares of restored land, generating about 1.22 billion person-days of rural work.

Major Conservation Updates

Pygmy Hogs Return: Conservationists released 15 captive-bred pygmy hogs (9 females and 6 males) into the Kuribeel grasslands of Manas National Park in Assam, India, returning the world's smallest wild pigs to their historic home.

Golden Langurs Reintroduced: Seven golden langurs that were seized from an illegal trafficking network were safely released back into their natural habitat at SikhnaJwhwlao National Park in Chirang, India.

Sumatra Snare Crackdown: Conservation authorities intensified crackdowns on illegal wildlife snares across Sumatra following high-profile rescues of endangered species, including a young female Sumatran tiger caught in a wire trap.

Marine Patrols: Crews from Sea Shepherd maintained constant patrols alongside the Mexican Navy in the Upper Gulf of California through June to protect the critically endangered vaquita porpoise.

Environment and Development Metrics (Down to Earth, June 2026)

Poor Performing States: Released on June 4, 2026, the annual State of India's Environment 2026: In Figures report showed that India's five most populous states—Uttar Pradesh, Maharashtra, Bihar, Madhya Pradesh, and West Bengal—ranked poorly on environment, health, agriculture, and development metrics.

World Environment Day 2026: Focused heavily on a new environmentalism, balancing necessary economic growth with ecological sustainability amid rising global heat stress and concretization of cities.

Contd.. on page No.56



Fossil Rim Wildlife Center, Glen Rose; Texas

V. Santhaseela Babu

Fossil Rim Wildlife Center is located at a distance of about 110 miles from Frisco, Dallas in Texas State. It takes about 2 hrsdrive by car.As a retired Forest Officer, I felt that I should visit this center. When I expressed my desire, my Grandson Mr. Shantanu drove all the way. I along with my wife Mrs. Bhagya Lakshmi and granddaughter Ishita started from our home at Frisco, Dallas by 8 AM with packed lunch and reached the WL Center by about 10 AM. After purchasing the entry ticket of $35 per person, we opted for self-drive in the Center. Of course, guided tours are also organized by the management. We were given 2 bags of animal feed free of cost so that when the animals approach our vehicles we can feed them.

Here let me narrate a brief history of this wildlife center. Fossil Rim Wildlife Center is a non-profit conservation centre near Glen Rose, Texas. They specialize in the breeding of endangered species, public education, scientific research and natural land management. The facility has over 1,000 animals from 50 species. Guests have access to guided and self-guided tours across the center's 1800 acres of Texas Hill Country, as well as lodging, dining and educational facilities. The center was first an exotic herding ranch acquired by a Texan businessman from the oil industry named Mr. Tom Mantzel. He bought the ranch in 1973 and renamed it Fossil Rim Wildlife Ranch. The project was at first a weekend retreat for Mr. Mantzel, but it soon became a full-time occupation. Concerned by the extinction of species, Mr. Mantzel started experimenting with breeding the endangered species in 1982 with Grévy's zebras. Fossil Rim was the first ranch to participate in the Species Survival Plan, an initiative partnered with the “Association of Zoos and Aquariums (AZA)”, and their success with zebras prompted the association to continue its work with Fossil Rim.

Mr. Mantzel decided to open the zoo to the public in 1984; with the oil crash, he was in dire need of funding to continue his breeding program. With a small team, he built a road along the 1,400 acres of land and opened a snack bar and a souvenir shop. He also brought a few more animals to bring in the public: Grant's zebras, ostriches, and reticulated giraffes.

Areas:

Fossil Rim's property covers 1800 acres of hill-country topography including rolling hills, limestone deposits, and wooded and open land. In addition to providing habitat for the facility's animals, this land is also used for hay production and the protection of native Texas flora and fauna. The property is divided into several pastures, some of which guests will have the opportunity to travel through on tours. The areas include:

- Front pasture – The first pasture guests enter during a tour. Houses various hoof stock such as the blackbuck and wildebeest.
- Buffer pasture – This area acts not only as pasture for crepuscular species like the bongo and the greater kudu, but as hay producing land and separates the Front and Main pastures from each other.
- Main pasture – So called for its status as the

largest pasture guests can travel through on tour, the main pasture houses many of Fossil Rim's species.

- Preserve pasture – This pasture is home to some of the most recognizable animals on Fossil Rim property including giraffes.

- Intensive management area – This area, also known as the IMA, is off-limits to guests unless on a guided tour. This area houses species that are typically vulnerable and endangered and have historically had better conservation breeding success with less human interaction. For this reason, these species are kept out of the public eye more than other animals on property, so that staff can better assess their needs. This area is well known for containing one of two cheetah facilities on site. The other location, known as Cheetah Hill, is open to guests on a standard drive-through tour.

- The overlook – One of two locations on property where guests can exit their cars, the Overlook is home to the Overlook Café, restrooms, the conservation-focused Nature Store, and the Children's Animal Center (CAC).

Other land owned by Fossil Rim is used for hay production, educational facilities, conservation and administrative buildings.

Animal species:

Fossil Rim Wildlife Center houses over 1000 animals in 50 species, of which 22 are vulnerable or endangered, including:

Addax, African spurred tortoise, Aoudad, Arabian oryx, Attwater's prairie chicken, Axis deer, Black-footed cat, Black-tailed jackrabbit, Blackbuck, Blue and gold macaw, Cheetah, Waterbuck, Wildebeest, Dama gazelle, Emu, Fallow deer, Gemsbok, Giraffe, Greater kudu, Grevy's zebra, Hartmann's mountain zebra, Maned wolf, Mexican gray wolf, Mountain bongo, Nigerian dwarf goat, Nile lechwe, Nine-banded armadillo, Przewalski's horse, Red-crowned crane, Red deer, Red wolf, Roadrunner, Roan antelope, Sable antelope, Sandhill crane, Scimitar-horned oryx, South-central black rhinoceros, Southern white rhinoceros, Texas tortoise, Vietnamese pot-bellied pig, White-tailed deer, Wild turkey.

I would like to describe some important details of the animals which I have noticed in our drive through, as provided by the Wildlife Center authorities.

Soon after we entered the safari (as we call in India), the first animal we sighted was Blackbuck. Of course, I need not explain the details of this animal as it is seen by many of us in India.

1. ADDAX (Addax nasomaculatus):Then we came across an animal called Addax. The range of this animal is with isolated populations in Niger, Mauritania, Morocco and Chad. The status of this animal is “Critically endangered”. This is a best desert-adapted antelope, Addax can survive for long periods of time without drinking water, instead deriving sufficient moisture from plants. The Addax reintroduction effort began in Chad in 2020 and the staff from Fossil Rim travelled abroad to assist with the release.

2. AOUDAD (Ammotragus lervia) - (Barbery Sheep):Next, we came across an animal, the Aoudad (pronounced as ow-dad)which is the only African wild sheep. Its distribution is Northern Africa, Morocco and Algeria. The status of this animal is ‘vulnerable’.Its eyes could be considered as its most remarkable feature with horizontal pupilssurrounded by brilliant yellow irises.It is a very agile climber and jumper. These animals when they approached our vehicles,we fed a little bit of pellets supplied to us at the entrance.

3. ARABIAN ORYX (Oryx leucoryx): The Arabian oryx or white oryx is a medium-sized antelope with a distinct shoulder bump, long, straight horns, and a tufted tail. It is a bovid, and the smallest member of the genus. It is distributed in Oman, Saudi Arabia, Jordan, UAE, and Israel. The status of this animal also is 'vulnerable'. This animal became extinct in 1972 but was reintroduced in 1982. It can go weeks together without water, instead getting moisture from plants. It has broad hooves for walking on sand. The Horns can reach 36 inches and are used for defence and fighting. These animals are also in the habit of stopping the vehicles for feeding them with food. We fed a little bit of pellets supplied to us at the entrance.

4. AXIS DEER (Axis axis): This deer is found in India, Bangladesh, Bhutan, Nepal and Sri Lanka and the status is 'Least Concern'. We know about this animal which has a bright-reddish coat marked with permanent white spots. The antlers can reach 30 inches and usually have three points. It is a good swimmer with no fear of water.

5. CHEETAH (Acinonyx jubatus): The distribution of this animal is presently restricted to Southern, Western, Eastern Africa and Iran. The status is Vulnerable. The Indian Cheetah was last recorded somewhere around 1950s. Of course, since 2022, India has introduced Southeast African cheetahs from Namibia and South Africa into Kuno National Park in Madhya Pradesh as part of a conservation and reintroduction program. It can reach a speed of 65 plus miles per hour in seconds, but can run for 400 yards before exhaustion sets in. Over sized nostrils, flexible spine, enlarged heart and increased lung capacity are all the benefits for this fastest animal.It was almost midday when we approached the Cheetah's enclosure and the animal was relaxing under the shade of a tree.

6. COMMON WATERBUCK (Cobusellipsiprymnus): The occurrence of this animal is limited toSoutheastern, Central and Western Africa. The status is least concern. An oily, musky secretion from the skin of this animalserves a water proofing function for this animal.Waterbuck must drink water daily, so they never stay far from water sources and are good swimmers. Only the males have horns, and serious fighting is more common than in most ungulates.

7. FALLOW DEER(Dama dama): Fallow deer are found in Turkey and Europe, and their status is least concern. The European fallow deer (Dama dama), also known as the common fallow deer is a species of deer native to Eurasia. It is one of the two living species of fallow deer alongside the Persian fallow deer (Damamesopotamica). It is historically native to Turkey and possibly the ItalianPeninsula, Balkan Peninsula, and the island Rhodes near Anatolia. During the Pleistocene it inhabited much of Europe and has been reintroduced to its prehistoric distribution by humans. It has also been introduced to other regions in the world. These are the only Fossil Rim deer withpalmate (broad, flat surface) antlers. These animals came nearer to our vehicle, and we have given the food stuff from the food packets given to us.

8. EMU (Dromaiusnovaehollandiae): Emu is the second tallest living flightless bird. It is thought to have roamed the outback of Australia 80 million years ago. The range of this bird is Australia and the Government there has protected it since 1960s. Emus are monogamous. The male incubates eggsand guards chicks for 18 months.Its height is about 5 feet and weighs about 100 pounds.

9. GIRAFFE (Giraffa camelopardalis): Giraffes are the tallest living land mammals and although it looks like their hind legs are shorter, all the four legs are almost of the same length. Their distribution is in Eastern, Southern and Central Africa. A typical

herbivorous mammal, the giraffe survives primarily on the leafy material of trees. With its long neck, the animal can reach food that no other herbivore can, due to the height of the vegetation. During our visit one Giraffe approached our vehicle bringing its head into our vehiclethrough the windowsand we have fed it with the food material that was given to us at the time of purchase of entry tickets.

10. SOUTHERN WHITE RHINOCEROS (Ceratotheriumsimumsimum):This Rhino is found in Botswana, Kenya, Namibia, South Africa, Eswatini, Zambia and Zimbabwe. The name 'White Rhino', unrelated to its colour (gray), is derived from the Africaansword describing its mouth: "weit" or wide. Its square lips and expansive snout, plus its size, distinguish it from the smaller, prehensile-lipped black Rhinoceros. It has poor eyesight but strong senses of hearing and smelling. During our visit, one Rhino was nearer to the approach road in its enclosure and another group of them were relaxing under trees far away.

11. HARTMANN'S MOUNTAIN ZEBRA (Equus zebra hartmannae): Hartmann's mountain zebra is a vulnerable subspecies native to the arid, mountainous escarpments of Namibia and southwestern Angola. They are agile climbers distinguished by a distinct fold of skin under the throat (dewlap), hard-pointed hooves, and wider stripes that extend down to their hooves. They have a white belly, like the Grevy's. If surface water is not available, wild Hartmanns's will dig for surface water. Members of herds can often be seen engaging in challenge games and other play behaviour, namely chasing, racing, play-fighting. Actually, when we visited the area allocated them, they were in herds and I could take a snap of a walking mother Zebra followed by its calf from my vehicle.

During our visit, we found many animals as explained in the para covering Animal Species. But for the restraint of space, I have covered the details of the animals which I thought are noteworthy. I am also sharing some photographs of animals which were shot by me on my mobile during our tour of the Fossil Rim Wildlife Center.

Photos on Page No : 30

(The author is a retired DFO worked in undivided AP state. He mailed this article from Dallas (USA) for publishing in our Magazine. He can be contacted on e-mail vssbabu@gmail.com and mobile:8019722292.)

Continuation from page No. 52

Monsoon and Climate ImpactsRainfall Deficit: India's June 2026 southwest monsoon opened with a steep 40% deficit due to strengthening El Niño patterns and an unfavorable Madden–Julian Oscillation.

Vulnerable Districts: A Down To Earth analysis flagged 111 high-priority farm districts vulnerable to El Niño, noting low irrigation coverage below 25% for many areas.

Global Temperatures: Copernicus climate data confirmed June 2026 globally averaged surface air temperatures reached 16.54°C, making it the second-warmest June recorded in history.

(Source: Internet, collected by the Editor)



Green Quiz – August 2026

Quiz Master : Dr. K. Tirupataiah

1. Name the Dutch commandant who initiated and published Hortus Malabaricus, a treatise on natural wealth (including flora) of Asia?
2. Who is called "The Genome Man of India"?
3. Which Swiss author commented that the Iron pillar at Qutub is "an unknown alloy from antiquity staring in the face"?
4. Which "freshwater aquatic beetle" native to wetlands and shallow wetland ecosystems was named recently from Kinnerasani WLS (TG) and Sandi Bird Sanctuary (UP)?
5. What is the name given to the Olive Ridley Turtle that was treated at the Dahanu Turtle Rescue center and released back to Sea that retraced the Arab sea trade route ?
6. Health Green cost. How much emissions are estimated to be generated (in terms of car units) through a single bypass surgery?
7. Considered as one of the greatest English poets and essayists and a Nobel laureate, he wrote "The Waste Land". Name him.
8. Considered as "Father of National Parks", this Scottish-born American was a naturalist, environmental philosopher, botanist, zoologist and glaciologist. His famous line is, "And in to the forest I go, to lose my mind and find my Soul". Name him.
9. Who is the First Asian and first from the Eastern Hemisphere to be elected as the Chair of "Species Survival Commission of the IUCN"?.
10. What is the World's smallest flying Mammal?

For School Students

1. Post-World War II, when Children from Japan wrote to him, the Indian PM arranged for sending of an animal named after his daughter Indira. Which animal?
2. While Emperor Ashoka commissioned the main Budhist stupas, the Arches came up later. During which dynasty were the arches commissioned?
3. Which environmental presenter popular for the BBC series on "The Living Planet" is celebrating his Centenary in 2026?
4. Which animal's "shell" is like a "bullet proof" coat? (it inspired human body armour research)
5. Which country has the "Rainbow River"? During Sep-Nov, it becomes a rainbow due to the growth of special plants at its bottom.

Answers on page no : 58

Others First

There is a magnet in your heart that will attract true friends.
That magnet is unselfishness,
thinking of others first, when you learn to live for others,
they will live for you- Paramahamsa Yogananda



LEGAL NOTES

Ponugonda Sailoo Vs. State of Telangana

(Conditional release of seized vehicle)

K. Buchiram Reddy

A Tractor bearing No AP 15 BM 9451 was seized as it was allegedly used in committing forest offence reported by P.O.R. No.25/06, dated 21.07.2025 for illegal trespass into a reserved forest and ploughing in anarea of 0.239 ha and causing damage to forest involving Porka valued Rs. 372/-.

For committing the forest offence, charge-sheet was filed before the Judicial First Class Magstrate at kamareddy against the petitioner's son. The owner of the tractor filed W.P. No. 10437 of 2026 and requested the High Court to pass order to conditionally release the tractor as it is prevented from use for agricultural purpose and may get damaged while it is kept in the custody of Forest Department.A precedent of an order passed in W.A. No. 838of 2023 was cited whereby a tractor was released by taking a Bond for Rs. 50,000/-

The petition was opposed by the Government Pleader and it was submitted that under Art. 48 A, it is the state policy to protect forests.When a notice was issued to the owner of the tractor, it was replied that the facts mentioned in the notice are incorrect. It was submitted that it is trite law if a tractor used for agriculture is not released under Section 44(3) of the Forest Act.

The petition was heard by The Hon'ble Justice Anil Kumar Jukanti and His Lordship considered that if the tractor is kept with the Forest Department without use, the petitioner would suffer irreparable loss.The court, taking into consideration all aspects of the matter and following the judgment of Supreme Court (AIR 2000 S.C. 2729) in State of KarnatakaVs. k. Krishnan, directed release of the tractor by taking Bank guarantee.

Source: Internet

The author is Dy.C.F (Rtd). He is on Phone 966 609 7788; and E-mail ID ; keesrabuchiram@gmail.com

Speak Out

Never be afraid to raise your voice for honesty and truth and compassion against injustice and lying and greed. If people all over the world… would do this, it would change the earth

- William Faulkner

Answers: 1.HendrikAdriaan van Rheede, 2.Sam Satosh, 3.Erich von Daniken, 4. Amphioskinnerasani and Amphiopssandi,5.DhavalMahalakshmi named after wildlife activist DhavalKansara, 6.Equal to a small petrol car travelling for 250 kms,7.T.S.Eliot, 8. John Muir, 9. VivekMenon, 10. Bumble Bee

For School Students: 1.Elephant, 2. Shunga&Satavahana, 3. Sir David Attenborough, 4. The Armadillo, 5. In Serania de la Macarina area of Colombia

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- The Corporation has bagged **"CAPEXIL Excellence in Export Awards (Top)"** for export of Red Sanders wood by earning a total foreign exchange of Rs.852.50 crore during the years 2017-18, 2018-19 and 2021-22.
- Diversifying its activities through promotion of Eco-Tourism.

Vice Chairman & Managing Director,
A.P. Forest Development Corporation Ltd.,
PVS Land Mark, 3rd Floor, Near APIIC Towers,
Mangalagiri, Guntur District.
Andhra Pradesh – 522 503.Ph: 08645-297211, 297221
website: https://apfdcl.com e-mail: vcmd_apfdc@yahoo.co.in



Asian palm Civet (*Paradoxurus hermaphroditus*)

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