

# VANA PREMI



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**"Wishing You a  
Christmas that's Merry  
and Bright!"**



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- ✓ TSFDC has introduced new commercial species with in the RRR region viz., Seethaphal, Sandal wood, Red sandal, Rose wood, Teak, Panasa, Bambusatulda, etc.,
- ✓ TSFDC has also taken up consultancy works for NTPC & RFCL and successfully raised multiple row avenue plantation along with Rajiv Rahadari Highway in Peddapalli District.

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**EDITORIAL:****The Elusive Call For Climate Action**

After two weeks of negotiations, the Glasgow Climate Pact was adopted on the 13<sup>th</sup> of November, 2021. More than 100 world leaders flew down to Glasgow using 400 private jets. These jets blasted 13,000 tons of CO<sub>2</sub> into the atmosphere. The amount of carbon emitted by 1600 Scotts in a whole year. Now, these leaders have emitted 13,000 tons just to assemble for one summit for tackling climate change.

The leaders planned to protect communities in natural habitats, mobilize Finance with an eye on climate change, cooperate and work together on climate action, and finally achieve the much talked about net zero-emission.

The summit recognized the urgent need to transition away from fossil fuels. The focus was on giving up coal-based power altogether. As expected, coal became a prominent bone of contention as per the concluding remarks at the summit. Cop 26 President Alok Sharma said that India and China would need to explain to developing nations as to why they push to water down the language on efforts to phase out coal at the top 26 conference. The original draft contained a pledge to phase out coal, and India introduced an amendment at the last moment to replace this phrase with the word face down. But one should know that the amendment came from consultations among India, China, the U.K., and the USA. China paid a crucial part in pushing for the language change.

The world knows that three countries- the U.S., China and India are the largest fossil fuel emitters in the world. It is the fact that India and China are far more dependent on coal than the U.S. Discussion on other fossil fuels like natural gas were conveniently

eliminated since much of the developed world is dependent on it.

India had a different contention; one that focused only on coal would disproportionately impact developing countries. It wanted all fossil fuels to be face down, but such an equitable fossil fuel phaseout would have burdened the United States and rich European countries. India called out this inequity but was branded as obstructing the process. Another significant disapproval was from Australia, the second largest coal exporter in the world. To continue to sell coal for the next few decades, it even conveniently skipped the session on phasing out coal. Australia has the highest per capita emissions in the G 20, and in the world, it stands at 5.34 tonnes of carbon dioxide per year. The average Australian emits five times more CO<sub>2</sub> from coal power than the average person globally. The world's largest coal power consumer, China has the 5th highest per capita coal emissions at 2.71 tons of CO<sub>2</sub> per year and 2.5 times CO<sub>2</sub> from coal power than the global average. The United States has the 4th highest per capita CO<sub>2</sub> emissions in the G 20 at 3.08 tonnes of carbon dioxide per year. The average American has almost three times more CO<sub>2</sub> coal power than the global average.

The climate figures are alarming. As one study puts it, 'The Earth's average temperature has increased over 1.2 degrees Celsius since the 19 century. 2020 was the hottest year on record. The World Meteorological Organization calls it the second hottest. Greenland lost 152 gigatons of ice between September 2019 August 2020. One gigaton of water can fill 400,000 Olympic size swimming pools. Water 152 times that amount has been added

to our oceans, while the ocean surface rose, so did its temperature. In 2020, 80% of ocean areas experienced at least one marine heatwave. Half of Australia's Great Barrier Reef is either dead or dying. The Atlantic hurricane season witnessed 13 named storms between June and November. That's the highest number ever recorded. Asia and Africa witness heavy rainfall and flooding. It's a vicious cycle.'

The world has been trying to curb Carbon emissions for 29 years since "The Earth Summit at Rio de Janeiro" was finalized in 1992. Countries established the U.N. Framework convention to avoid dangerous climate change. Yet, our climate continues to change. The greenhouse gas concentration continues to rise. CO2 levels have increased 17% since 1992. The greenhouse Gas Index has risen by 20% since 1992. Between 1993-2019, the world put 885.41 billion tons of CO2 in the air.

The Earth Summit was an essential precursor to COP 1. Now the coveted climate summit of our era - COP 26 Summit is concluded with a disappointing note. But that's the thing with these summits. They promise a lot but deliver very little. The Conference of Parties with 197 countries meant to discuss climate solutions ended with many negative connotations. Since its inception, the COPs has been failing to deliver. As the U.K. Prime Minister, Johnson remarked, "one conference could never change that. If summits alone could solve climate change, we wouldn't have needed 25 previous cop summits to get where we are today. So COP 26 cannot be the end of the story."

The main goal is to deliver on the Paris promises- the pledge to cut down greenhouse emissions. The goal was to keep the planet from heating up more than 1.5 degrees, but we are far away from that. Even in the best-case scenario, temperatures will rise well above 2 degrees. As

Mr Antonio Guterres, UN Secretary-General, puts it, "So as we open this much-anticipated climate conference, we are still heading for climate disaster. We are digging our own graves". How true it is!

The official website of COP 26 says it is uniting the world to tackle climate change. Glasgow was the moment for countries to update their plans. What were the goals? Developed countries want developing nations to pay for climate change. They want to shrug off the historical responsibility. It is a plan without any road map. The West want to achieve Net-zero without telling the world how to. In fact, the entire event is being called climate hypocrisy.

It is heartening to note the remarks of the Prime Minister of India at the World Leaders Summit, who came with a targeted vision, "India would be net-zero by 2070, and its non-fossil energy capacity will reach 500 GW by 2030: it will meet 50% of the energy requirements with renewable energy by 2030: it will reduce its projected carbon emissions by a billion tons by 2030 and reduce the carbon intensity of its economy to less than 45%".

What is happening to the climate after the summit? It is business as usual. It was still fresh in our minds when the U.S. President, Joe Biden, promised in the COP 26 Summit to take "transformative action" on the climate crisis. He vowed to lead the world by example. Within a week of the conclusion of the summit, Biden has broken these promises. His administration sells oil and gas fields in the Gulf of Mexico, leaving them out to energy companies for drilling. The areas for sale are spread across 80 million acres. The reserves are worth 1.1 billion barrels of crude. The extraction process is expected to release 600 million tons of planet heating gases. That's more than the total annual emissions of the U.K., Pakistan, Italy, France, Egypt and Israel. Activists call the sale a climate bomb, which will take America's climate goal back by several years. It's

also a fact that, on average, the Biden administration has handed out 339 drilling permits a month since its inauguration. Hence everyone calls America a climate hypocrite. Just a few days back, America promised to lead by example, and now it's setting an example of what not to do.

Contrary to America, India is looking at implementation and solutions rather than talking about Net-Zero. It is launching key initiatives. One of them will be under the International Solar Alliance. It's the ISA. The second one is under the Coalition for Disaster Resilient Infrastructure, the CDR. The focus is on a project called the Green Grids Initiative. The International Solar Alliance initiated it. It was launched to promote solar energy. The goal is to create a global solar grid. It has been discussed in the past, but this is the first attempt to create a global network. And leading this initiative is India. It is a concrete proposal to switch to sustainable energy. Way better than the unrealistic net-zero target sold by many.

Coming to Climate Finance, twelve years ago, at a United Nations climate summit in Copenhagen, rich nations promised to channel US\$100 billion a year to less wealthy nations by 2020 to help them adapt to climate change and mitigate further temperature rises. That promise was broken. Compared with the investment required to avoid dangerous levels of climate change, the \$100-billion pledge is minuscule. Trillions of dollars will be needed each year to meet the 2015 Paris agreement; the goal of restricting

global warming to "well below" 2°C, if not 1.5°C, above pre-industrial temperatures.

The WRI (World Resources Institute) report reckoned that the U.S. should contribute 40–47% of the \$100 billion, depending on whether the calculation considers wealth, past emissions, or population. But its average annual contribution from 2016 to 2018 was only around \$7.6 billion. Australia, Canada, and Greece also fell far short of what they should have contributed. On the other hand, Japan and France have transferred more than their fair share — although most of their funding came in the form of repayable loans, not grants.

Climate Policy Initiative (CPI), a non-profit research group based in San Francisco, California, estimates that climate-related finance flows in and between countries amounted to \$632 billion per year in 2019–20 or about 0.7% of the World's GDP. Around half of this was private funding, much of it for renewable energy generation.

The U.N. Intergovernmental Panel on Climate Change's estimate that \$1.6 trillion–\$3.8 trillion is required annually to avoid warming exceeding 1.5°C. Frustratingly, fossil fuels are still being subsidized, receiving some \$554 billion per year between 2017 and 2019. And in 2020, annual global military spending reached \$2 trillion. Let's hope the countries keep up their promised finances for the inevitable cause "THE CLIMATE".

#### **THE SUCCESS OF THE COP26 SUMMIT HANGS ON CLIMATE FINANCE.**

*Most people do not listen with intent to understand: They listen with the intent to reply.*

**-Stephen R. Covey**

## Two Tales of An Officer and A Gentleman Minister

Paresh Kumar Sharma, IFS (Retd.)



Till the early eighties, people were generally under the impression that the Officers were highly knowledgeable, responsible, sympathetic, considerate and did not commit any mistake on their own. Sometimes they buckled under political pressure. There were many examples of civil servants who defied the dictates of the political bosses and instead preferred to be transferred to the insignificant posts or deputation to the Government of India. On the contrary political leaders were considered unreasonable, demanding their words be implemented by whatever means or methods. They did not brook response in negative from the Officers. Here I will narrate two incidents contrary to the then established images of the Officers and politicians.

### a. Sanction of a “Dhwaja Stambham” the Flag Post” for a Temple:

In the South Indian temple, the architecture flag post or Dhwaja Stambham occupies a prominent place. This is the first structure one comes across while entering a temple in South India. Temple Flag is hoisted on this post, commonly 30 to 40 feet in height, with or without metallic covering. In the State of AP, the Government had agreed to supply flag posts from the forests at subsidized rates to the Temples recognized by the Endowments Department. A detailed procedure was prescribed for this purpose. Subsidy used to be extended to the temple administration by the forest Department only on the recommendation of the Commissioner of the Endowments & following the due procedure. Powers were delegated to the various cadres of the Officers (CCF to DFO) in the Department,

considering the volume and value of the log or tree to be supplied. Generally, the Temples needed 30-40 feet tall tree logs of Teak or Narepa (*Hardwickia binata*), having straight boles for this purpose. Suppose such a log was readily available in the Govt. Timber Depots (GTD), it was easier to supply the same to the Temple. However, in most cases, such massive sized logs were not available in the GTDs. In such a situation, the Temple nominee was permitted to scout for a suitable standing tree of Teak or Narepa in the forests. Once the tree was located in the forests, its availability used to be examined; i.e., whether it was silviculturally available, did not form a part of the Seed Stand, Preservation Plot or Germ Plasm Bank & was not a mother tree or Plus Tree. On having satisfied all the above criteria, the Range Officer was required to jointly inspect the tree and submit a detailed report to the DFO along with a photograph of the tree and details of location, DBH & approx. height and estimated volume and value of the tree so selected. If the volume and value of the tree to be felled fell in the competency of the DFO, the DFO used to sanction the tree felling and transport permission after collecting the due amount and completion of other formalities. However, if the volume or the value used to be above the authority of the DFO, he used to refer the matter to the CF or PCCF as per the delegation of powers.

In one such case, on the recommendation of the Astd. Commissioner of endowments, I had permitted the authorized persons of a temple to scout for a suitable Teak or Narepa Tree in the forests with the help of local forest staff. This team could locate a beautiful tall, and handsome Teak tree for

this purpose. The Range Officer had also inspected the site and the tree and, having satisfied himself, prepared and submitted his report to me. On scrutiny, I found that the matter did not fall into the authority of the DFO or CF but fell into that of the PCCF, both in terms of volume and value. Therefore, I forwarded the case to the PCCF through the Conservator of Forests, Warangal, for the issue of necessary orders.

While I was waiting for the orders of PCCF, one fine day, the PCCF rang me up and informed me that the due date for the erection ceremony of Dhawaja Stambham for this particular Temple was fast approaching. There was pressure on him for the early issue of felling and transport permission by the DFO; therefore, he wanted me to issue the necessary felling and transport permission without waiting for the formal written orders of the PCCF. I pleaded for the issue of orders from his end at the earliest to expedite the matter. However, he insisted on the issue of orders at my end immediately on that very day without waiting for his orders. He had me that I needed not to worry as no action would be taken against me for compliance with the verbal orders of the PCCF. There was no reason to disbelieve the PCCF. Hence, I had agreed to issue the required orders. However, to be on the safer side, I recorded the instructions of the PCCF received telephonically in the Note File and issued the order for felling and transport the Teak tree in this case after collection of the due amounts. Temple administration had happily arranged for felling, conversion and transport of the Teak log. Transportation of the enormous log is a specialized task. A long body Lorry was arranged for this purpose.

Having done this, I had submitted a compliance report to the PCCF through CF Warangal. After a few days, to my shock and horror, instead of the written orders, I received an Explanation Memo for acting beyond my (DFO's) powers in having sanctioned felling & transport permission of the

Teak tree in question. I could not believe this. I felt betrayed; it amounted to a breach of trust on the part of the PCCF! I felt cheated but did not lose my cool. I patiently recounted all the events and jotted down the events chronologically in my explanation, and submitted them to the PCCF through the CF. However, I did not keep quiet with the submission of the explanation to the Memo. Something was boiling within me; I had become agitated and restless. I had kept wondering as to why the PCCF had done this to me. Had he forgotten his own words, wondered me!

Hence, I had decided to speak my mind to the PCCF. By then, I had mustered enough courage to speak my mind to the PCCF over the phone. When I got him on the line, I vented out my feelings and stated that I did not deserve this treatment for having obeyed the orders of the PCCF & the Head of the Department. The Explanation Memo was uncalled for. I told him that he should not have approved the Memo when it was put up to him. He should have recorded that the DFO had carried out the instructions of the PCCF in the exigency of the circumstances. The matter would have ended then and there only. By not owning his own words, the PCCF had put a blemish on the record of a young DFO for no fault of his. PCCF was apologetic and reassured that no action would be taken against me based on this Memo. This time the PCCF kept his word, and after a few days, I received an order of the PCCF wherein the PCCF had very gracefully accepted my explanation dropped further action in the matter!

This episode taught me a big lesson: one should not implement the oral instructions of superiors, howsoever senior they might be & seek written orders/instructions in advance or immediately afterwards. I practised this principle on my part till the end of my service. First of all, I did not give the field officers verbal orders for execution, though most were habituated to it. If at all I had to do so to get

some work done in the exigency of the situation, then converted the oral instructions into written orders or Memo at the earliest so that no subordinate Officer was put into an embarrassing situation. I have always advised my subordinates also to follow the same.

### **B. A Thorough Gentleman Minister**

The Conservator of Forests, Warangal Circle, Warangal used to convene meetings every month at Warangal, with all the DFOs and Sub-DFOs of the Circle for review of Office and field works. After one such meeting, all the Officers, including the CFWC, went to the residence of Sri Narasimha Reddy, Minister for Municipal Administration of the GoAP, who was resident of Warangal, to invite him as Chief Guest for the Vana Mahotsava programme. After introducing the Officers of the Circle, the CF requested the Minister to be the Chief Guest. The Minister readily agreed to the proposal.

During this meeting, a farmer approached the Minister with a petition to allot him a piece of land (grant of Patta) in the adjoining forest land for cultivation. The Minister handed over the petition to the concerned DFO and waited for his response. The DFO saw the petition and curtly informed the Minister that forest land could not be assigned for cultivation because of the Forest Conservation Act. The Minister listened to the reply patiently, did not get perturbed and informed the petitioner accordingly sweetly and politely and directed him to leave the venue.

After the farmer had departed and no other petitioners were at the site, the Minister addressed all the Officers present in a calm, composed and dignified manner. He told us that all of us (Officers) were highly educated, members of All India Services and well versed with the Acts, Rules & Regulations concerning the Forest Department and hence he

placed us all in high esteem. However, he pleaded to keep in mind & have concern for Political Leaders positions as well. He continued with his address and stated that the People, mainly belonging to weaker sections, came to them with high hopes for redressal of their problems & grievances. He reiterated that people's issues might or might not be genuine and or tenable in the parlance of law or legal frame, but that should not be the reason for being rude to them. Hence, he was not pleased with the way the DFO had responded to the request of the poor person; but did not show the same on his face in the presence of the petitioner. Therefore, he advised us not to be blunt or curt and not to give replies in negative on petitions or requests of the poor persons to the elected Members or Ministers in their presence. He advised us instead to be slightly diplomatic in such circumstances and stated politely instead that "I will look into the matter or examine the issue and come back to you, Sir!" This will neither demoralize the petitioner nor embarrass the leader/Minister!! It will not lower the prestige of the Officers as well. And, later on, the Officer could explain the legal position to the MLA / Minister with Rule Book etc. What pragmatic advice!

Such advice could come only from a seasoned politician. Nowadays, even the Leaders of more diminutive stature take the above type of replies as personal insult or offence and try to harass and/or damage the reputation and career of the Officers. They consider their words or wishes to be law and won't listen to logic or legality. The fault does not lie with the Political Leaders alone; many Officers are also willing to toe their line; bend backwards, or turn the Act & Rules to satisfy the Political Bosses. Both are the extremes and need to be avoided. For Officers, the advice of the Minister is the sanest one. Unfortunately, this breed of politicians is dwindling.

*(The author is former PCCF & HoFF, Telangana and can be reached on mobile at +91 6300030519 and e-mail at [parshvvas22@gmail.com](mailto:parshvvas22@gmail.com))*



## Six Packages for Good Forest Management

P. Mallikharjuna Rao, IFS (Retd.)

Forest management and administration at the field level carry out multiple activities - forest protection, wildlife management, forest treatment, research, plantations, nursery management, production, marketing, extension and various other functions under a central theme of forest conservation and sustainable forest management. Due to the multiplicity of functions, it becomes necessary to bring a balanced and equitable thrust on various aspects of forestry at the field level so as to create a good impact. Another important issue in forest management is bringing role clarity to the entire cross-section of field staff to improve the organisation's efficiency and effectiveness.

In the course of discussions and deliberations with the team members and colleagues during my tenure as Chief Conservator of Forest, WLM circle, Tirupati (2007 to 2010), an approach, namely 'Six Packages for forest management' emerged to address the above issues. In this approach, various activities of the forest department are grouped into six broad categories, and each one is given a catchy and meaningful name. They were: Vana Suraksha (Protection), Vana Vikasam ((Development), Vanodayam (Forest fringe area development), Vana Chaitanyam (Education and awareness), Vanavihari ( Recreation and ecotourism) and Vana Sahay (Supporting systems). The details of the activities are presented in the following lines.

### **VANA SURAKSHA (PROTECTION):**

All protection and policing related activities come under this category. This was used to be given the topmost priority. The activities under this category were:

- Anti smuggling of timber and other forest produce
- Anti-poaching
- Forest fire control
- Protection from forest land encroachment
- Grazing management

### **VANA VIKASAM (Development):**

The forest improvement and treatment activities come under this category.

- Assisted natural regeneration, rejuvenation and restoration
- Wildlife habitat improvement works
- Watershed management and SMC works
- Sustainable harvesting of Non-Timber Forest Products
- Plantations and nurseries.

### **VANODYAM**

#### **(Forest fringe area development):**

The following are the activities on various livelihood improvement and other development activities in forest fringe areas.

- Livelihood programmes
- NTFP collection, processing and value addition
- Entry point activities
- Income generation programmes of VSS
- Tribal welfare

### **VANA CHAITANYAM**

#### **(Education and Extension)**

Various information, publicity and extension activities aimed at awareness building and sensitisation people and communities on conservation

- Forest and environment education- Educational Tours of school children to the forest, Environment education centres, forest museum etc.,
- Forest extension and farm forestry
- Publicity and information materials
- Vana chaitanya Rathams ( Publicity vans with AV equipment) one each per division
- Coordination with media

### VANA VIHARI

#### (Recreation and Ecotourism):

Activities on ecotourism, eco-parks and maintenance of scenic spots etc., are covered under this

- Community-Based Ecotourism
- Community managed eco parks
- Sanctuary facility centres
- Trekking and nature trails
- Nagaravanams

### VANA SAHAY

#### (Forest management support systems):

- Forest Survey and monitoring
- Beat inspections
- Human Resource Development- Trainings
- GIS and GPS facilities
- CC camera equipment
- Vehicles and communication equipment

- Infrastructure
- Other facilities to support forest management

#### MODUS OPERANDI:

The above approach was popularised among the field functionaries through training and meetings, which helped bring role clarity and develop a common vision in the entire circle. This approach was internalised into the system of reviews and monitoring taken up periodically at various levels in the circle. In general, the reviews in the Forest Department were based on the financial allocation and progress of expenditure. But the system of reviews adopted in the Tirupati circle was not based on budget allocation and spending but primarily on activities (as per the above) and outcomes.

#### CONCLUSION:

The above approach brought good teamwork and helped to unleash the full potential of the field functionaries to perform their functions effectively with good results and significant impact on various fronts in the forest management of the circle. The credit for all the excellent work and impressive results should go to the entire team of my colleague officers and field functionaries in the circle during my tenure from 2007 to 2010.

(The author is the former Principal Chief Conservator of Forests (Head of Forest Force) Andhra Pradesh and can be reached over mobile: +919989171958 and by email: pmkrao72@gmail.com)

*Being the richest man in the cemetery doesn't matter to me. Going to bed at night saying we've done something wonderful, that's what matters to me.*

– Steve Jobs

## In commemoration of Vigilance Awareness Week (26<sup>th</sup> Oct – 1<sup>st</sup> Nov) **Land Degradation and Desertification**

**Dr B. Raghotham Rao Desai, IFS(R)**

### **INTRODUCTION:**

Land may be broadly interpreted to comprise of 'soil, water and air'. In contrast, vegetation ---- an essential component of land ---- can be closely associated with soil. Land Quality refers to its 'capacity to sustain ecosystem services for humans & nature'. Therefore, Land Degradation implies the 'decline in its capacity to provide Ecosystem Services' due to disregarding planetary boundaries through anthropogenic activities ---- involving land misuse and soil management.

Planetary boundaries sensitive to anthropogenic activities include: (i) climate change; (ii) ocean acidification; (iii) freshwater consumption and the global hydrological cycle; (iv) land system change; (v) atmospheric aerosols loading; (vi) stratospheric ozone depletion; (vii) loss of biosphere integrity; (viii) chemical pollution and (ix) terrestrial and soil carbon stocks, a critical parameter. Depletion of soil organic carbon content can set-in-motion soil degradation trends, whereas earth system interactions amplify human impacts. Thus, a thorough understanding of earth system dynamics is essential to reducing the risks of land degradation ---- it is important to demarcate 'safe operating space' so that the environmental footprint (land degradation) can be reduced.

Now, desertification is a land degradation process occurring in arid, semi-arid and dry sub-humid areas primarily due to climatic variations and improper human activities ---- it being defined as the 'reduction or loss in biological and economic productivity of land' and the most challenging task is to assess its magnitude (and the spatial distribution of areas which are prone to it).

And since desertification is a diverse land degradation process (involving natural and human factors), it is necessary to understand causes, impacts and linkages among the most likely contributing natural factors (such as climate, soil, water, land and socio-economic conditions of people living in vulnerable areas) for evolving efficient environment policy to combat the process. This would need a systemic approach capable of deriving individual and integrated composite vulnerability indices (of natural and human-induced factors) that need to be transformed onto space for identifying the lands vulnerable to desertification.

### **FACT FILE:**

Land degradation and desertification are the most severe forms of environmental threat in our country ---- identification of areas that are more vulnerable being essential for devising strategies to arrest land degradation and desertification. The decline in functionality and weakening of ecosystem services are indeed our serious problems ---- different processes as being (i) decline in soil structure, (ii) soil erosion by water and wind, (iii) salinization, (iv) depletion of soil organic matter content, (v) negative nutrient budget and elemental imbalance, (vi) water imbalance (including drought and inundation), (vii) loss of above and below-ground biodiversity, (viii) topsoil removal for brickmaking etc.,

As a signatory to implement the concept of land degradation neutrality (implemented by the UN Convention to combat desertification), India aspires to restore 26 million ha of degraded lands by 2030. Supporting must be done based on transparent and just & fair price for specific Ecosystem Services (such

as carbon sequestration, restoring groundwater & conserving surface water, improving water quality and restoring above and below-ground diversity).

An ever-increasing human and cattle population have enormous demands on land resources. The land is the most important natural resource (which embodies soil, water, associated flora & fauna) involving the total ecosystem. These pressures have led to drastic changes (in the proportion of land utilized) for agricultural activities, urbanization and industrial development. Degradation of land is the result of both biotic and abiotic factors ---- major ones being over-exploitation of soil & water resources, unscientific land use, human and animal pressures on land, added to them having been natural calamities like droughts and floods.

#### CONCLUSION:

The policies, laws and regulations (related to conservations of forests, biodiversity, environment and wildlife, well-structured forestry institutions at the centre and state levels, ongoing forestry programmes and projects) are subsets (or parts of larger groups of related things) for achieving zero net forest land degradation. To develop state-specific transformative projects, large amounts of financial resources need to be mobilized (for restoration of degraded forest lands) from international, public, private, bilateral, and multilateral sources.

Knowledge sharing and capacity building (of the frontline staff and Members of Joint forest Management Committees of forest fringe villages) also need to be developed for sustainable land

and ecosystem management (through upscaling of tested, proven and cost-effective practices) related to soil and water conservation measures, forest fire protection, control of invasive species, enhancement of carbon stocks and pest & disease management (for restoration of degraded forest lands). This will also help achieve the national targets (as well as international commitments) related to climate change, combating desertification and biodiversity conservation.

To decide on something, it is mandatory that we need to make the right choices, which will give the correct results ---- even if they don't, instead of getting disappointed, we can resort to making changes by learning from our mistakes. Our choices should never be made at the cost of harming the environment ---- rather, they should be meaningful to us and the world around. We should constantly be reminding ourselves that the following factors continue to challenge the lives and livelihoods of millions of our countrymen: (i) soil erosion, (ii) forest fires, (iii) emission of fossil fuels, (iv) pollution, (v) burden of disease, (vi) disasters, (vii) demography (i.e., the study of the structure of human populations), (viii) urbanization, (ix) transformation in living standards, (x) epidemics and (xi) pandemics.

Needless to emphasize that integration of efficient use and conservation of soil, water, air quality/wind velocity, vegetation and biodiversity requires consistent attention of all stakeholders. Roles of glaciers, wetlands, seacoast, islands and biodiversity of vegetative cover need further integration.

*An idiot with a plan can beat a genius  
without a plan.*

– Warren Buffett



## Forest Rights Act – Ground Realities in Implementation

**B.K.Singh, IFS (Retd.)**

'The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forests Rights) Act, 2006 (No 2 of 2007) was enacted to recognize and vest the forest rights and occupation in forest land in forest-dwelling Scheduled Tribes (STs) and other traditional forest dwellers (OTFDs) dependent on forests for their living. The Act provided for recognition of rights in favour of STs and OTFDs in occupation of the forest land as of 13-12-2005 and was followed by the notification of "The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Rules, 2008" promulgated on 01-01-2008. STs were entitled to claim the rights if they were in occupation of the forest land as of 13-12-2005, while OTFDs had to prove 75 years of employment as of this date.

Reserved Forests (RFs) and Protected Forests (PFs) were notified on different dates in the 19<sup>th</sup> and 20<sup>th</sup> centuries across the country. Steps prescribed in the Indian Forest Act, 1865, 1878 and 1927, Madras Forest Act, 1882, Mysore Forest Regulation 1900 and Hyderabad Forest Act, 1899, 1916 and 1945 were followed the process in respective regions after duly appointing a Forest Settlement Officer. FSO expressed the intention of the state to notify a specific area as RF or PF and communicated to the public, invited objections from forest dwellers and finalized the boundaries of the notified forests after considering all claims. The claims were also settled even inside forests; thus, large chunks of forests have enclosures within them.

Subsequently, the forests have been subjected to anthropogenic pressure and have also been encroached by the dwellers. The cultivated lands in

enclosures and even on the fringes of the notified forests have been annually extended in the forests by removing the tree growth. States being sympathetic to dwellers have also come up with schemes to regularize their encroachments. By and large, all encroachments till 27-04-1978 were regularized in all states. Some states even took proactive steps and ensured that the encroachments till 25-10-1980, the day Forest (Conservation) Act 1980 came into existence, were regularized with the approval of the Union Environment and Forest Ministry.

Even after the promulgation of the Forest (Conservation) Act, 1980, encroachments on forest lands progressed at the same pace and states also pressurized Union Government to accept some more encroachments. Finally, in 1990 Union Government issued guidelines to the states to evict all encroachments post 25-10-1980. Supreme Court also reiterated the removal of encroachments in Gadavarmana's judgment in 2002. However, the pace of the encroachment on the ground did not alter.

Even with the clear evidence that no injustice was meted out to any ST or OTFD, the law (FRA, 2006) was passed, and its implementation is seen as a threat to the country's ecological security. Because Union Government has accepted the regularization of encroachment made up to 25-10-1980, the provision in the law for OTFDs is unnecessary as they have to prove the occupation of the forest land as of 13-12-1930 (75 years before the cutoff date in the Act). When there is a provision to regularize the encroachments by OTFDs made till 25-10-1980, where is the need for another provision? This has

been grossly misused, as the verification system provided in the law is quite prone to misuse. Many claims of OTFDs are accepted by district-level committees (DLCs) on the statement of an elder in the village. For an elder to certify the occupation of OTFD in 1930, the person should have been born before the year 1912. Among the shreds of evidence provided in the law, possession of ration cards has been heavily relied upon. Ration cards in a village are also issued to tailors, blacksmiths, barbers, landless labourers and other pageants not practicing agriculture. Many states like Andhra Pradesh had given lakhs of bogus ration cards. Likewise, many other shreds of evidence listed in the Act are prone to manipulation.

Apart from individual forest rights, the Act has also provided for Gram Sabhas to claim the community forest rights for collection of usufructs and non-timber forest products for commercial purposes. It also provides that rights for the management of community forest resources can be vested in the communities that have been traditionally managing the forests.

States like Maharashtra have vested rights in the communities to manage the forest in the jurisdiction of some Gram Sabhas, who had earlier no experience managing the resource. The government has also earmarked funds for writing management plans for such forests, and NGOs are grabbing the funds for preparing the required documents, although they have no technical expertise. The management of the Bamaragarh forest division in Ghatchiroli district has been vested in the communities in many Gram Panchayat areas. More or less forests of the entire division are vested in communities for management, and there are hardly a few patches left for the administration by the Forest division. The department can very well entrust the job to adjoining division and abolish Bamaragarh.

Ministry of Tribal Affairs (MoTA), Government of India, has been the nodal agency for monitoring implementation of FRA, issuing advisories and guidance to States from time to time. They have also periodically uploaded state-wise progress reports showing cases on their website, where individual and community forest rights are granted. Progress reports also indicate the rejected cases in both categories. When DLCs rejected high proportions of claims, they (MoTA) have expressed concern and took up the matter with the states. In April 2010, they had issued advisories not to reopen the rejected claims; the stand supported conservation. However, after the Joint Committee led by N C Saxena criticized MoTA's action in their (Committee's) report in December 2010, MoTA took steps to amend the rules in 2012. With this amendment, MoTA advised states to reopen rejected cases and consider with reference to fresh evidence. Claims rejected on the proofs provided by satellite imageries, where claimants could not prove their occupation as of 13-12-2005, were reopened and accepted based on a statement from village elders. MoTA's advisory said that the cases rejected on evidence-based satellite imageries can be accepted if other evidence supports the claims. This led to admitting large numbers of bogus claims. It also resulted in many more villagers clearing tree growth and occupying forest lands. The net result was that deforestation was accelerated.

In the Bastar region of Chhattisgarh, individual forest rights are granted in urban forest areas. In contrast, the State of Odisha, particularly in Sambalpur, has so far offered resistance in allowing any right in urban forests, sending a positive signal to save the lung spaces for the cities.

I have written a book named "Forest Rights Act – Accelerated Deforestation", where instances of unprecedented deforestation to grab forest lands for claiming rights in certain states have been compiled.

The book is published by Notion press, Chennai and can be accessed through Amazon or even publisher. Apart from covering the status of implementation of FRA, 2006 in my state of Karnataka, I have covered it in Andhra Pradesh, Telangana, Maharashtra, Madhya Pradesh, Chhattisgarh and Odisha. There are sincere and committed retired IFS officers in the states who observed and documented the illegalities. Like Dr Arvind Kumar Jha, IFS '80 Maharashtra cadre, some of them have even shown torches to state Governments and implementing officers explaining proper procedures evolved for verifying claims and weeding out bogus ones.

Dr Jha worked as Director-General, Tribal Research and Development Institute Pune and was instrumental in developing a geo-informatics system for verification of claims under FRA using satellite images that determine whether the area claimed for rights had tree growth 13-12-2005. Although Dr Jha was a torchbearer for Maharashtra and several other states and developed a correct method for verifying claims, the same was not followed anywhere. The technology cannot be manipulated, and vested interest groups did not want it to remain in place. State administration largely depended on other evidence which could be manipulated.

Sri J V Sharma, a retired DFO from Andhra Pradesh, opposed the Act (FRA, 2006) in the High Court of Andhra Pradesh. He has the distinction of being the first person to have filed the writ petition in any High Court in this country against this Act. After that, more petitions were filed in respective High Courts, and now all the petitions are transferred to the Supreme Court of India.

The website of MoTA reveals that 40,92,183 individual forest rights applications in 20 major states of peninsular India and Central Indian landscape were processed, and out of this, 18,99,698 claims are approved, and rights have been vested over

41,50,843 acres of forest land. The average land where rights are granted in an individual works out as 2.19 acres. Out of the remaining, a significant chunk of 17,07,190 applications are rejected, and a very small number of applications are kept pending. The claimants whose applications are rejected and those even kept pending have continued to occupy forest lands. The extent of land occupied by these claimants is not available in the public domain, but at the rate of 2.19 acres per individual, it can be estimated to be 48,01,542 acres. Thus total forest land where deforestation has taken place in these states works out to be 89,52,385 acres or 3.6 million hectares.

Further, these states have lost the management of over 88,06,103 acres of forest land to 76,162 Gram Sabhas, who are vested with the community forest rights. In addition, 72,790 cases are rejected or kept pending, but Gram Sabhas already resumed the management. The extent of forest lands under the management of 72,789 Gram Sabhas is not available in the public domain. However, working on a pro-rata basis, total forest areas in these states not under the management of the Forest departments works out to be 1,72,22,324 acres or 6.9 million hectares.

Although Gram Sabhas are supposed to sustainably manage the forests and only collect usufructs and non-timber forest products, the ground realities are different, and members look for personal gain resulting in degradation of resources. There are reports from Maharashtra, Chhattisgarh and Telangana that the communities are preventing even the entry of the forest officials in these areas and are clearing bamboo and some other trees unsustainably. Destructive methods of the harvest of non-timber forest products adopted by communities at large further hasten up the process of degradation of forests.

The Act has also threatened biodiversity conservation. Although it provides for notifying critical wildlife habitats (CWH) in selected Protected Areas, not a single square inch has been notified anywhere in the country so far. Ministry of Environment and Forests & Climate Change has come up with 4<sup>th</sup> series of guidelines, superseding the three earlier ones. The latest guidelines are impractical, and there is hardly any hope for an area to be notified as CWH soon. The Tiger Reserves have to be made intact in accordance with Wildlife (Protection) Act, 1972; FRA being at variance with this law, conservation of forests and wildlife is at stake.

Communities across the states are taking advantage of the Act and continue to deforest and occupy forest land with a motive to claim rights over it. As no last date for making applications has been fixed, the flood gates of the destruction of forests remain open. Further political parties appease the communities, especially during elections, for electoral gains. Often they instigate them to clear tree growth/forest plantations and cultivate the land. They also promise to reopen the rejected cases and ensure that the approvals are obtained from competent officers. MoTA, the nodal department under the Act, has already shown ways to reopen and re-verify rejected claims and consider such cases concerning a new set of evidence. They have also advised ignoring

evidence based on satellite imageries if other evidence supports the claims.

Further, FRA 2006 provides that unless the process of verification of claim is completed and DLC gives its final verdict, no one should be dispossessed of the occupation of the forest land. In other words, if an encroacher has claimed his right over forest land, he cannot be legally evicted until DLC rejects his claim. It has become a herculean task for any front line forest staff to remove encroachment from forest land.

However, State Forest departments are facing a more serious situation. There are nearly 2 million cases where DLCs have rejected bogus claims, and in February 2019 Supreme Court of India has stayed the eviction and ordered for re-verification. States have not made any report on the progress and unauthorized claimants, whose claims are rejected, continue to enjoy the possession of the forest land. The encroachers get encouraged, and cancer spreads as more families in the community try a similar trick, and further deforestation is accelerated. Central Government must take note of this and fix the last date for filing all claim applications.

Forests play a vital role in providing us with several ecological services, and deforestation leads to loss of carbon sink, impacts rainfall, aggravates flood and drought. Regions are facing extreme climate events, and we must conserve our forests.

*(The author is the former Principal Chief Conservator of Forests (Head of Forest Force) Karnataka and can be reached by email: bksinghretiredpccf@gmail.com).*

*Instead of buying your children all the things you never had, you should teach all the things you were never taught. "Material wears out but knowledge stays"*

**- Bruce Lee**



## Gray Langur (*Semnopithecus entellus*)

T.S. Prasanna Kumar

GRAY LANGUR (*Semnopithecus entellus*) is a primate and one of the Old-World monkeys belonging to the family Cercopithecidae. Occurring in various environments, they are widespread, the habitat ranging from sea level to 4000 MSL. They are found throughout the Indian sub-continent, China and Afghanistan.

With a strikingly different physical appearance from the common monkey, gray langur or Hanuman langurs have faces and ears that are typically black, and the fur is gray or yellowish. They are diurnal monkeys spending time both on land and on trees. Being primarily herbivores, the diet may sometimes include insect larvae, spiders, and termites. Jackal, tiger, leopard, and dhole are the known predators.

Gray langurs are social animals living in small groups of seven to fifteen individuals having a complex social structure. Groups are also known as 'troops'. The young ones or the infants are often groomed by 'aunts'. In a rare show of affection, the foster mother even suckles the infant. When there is a leadership change in a group, the new leader may stamp his authority and dominance by indulging in killing the young ones. The mother is very possessive of her kids. When a female from another group steals

an infant, the mother fights hard to reclaim the young one, even risking her life.

Gray langurs are vocally expressive with a variety of calls. They have different call forms like barks, coughs, grunts, hiccups, honks, rumbles, screams, and screeches to indicate different moods like happiness, sadness, and danger and attract the opposite sex in 'heat'.

Gray langur is often considered a chital's (spotted deer) best buddy. It is seen that they prefer to remain on treetops in the vicinity of chital herds and warn them of an approaching predator. They drop fruits from tall trees for the chitals to feed on. In return, the chital, bestowed with an excellent sense of smell, detects the predator's movement and warns the langur of impending danger.

As per Hindu mythology, it is believed that Hanuman, the 'Monkey-God', with a troop of langurs, helped Rama to rescue his wife Sita from a demon Ravana. Hence the langurs are fondly called Hanuman monkeys and are venerated.

The population is relatively stable in certain areas, and various stages of decline in others are threatened by deforestation due to multiple reasons.

(The author is retired Deputy Conservator of Forests from Tumkur, Karnataka and can be reached over mobile +919880571585, email: tspkumar57@gmail.com )

*Silence is golden when you can't think  
of a good answer.*

## Green Quiz

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

Have you updated enough yourself? Now Answer these Questions.

1. Expand UNFCCC
2. Parties who are not part of the UNFCCC can also participate in the conference. They will be called as...
3. Which conference/platform created the General path towards climate action?
4. Where was the First COP held?
5. What is unique about Dr Saleem Huq of Bangladesh with regard to COP conferences?
6. Which COP was held at locations over two years (2000, 2001)
7. Which is the only year when COP was not held since its beginning?
8. Which Country hosted COP a maximum number of times?
9. Which City hosted COP the Maximum number of times?
10. Expand IPCC
11. Who is the President of COP26?
12. Which fossil fuel was the focus of COP26?
13. Expand NDC under Climate change context
14. Which Article of the Paris Agreement 2015 deals with the Carbon Market?
15. By which year did India commit to achieving net-zero emissions?

(Quiz Master is the Defending Champion of the QUIZ competition held as part of All India Forest Sports Meet at Raipur, Chattisgarh, January 2019).

( Answers on page: 24)

## NOTICE

*The 95th GENERAL BODY MEETING of the Association of Retired Forest Officers of Telangana and Andhra Pradesh will be held on 5th December 2021 (Sunday) at 11.00 AM in Aranya Bhavan, Hyderabad. All the members of the Association are requested to make it convenient to attend the meeting with their spouses.*

**-Secretary**



## Zoo Education and Interpretation

Dr G. Ramalingam, IFS.,

### INTRODUCTION:

Maintaining animals in captivity has a long history, but the zoo concept has changed over time. Moving through the 21st-century, zoos should now have conservation as their central role, and education plays a vital part in this. Millions of people visit zoos every year, and each ZooZoo can be an inspirational place, providing powerful messages about threatened wildlife and the need for sustainability. People can learn in many ways, formally and informally, and zoos can offer entertaining opportunities to their visitors in the form of exciting interpretation, presentations, discovery sessions and school visits. Zoos can now act as agents for conservation and promote sustainability as a key requirement for the future of Earth's biodiversity.

Over 600 million people annually visit zoos across the world. Going to a zoo can be described as an activity for people in their spare time, and it is about enjoyment and seeing fascinating animals which they may otherwise never get to see.

### ZOO EDUCATION AND INTERPRETATION:

Education should be an integral part of the modern ZooZoo, and education is a fundamental process within its conservation mission. People can learn passively or informally (e.g. by seeing an animal and hearing about or reading exciting facts by the enclosure) or more formally (e.g. listening to talks and attending classroom sessions). Zoos can be inspirational, providing powerful messages which translate to positive memories, thus encouraging personal compassion and responsibility for conservation.

Interpretation is a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the resource. Interpretation aims to stimulate interest, promote learning, guide visitors in appropriate behaviour for sustainable tourism and encourage enjoyment and satisfaction.

"We Learn 10% of what we read, 20% of what we hear, 30% of what we see, 50% of what we see and hear, 70% of what we discuss, 80% of what we experience and 95% of what we teach others."

□ William Glasser.

Display boards can consist of exciting pictures and text and can be eye-catching through their colouration and design. They can also be interactive by incorporating visual components (e.g. video screens with different film options), sounds (e.g. matching pictures to their sounds) and tasks (e.g. matching footprints to the correct animal). Each element is carefully thought about. Colours, patterns and fonts are researched and selected based on the geographical location and habitat in which the species is found. Boards and displays are often mounted interestingly, with borders made of rustic wood, rope or carvings.

Presenter talks are a feature of the ZooZoo daily. Each day has a set of different talks which are advertised to the public through signs and leaflets. The Presenter team is also involved in developing unique displays (e.g. Tiger show, Crocodile feeding, Bird watching etc.) and events to coincide with holidays and celebrations such as Dasserah, Sankranthi, Valentine Day, Easter, World Environment Day, Wildlife Week, New Year, Christmas.

## GOALS OF INTERPRETATION

### Provoke

Grab on to your audience by stimulating their thoughts, curiosity and feelings

### Relate

Help the visitor relate the importance of our message(s) to their everyday lives

### Reveal

Give visitors the answer or the “big picture.”

## OBJECTIVES OF INTERPRETATION

- To increase the visitor’s understanding, awareness, and appreciation of animals and nature
- To communicate meaningful messages
- To involve visitor(s) through personal experience
- To affect the behaviour and attitudes of visitors
- To provide an enjoyable and meaningful experience for visitors

### Elements of a Successful Interpretive Program

Three elements contribute to making a successful interpretive program. Your program needs to be: 1. Organized, 2. Relevant, 3. Enjoyable

### Effective Communication

Body language – Posture, Eye contact, Arms, Hands and Gestures, Laughter;

Voice – Enunciation, Sentence structure

## INTERPRETIVE TECHNIQUES

### Using Objects to Teach (Representation):

An object is anything other than verbal teachings, such as a biofact, picture or any other tangible material. Using objects helps the visual and tactile learner. It allows the learner to understand a concept by putting it into real life meaning. People remember what they experience. Things give spice to your interpretation; they change the pace of a simple

verbal interpretive setting and heighten curiosity.

### Examples of objects include:

- A gummy bear to show the size of a baby wallaby when it is born
- Pictures of natural habitats to show visitors what the animal’s natural habitat looks like
- Puppets to help engage younger visitors

### Interpreting Biofacts

Demonstrating or interpreting biofacts to visitors is included in many Interpretive Programs and interactive exhibits. Using biofacts with the guests allows us to do the following:

- Appeal to their curiosity, attracting them so you can serve as a resource
- Give them the chance to experience an animal otherwise dangerous or unapproachable.
- Offer visually impaired guests the opportunity to gain a broader sense of our animal collection.

## COMPARE AND CONTRAST

### Analogies

Analogies allow learners to understand a new concept by putting it into terms with which they are already familiar.

### Games

Games allow your group to explore a concept while having fun.

Age-Appropriate Topic Suggestions for Educational Programs

### Birth to 3

\* Sensory: Pretend to fly by flapping arms up and down (birds’ dolls). Listen to sounds of the forest and try to make different animal sounds like songbird and frog sounds

- Sensory experiences
- Animals that are close to home
- Families (moms, dads, babies)
- Life cycles (birth, death, etc.)

**4 to 7**

- Animal homes
- Farm/domestic animals
- Predators/prey
- Compare/contrast animals to self
- Animal groups
- Life cycles (birth, death, etc.)
- Good environmental manners (recycling, reusing, turning off lights, etc.)
- Ecosystems (too abstract)
- Environmental problems/issues

**8 to 11**

## Sensory

- \* Empathy
- \* Exploration
  - Discuss eagles' habitat and life cycle and compare them to other birds or people.
  - Build a forest model on a wall, so kids understand the various layers and animals that live within those layers.
- Good environmental manners (recycling, reusing, turning off lights, tree planting, habitat cleanup, etc.)
- Ecosystems
- Physical adaptations
- Animal habitats and needs

- Site-specific investigations
- Cycles (life, water, etc.)
- Introduce direct, simple (not overwhelming) consequences of not using good environmental manners, such as "If we don't recycle, we will need more landfill space."
- Dire consequences of not using good environmental manners (habitat loss, pollution, endangered species, etc.)

**12 and up**

- All of the above (older kids like to learn fun stuff about animals, too!)
- Behavioral adaptations
- Consequences of not using good environmental manners
- Ecosystem investigation with concrete experiences
- Endangered species
- \* Sensory
- \* Empathy
- \* Exploration

**Action**

- Discuss eagle habitat and participate in local river cleanup efforts.
- Learn about different types of forests and resources we use from these areas, such as hardwood, coffee, chocolate, and metals. Then investigate how purchasing materials that don't come from these forests can decrease demand for those products.

**Signage:**

The main types of signage could be animal details, directions, zoo ethics and zoo map.



1. Visuals: Signage for animal enclosures in almost all zoos includes some visuals.
2. Directional Signage: Signage directing visitors towards various facilities with proper field surveys and at strategic points in the Zoo Zoo is an important interpretative tool.



3. Zoo ethics signage
4. Zoo maps
5. Signage for Trees – Labelling

## ANIMAL ENCLOSURES

### Design

Naturalistic enclosures (Immersion enclosures) and have a mix of closed cage and natural enclosures. Mainly, enclosures for birds are of closed caged types.

### Simulation of wild habitat:

Many zoos are coming up with naturalistic enclosures that give visitors a wilderness experience and provide indirect interpretation. Visitors get an idea about the habitat of the displayed animal in the wild.

### Indoor Interpretation

Interpretation Centres - exhibition hall with pictures/posters of animals eggs, pug marks, plaster casts,



**Strengths/Opportunities:**

- Zoo visitors
- Zoo staff
- Existing facilities offered by zoos

Some zoos provide good “package outings” for visitors as they have facilities like a museum, art gallery, ZooZoo, gardens, souvenirs shop etc. all at one place.

**LIMITATIONS/CONSTRAINTS/CHALLENGES**

- Training and capacity building- Lack of experts and trained zoo staff for content development, writing, design, and innovative thinking is a significant limitation in developing planned interpretive facilities.
- Zoo staff - Inadequate number of zoo staff. Attitude and mindsets of zoo staff towards taking up new challenges.
- Infrastructure - Lack of facilities like library, computers, internet etc. makes it challenging to do proper research for developing interpretive facilities
- Zoo visitors - Large numbers and heterogeneous groups of visitors coming at one time is

challenging to manage. Non-motivated crowd. Visitors mainly come for recreation, and knowing about animals is a second priority. Making them understand and learn about animals in a fun way is a challenge.

- Vandalism: Zoos in India face various types of vandalism. Developing and designing vandal resistant signage is a challenge.

**ANIMAL ADOPTION SCHEME:**

Animal adoption sets the emotional attachment for public support and genuine involvement in animal conservation through actual participation. This programme was intended to invoke any animal-loving individual and institution can adopt any number of specimens from the Zoo animals, birds or reptiles by extending support for one year or multiple months/days.

The primary purpose of this scheme is to inculcate the preparedness for the conservation of wildlife among the people. This creates awareness and enriches the knowledge about wild animals, their feeding, reproduction, behavioural changes etc. One should have interest and little understanding about the animal being adopted to develop more affection.

*(The author is Chief Conservator of Forests, Adilabad Circle, Telangana and can be reached at gamineniramalingam66@gmail.com )*

**HERE ARE THE ANSWERS FOR THE GREEN QUIZ (Page: 15)**

1. United Nations Framework Convention on Climate Change	6. COP6 (2000-The Hague, 2001-Bonn)	11. Alok Sharma, United Kingdom
2. Observers	7. 2020 due to Covid19 Pandemic	12. Coal
3. Durban Platform, 2011	8. Germany (04 times)	13. Nationally Determined Contributions
4. Berlin 1995	9. Bonn, Germany (03 times)	14. Article-6
5. Attended all 26 COP Conferences	10. Intergovernmental Panel on Climate Change	15. 2070

## Men Who Made Forests and Nurtured Trees

K.B.R. Reddy



Nature had given humankind enough land with forest cover. Several years ago, the man cleared the forests for farming and establishing homesteads. In addition to cutting trees for agriculture and establishing towns and villages, deforestation took place even though the Central Government took over regulatory powers to manage the State forests. Forests are being cut legally and illegally, and the clearance of forest has increased menacingly at a rapid pace for irrigation projects, industries, other development projects etc. National Forest Policy laid down a condition that 33 1/3 % of land area should be under forest. We have not been able to reach that target. Rights are being created under the law for areas cleared for agriculture. With the fragmentation of forests resultantly **assigning** forest rights, there is no proper habitat for the wild animals. In this scenario, some zealots are creating forests and growing trees in the country. I have found some names of persons who have relentlessly toiled to develop forests and tree-lands over several years. I call them **green heroes**. A brief description of their struggle against their names is given in the following paragraphs:

1. **Jadav Payeng:** He is famous as '**Forest Man of India**'. He spent 30 years of life planting 40 million trees to create a real man-made forest. He changed the Brahmaputra barren sand bar of 1360 ac., which is known as 'molai'. His work of raising forest has resulted in preventing erosion by the river Brahmaputra. This forest land is a sanctuary for tigers, elephants, deer and myriad other animals. He is honoured by the award of **Padma Shri**.
2. **Salumarada Thimmakka:** This woman planted 400 banyan trees on the roadside in the State of Karnataka and nurtured them over a long period until they were fully established. She also planted 800 trees of other species. She was honoured by **Vriksha Mitra** Award in 1999 and an honorary doctorate from Central University in 2000. She received the **Padma Shri** award in 2019.
3. **Deepak Gaur:** This man is known as Gurgam's Tree Man. He was deeply interested in greening the areas. He met with a horrific road accident and fortunately recovered after six months in coma. He realized the criticality of nature and humanity. He planted and distributed six lakh saplings since 2012. He is a great admirer of Dr A.P.J. Abdul Kalam and drew inspiration from him.
4. **Pamela Malhotra:** She was born in 1962 in New Jersey and married an Indian restaurant owner. They moved to India (Kodagu) after spending some time in Hawaii. She started SAI (Save Animals Initiative). The land protected and managed by her became a sanctuary for Tigers, Elephants, Leopard, Wild Boar etc. She was felicitated and awarded the title of **Nari Shakti Puraskar** in 2017.
5. **V. Vidyadharan:** He is a Police Inspector in Kerala state. Planting trees along roads is his hobby. For 40 years, he has been planting trees along the roadside in South Alappuzha. He used to carry saplings in his jeep for distribution among farmers and others.

6. **Kareem:** Abdul Kareem of Kasargode in Kerala established a forest park in a barren land. After acquiring a 5 Ac. piece of land and he established a nursery. He toiled for 25 years for raising the forest plantation with all local species.
7. **Shyam Sunder Jyani.** An Associate Professor at Dungar College, Bikaner, started the '**Family Forestry Campaign**' to make Rajasthan bloom. It involves families in plantations and caring for their own home forest. He feels it is an effective alternate for afforestation, through which trees planted are seen as members of the family. He started hosting free of cost plantation drives and motivated people to gift plants in marriage, death and birth ceremonies. Plants are also offered as Prasad in local religious festivals.
- Shyam Prasad Jyani hails from the hot and dry Thar Desert region. He greets fellow citizens by saying, "**Haritha Pranam**". He has been in the greening effort for the past 15 years. He recently won the U.N. Convention to Combat Desertification's land for life Award.
8. **Ranaram Bishnoi:** He hails from Ekakkohri village, about 100 km away from Jodhpur. The effort made by him has such good results that it is now a place of rich flora. Bishnoi is now in his 70s. takes a sobriquet of "**Tree Man**". This environment crusader has planted 27,000 trees in a desert swathe, turning it green. He has single-handedly stopped the march of the desert. He planted all indigenous species like neem, khajri, fig etc. The community applauds Ranaram for taking up this initiative singlehandedly. We need more such men to make our planet a better place to live in.
9. **Devend Sura:** Inspired by the planned city of Chandigarh by architect Le Corbusier, Police Constable undertook a mission to turn his hometown Sonipet in Haryana green. The idea struck him in 2011 and started planting in 2012. Starting from his village, it spread to 152 villages; about 7,600 children found the initiative fruitful. He formed a team of volunteers to continue the work. The volunteers are assigned a duty to plant tall plants grown by him.
10. **Daripalli Ramaiah** is popularly known as "Chetla Ramaiah" and "VanaJeevi Ramaiah". He planted more than one crore saplings in Khammam and other parts of the state as part of a green campaign for nearly six decades. He carries seeds in his pocket and plants on his cycle as he goes around replenishing nature. He drew inspiration for this noble work from his mother. He collected seeds of Bilva, Peepal, Kadamba (Nanlea cadamba), Nidra ganneru, Kanuga, Neem, Erra chandanam, and started planting on Khammam-Plleguda Bridge on a 4 Km stretch. His wife Janaki was a good source of support. A.P. Forest Academy presented him with "**Green Warrior Award**". On the second Telangana Formation Day, a cash award of Rs. One lakh was paid to him. He received the "**Vana Mitra Award**" in 2015 and was a **Padma Shri Awardee** in 2017.
11. **Tulasi Gowda:** An illiterate tribal woman of the Vokkala tribe, born in 1944, belongs to the Hannali village of Ankola taluk in Karnataka. She is an environmentalist, raised 30,000 plants and worked in the Forest Department nursery in Honalli. As a barefooted ecologist, she knew the silviculture of the Indian forest and tree species. She was a daily wagger in a forest nursery. Senior forest officers were impressed by her performance and knowledge of trees, dedication to work. She earned an

Contd.. on page No.40

## Biopiracy- A Boon or A Bane to The Developing Countries?

V.V. HARIPRASAD



While the term “**Biopiracy**” is not defined under international law, it is conceptually founded in the principle of state sovereignty over natural resources. Principle 02 of the 1992 Rio Declaration affirms that “**states have the sovereign right to exploit their resources pursuant to their own environmental and developmental policies.**” As genetic research becomes more sophisticated, we can use plants and animals to develop new drugs or modify crops to meet food security needs.

*In the search for new bioresources, researchers often draw on local people’s traditional knowledge about the properties of a particular plant, animal or chemical compound. When researchers use traditional knowledge without permission or exploit the cultures they are drawing from – it is called **biopiracy**.*

As such, “Biopiracy” may be defined as the practice of commercially exploiting naturally occurring biochemical or genetic material, especially by obtaining patents that restrict its future use, while failing to pay fair compensation to the community from which it originates.

Biopiracy happens when researchers or research organizations take biological resources without official sanction, mainly from less affluent countries or marginalized people.

Biopiracy is not limited to drug development. It also occurs in agricultural and industrial contexts. Indian products such as the *neem tree*, *tamarind*, *turmeric*, and *Darjeeling tea* were patented by foreign firms for different lucrative purposes.

A less politically charged word for *biopiracy* is *bioprospecting*. This is more commonly used by research groups who attempt to search for biological resources legally and respectfully. **Bioprospecting** is the search for plant and animal species from which medicinal drugs, biochemicals, and other commercially valuable material can be obtained.

Unfortunately, not many positive examples of *bioprospecting* exist. The letter and spirit of the **Biological diversity Act 2002** involve even ethical considerations such as prior informed consent, access and benefit-sharing agreements, and material transfer agreements before research commence. Earnings from any commercial products should go towards local conservation efforts and the construction of infrastructure.

### Scientific colonialism

Although biopiracy might happen within a country, with elite groups or government officials taking resources from less influential citizens, it has a reputation for occurring between different countries. Biopiracy often accentuates power inequalities between wealthy, technology-rich countries and less affluent yet bio resource-rich countries.

### Biopiracy and Colonialism:

Historically, biopiracy has been linked to colonialism, with formerly colonized countries having many of their resources forcibly removed. **Pepper, sugar, coffee, quinine, or rubber** did have a significant impact on the world economies. All of them have a colonial past.

At the heart of the matter is the idea of ownership. International trade organizations and multinational groups hotly defend patents and trademarks.

### **Biological patent**

A biological patent is a patent on an invention in the field of biology that by law allows the patent holder to exclude others from making, using, selling, or importing the protected invention for a limited period.

*Whereas a patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something or offers a new technical solution to a problem. To get a patent, technical information about the invention must be disclosed to the public in a patent application*

Since 1994, the **Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)** has required WTO (World Trade Organization) member countries to develop legal frameworks to protect varieties of plant and animal resources in two systems: one for agricultural contexts and the other for pharmaceutical, chemical, textile, or different commodity contexts. Several countries have considered this to be counterproductive for protecting their bioresources.

Since the early 2000s, many national governments have changed their laws to protect their bioresources, following the **1992 Convention on Biological Diversity**.

### **Convention on Biological Diversity:**

The Convention on Biological Diversity (CBD), known informally as the Biodiversity Convention, is

a multilateral treaty. The convention has three main goals: the conservation of biological diversity (or biodiversity), the sustainable use of its components, and the fair and equitable sharing of benefits arising from genetic resources. Its objective is to develop national strategies for the conservation and sustainable use of biological diversity, and it is often seen as the key document regarding sustainable development.

The convention was opened for signature at the Earth Summit in Rio de Janeiro on 5th June 1992 and entered into force on 29th December 1993. It has two supplementary agreements, the **Cartagena Protocol and Nagoya Protocol**.

The Cartagena Protocol on “**Biosafety**” to the Convention on Biological Diversity is an international treaty governing the movements of **living modified organisms** (LMOs) resulting from modern biotechnology from one country to another. It was adopted on 29th January 2000 as a supplementary agreement to the CBD and entered into force on 11th September 2003.

The **Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS)** to the Convention on Biological Diversity is another supplementary agreement to the CBD. It provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources. The **Nagoya Protocol** was adopted on 29th October 2010 in Nagoya, Japan, and entered into force on 12th October 2014.

# We produce black - But our views are Green



Cultivation near Reclaimed Dump



Settling pond / Summer storage tank

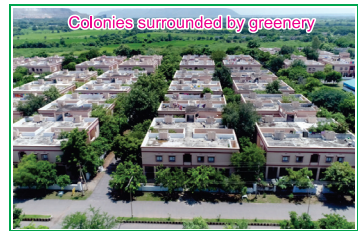


Eco-Friendly Park



Award in recognition of eco-friendly measures

- Pollution control and Soil Conservation Measures.
- About 5.50 crore saplings were planted in Singareni spread over area.
- Artificial forest covers to OC Dumps.
- Avenue plantation in colonies and roads.
- Eco-friendly parks developed in colonies.
- Sand manufactured from OB.
- STP/ ETP at all Colonies / Establishments.
- Efforts of Singareni were rewarded by State and National level awards.



Colonies surrounded by greenery



Reclaimed OB Dump



## THE SINGARENI COLLIERIES COMPANY LIMITED

(A Government Company)

## Vanapremi Deeply Mourns the Killing of Smt. Swati Dumane



Smt Swati Dumane, *Forest Guard*,  
Kolara Forest Range, TATR.

The woman forest guard was killed by a tigress in Tadoba Andheri Tiger Reserve (TATR) in Chandrapur district of Maharashtra on 20-11-2021 morning while surveying with three other personnel as a part of the All-India Tiger Estimation (AITE)-2022.

After walking for around four km from Kolara gate till compartment number 97 under the core area of TATR, the team noticed a tigress sitting ahead on the road, approximately 200 metres from them. The group waited for around half an hour and tried to detour through a thick patch of the forest. The tigress, identified as Maya, after noticing the movement, followed, and attacked Dumane, who was moving just behind the three beat helpers. The tigress pounced on her dragged her deep inside the forest and killed her.

**Grey Hypocolius**, an uncommon winter migrant, has been a regular visitor in a specific area of Greater Rann of Kutch (particularly near the village of Fulay in the Banni region of Kutch, Gujarat.



Photograph: G. Ramakrishna Rao  
[Article on Page:49]

**GREY HEADED LAPWING IN KOLLERU** (Page:42/43)



Photos by G. Ramakrishna Rao, DyCF (Retd.)

**SMC MEASURES IN NEW SOUTH WALES, AUSTRALIA** (Page:42/43)



Coir logs and coco logs wrapped with coir netting for a sloppy terrain

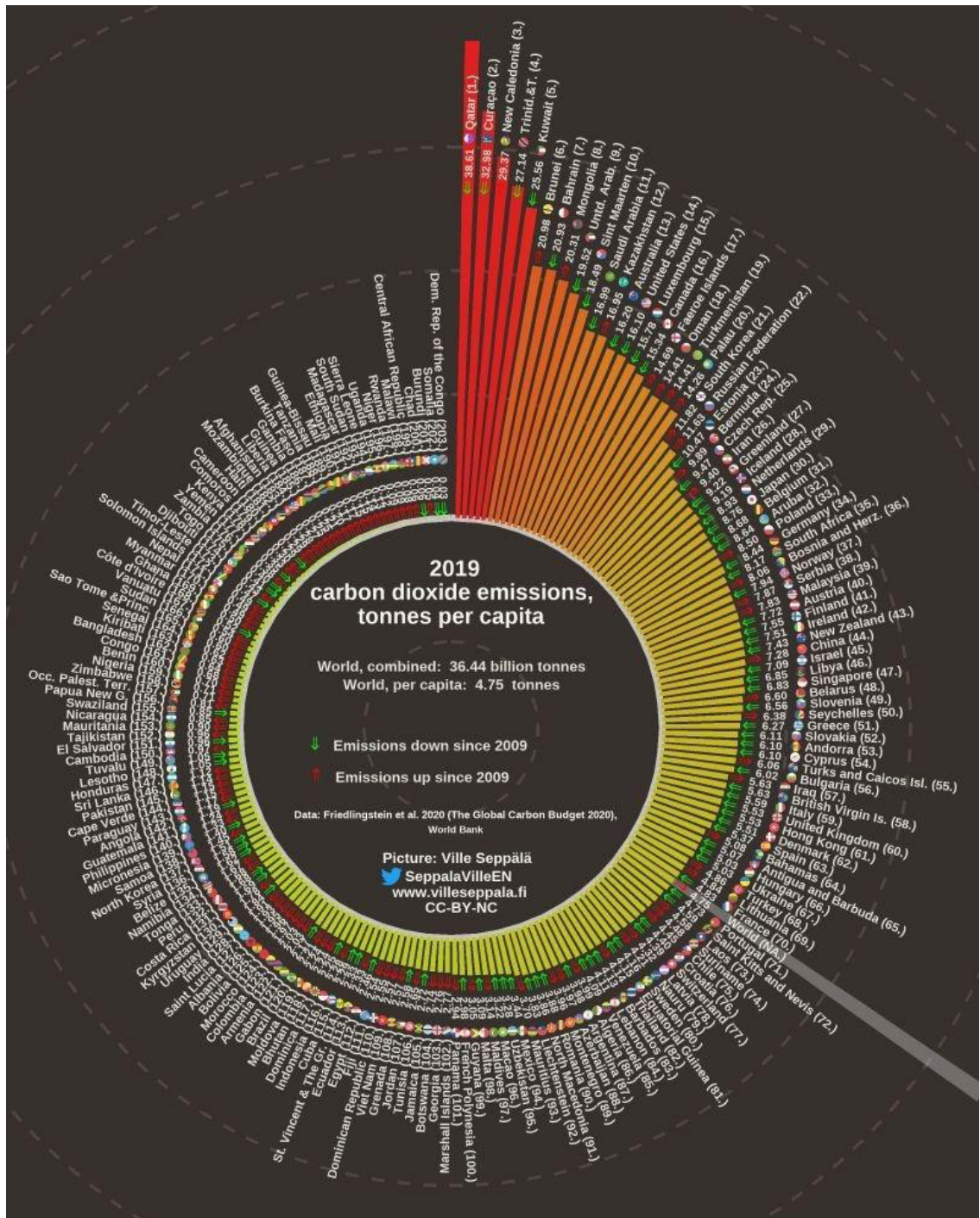


The tree base covered with Wood chips waste mulch - protects from runoff and weed growth

**KAISER-I-HIND is Arunachal's State Butterfly**

The insect with a 90-120 mm wingspan is found in the eastern Himalayas





Country wise per capita CO2 Emission as of 2019 since 2009. (Courtesy: www.villeseppala.fi)

Continuation from page No. 28

### BIOPIRACY - WHEAT:



#### WHEAT

- ❖ Wheat the golden grain is called KANAK in northwestern India
- ❖ In December 1909, the book titled "**Wheat in India**" was published
- ❖ During 1916-1920 Indian wheat varieties won prizes at international grain exhibitions
- ❖ On May 3<sup>rd</sup> 1994 U.S. gave patent to MONSANTO for low elasticity of flour blends of wheat (*exclusive ownership overuse of Nap Hal, a strain of wheat*)
- ❖ On 21st May 2003 European patent office in Munich granted a patent on wheat to Monsanto titled "plants" (*use of **Nap Hal**, a strain of wheat in making chapathis*)
- ❖ **India has challenged the wheat biopiracy of Monsanto in the European patent office on 17th February 2004**
- ❖ *The patent is a blatant example of biopiracy as it is tantamount to the theft of the results of endeavours in cultivation made by Indian farmers*
- ❖ A patent on Indian wheat, held by **multinational corporation Monsanto**, has been revoked by the Munich-based **European Patent Office (EPO)**.

- ❖ The EPO's decision is in response to a petition filed by three organizations--**Bharat Krishak Samaj (BKS)**, **Navdanya** and **Greenpeace, Germany**--challenging Monsanto's patent on *Indian wheat variety Nap Hal*.
- ❖ *Monsanto could not file a contest against the petition. **BKS president Krishan Bir Chaudhary** said Monsanto had got the patent by transferring genes from **Nap Hal** to its **Galatea wheat variety**.*

### BIOPIRACY-TURMERIC



#### TURMERIC

- ❖ *In 1995 two expatriate Indians at the University of Mississippi Medical Centre were granted a U.S. patent on turmeric in **wound healing**.*

- ❖ In India, turmeric has been applied to cuts of children as an anti-parasitic agent
- ❖ In 1996 CSIR Delhi, India requested the U.S. patent and trademarks office to revoke the patent on the grounds of **existing prior art**.
- ❖ CSIR could provide documentary evidence of traditional knowledge, including Sanskrit text and a paper published in 1953 in the journal of the **Indian Medical Association**.
- ❖ **The patent was revoked in 1997 after ascertaining that there was no novelty.**

#### BIOPIRACY-ONGOLE BULL



- ❖ These animals, known for their resistance to diseases like mad cow disease and scorching climate due to their protective and reflective coat, have been exported for more than four decades and bred in **Brazil, especially for meat**.
- ❖ For a long, the animals and their semen were exported from India and used for breeding in Brazil. But this was happening indiscriminately in violation of biopiracy laws,
- ❖ Brazil has many Ongole bulls, much more than India has now, resulting from biopiracy.

#### BIOPIRACY-VINCA ROSEA (*Catharanthus roseus*)



*Catharanthus roseus* is endemic to Madagascar. The Mozambique Channel borders Madagascar to the west and the Indian Ocean to the east. Madagascar is a large island located off the southern coast of Africa, east of Mozambique. The **United States of America** has obtained ***Catharanthus roseus*** from Madagascar without permission from the authorities of Madagascar, extracted two alkaloids, namely **Vincristine and vinblastine** and prepared a **medicine for treating leukaemia**. That is a cancer of blood-forming tissues, hindering the body's ability to fight infection. This is a clear cut example of biopiracy. In the USA, a developed country obtained the plant material from Madagascar, a developing country, through biopiracy, invented a medicine for blood cancer without any agreement on such eventuality, and made a lot of money from such invention. ***It is a stark reality that "Biopiracy" in the absence of strict implementation of the Biological diversity Act became a bane, not a boon to developing countries.***

#### CONCLUSION

**Biopiracy** is not likely to disappear any time soon. As climate change threatens, many large agri-businesses and researchers are patenting drought-resistant, heat-resistant, and salt-resistant genes from plants for future use in crop species.

To counter this, many researchers are attempting to collect genes and publish them in scientific domains (such as the NIH's online Gene Bank or various seed banks). By sharing genetic sequences, scientists can prevent big firms from claiming uniqueness and novelty, two patent criteria.

While patents were first used to protect inventions and stimulate innovation, many anti-biopiracy activists and some academic and scientific circles are pushing for changes in the system, as it is now thought to hinder research in many important areas. **For now, the issue of biopiracy remains at a stalemate.**

### TRADITIONAL KNOWLEDGE DIGITAL LIBRARY (TKDL)

In just under two years, India has succeeded in cancelling or withdrawing 36 applications to patent traditionally known medicinal formulations in Europe alone. The key to this success has been its

*(The author of this article, a retired Deputy conservator of Forests, presently practicing as an Advocate, is a guest faculty and teaches Cyber laws and IPR in the Central University Hyderabad).*

**Traditional Knowledge Digital Library (TKDL)**, a database containing 34 million pages of formatted information on some 2,260,000 (2.26 million) medicinal formulations in multiple languages

- A). *Designed as a tool to assist patent examiners of significant intellectual property (I.P.) offices in carrying out prior art*
- B). *Searches, the TKDL is a unique repository of India's traditional medical wisdom. It bridges the linguistic gap between traditional knowledge expressed in languages such as Sanskrit, Arabic, Persian, Urdu and Tamil, and those used by patent examiners of major IP offices. All TKDL information is structured along the lines of a patent application. India's TKDL is proving a powerful weapon in the country's fight against erroneous patents, sometimes referred to as "biopiracy"*

## 21<sup>ST</sup> ALL INDIA FOREST OFFICERS' ALUMNI MEET, KURNOOL (19<sup>th</sup> - 22<sup>nd</sup> January 2022)

Sri Y. Rajendra, Organizing Secretary of the Alumni Meet, in a communication informed that the meet will be organized from 19th to 22nd January 2022 at Kurnool and requested those who desire to participate in the meet to get themselves registered by sending Rs. 10,000 towards the arrangements with the following details:

1. Name of the A/c. holder : Yenugula Rajendra
2. Name of the Bank : HDFC Bank Ltd.,
3. Account number : 50100474375844
4. IFSC Code of the Bank : HDFC0007055

**Further details can be had from the Office Bearers of the Committee:**

PRESIDENT  
**K. Sudhakar Reddy -**  
9848818191

VICE PRESIDENT  
**G.Prabhakar Reddy**  
984932010

SECRETARY  
**Y. Rajendra**  
8096004499

JOINT SECRETARY  
**K.VenkataRamudu**  
9985359456

TREASURER  
**D. Chandrasekhar Rao**  
7032196995



## Our True Nature

**Master Masam Vikram, New York,**

*(8<sup>th</sup> Standard, Age: 12 years)*

Mist consuming air,  
Animals carrying out daily duties,  
Nature spread all over,  
Only signs of life, nothing dead.  
Monkeys swaying from vine to vine. Free!  
The Sun glowing with happiness,  
And trees dancing to wind.  
Free, action everywhere,  
Ponds as still as statues.  
Full of rivers but no sudden shivers!  
The roots connected once more,  
Gators pouncing bugs squirming around.  
Free! the order going smoothly,  
Swamps showing off raw smell.  
Grass showers the dirt beneath.  
The soil to seeds becomes plants,  
And the cycle continues, even with the ants.  
The next day arises, but now its dreary.  
Rain and thunder terrorize the greatness  
As if it was a crazy beast.  
But slowly slithering away.  
Everything back in absolute peace  
And everything was restored once more.  
Full of again, creatures happy all the time.  
Sunlight burns faster and faster,  
And animals go rest on ground or in a nest.  
Free! Waterfalls rushing quietly until tomorrow.  
Everything was free,  
And that was true nature.

## Paris To Glasgow - Climate Action To Be Accelerated

B.K.Singh, IFS (Retd.)



This year's Nobel Committee announced the Nobel Prize for Physics for climate model and understanding of physical system just weeks before the Glasgow Climate summit. Syukuro Manabe and Klaus Hasselmann, two out of three winners of the year, studied large scale global forces that shape our daily lives and laid the foundation of our knowledge of earth's climate and how human actions influence it.

Climate Action Tracker (CAT), of Germany, based non-profit group 'ClimateAnalytics' in its report in November 2020, rated India 'almost sufficient' for its climate actions for 2 degree Celsius temperature rise compatible under the 2015 Paris Agreement. The report added that India is the only G20 nation on course to fulfil its pledges of nationally determined contribution (NDC). Other G20 nations contribute 80% of global GHG emissions.

Extreme weather events are experienced globally; CAT rating is made more stringent to include climate action targets as per NDC, mid-century net zero-emission goals and 1.5-degree Celsius compatibility. Two months back, CAT has rated us in the 'highly insufficient category' along with China, Australia, New Zealand, Brazil, Canada, South Korea, Argentina and Mexico. Further UK, Germany, Japan, the USA, Nepal and 12 others are rated either in the 'almost sufficient' category or 'insufficient category' due to the up-gradation of climate action goals and pledging net-zero by mid-century. The report also noted that the U.K.'s domestic targets are 1.5 degrees Celsius compatible; however, the country's policies and international support do not match.

The report mentions that India's rating is brought down because NDC does not include our decision to set up 450 GW renewable energy by 2030 and 'green hydrogen' projects announced by PM Narendra Modi from Red Fort on 15<sup>th</sup> August. Even Indian Railways has announced to be net-zero by 2030. Our rating is thus down-graded because of a technical glitch, which can permanently be corrected.

In the G20 energy and climate joint ministerial meeting two months earlier in Napier, India's Environment Minister Bhupender Yadav said some countries pledged net zero emission of carbon neutrality by 2050, which is a change of goal post that was fixed in Paris in 2015. He also added, "The momentum of climate action can only be accelerated when there is enough support through means of Implementation, including finance and technology". Also, India requested members of G20 nations to bring down their per capita emissions below the global average. India's per capita emission is one-seventh of the U.S., two seventh of China and one-third of E.U.

Maximum GHG emissions in each of the recent years are by China – nearly 14.1 Gigatons (Gt) of CO<sub>2</sub> equivalent per year, which is 25% of annual global emissions. India's annual emission is 3.7 Gt CO<sub>2</sub> equivalent, only one-fourth of China, and is the fourth-highest globally. U.S. and E.U. being in second and third positions respectively, emit 6.6 and 4.1 Gt annually.

India's call to Western countries to slash emissions to the global per capita average level clearly puts China in an advantageous position,

as it is the only country with a larger population. China has 88.1 GW coal-fired power units under construction, and 158 GW are announced and are in the pipeline. Even if accelerated retirement of older plants is permitted, China will continue to increase its coal-fired generation until 2035, the year announced to peak the emissions. And in response to the call from U.S. and E.U. to be net-zero by 2050, China has fixed 2060 for itself.

U.S. Climate envoy John Kerry has been visiting nations with high GHG emissions and persuading for early transition to renewable energy and electric vehicles. He visited India twice in the last six months to make us pledge net-zero by mid-century. China, adamant about fossil fuel-related growth, should come on board first. If the fossil fuel-based economy is abruptly shut, India would be pretty challenging to lift several million people into more middle-class lifestyles. Transitioning to a green economy at affordable costs is dependent on appropriate technologies, which are being researched all across the globe.

On an Indian television channel, John Kerry was recently confronted with a question as to why developing countries like India should be asked to shut down fossil fuel-based businesses and industries when developed countries are responsible for warming the planet. He answered that the CO<sub>2</sub> accumulated in the atmosphere is reaching a dangerous level. The latest IPCC report (VI in the series) has indicated a red alert and shows only a small window of hope if the emissions are cut drastically. He further added that whether it is emission from India, China, or the U.S., the consequences are the same.

British MP Alok Sharma, who is COP26 president for the Glasgow Climate summit scheduled from 1<sup>st</sup> to 12<sup>th</sup> November 2021, has also been visiting countries to find favour for more ambitious NDC

targets to cut emissions. He highlighted four goals from COP 26 during his visit to India. These are - the overreaching ambition of keeping 1.5<sup>o</sup> C within reach, financial support from developed nations to developing countries, those with adaptation plans to come forward and closing off Article 6 from the Paris rulebook. He added that international investors are increasingly reluctant to invest in coal power. They have understood that they may well end up in some years with stranded assets. They are also seeing that the prices of renewable – solar, offshore, wind – have been coming down significantly, which will help drive the movement in transition to clean energy.

We are facing destructive climatic catastrophes at a 1.1 degree Celsius average rise in global temperature. It increases to 1.5 degrees Celsius if 400 Gt of CO<sub>2</sub> equivalent are additionally emitted in the atmosphere. At the rate of 40 Gt annually, this narrow window will be closed in about ten years. Slashing emissions by 2030 should be the priority and not the net-zero by midcentury. COP 26 should focus on these actionable points.

Prominent world leaders addressed COP 26 at Glasgow on the first and second November 2021. British PM Boris Johnson said that global warming was a doomsday device. United Nations Secretary-General Antonio Guterres said, “Enough of brutalizing biodiversity, enough of killing ourselves with carbon, enough of treating nature as a toilet, enough of burning and drilling and mining our way deeper, we are digging our graves.” Barbados PM Mia Mottley cautioned not to allow the path of greed and selfishness to sow the seeds of our common destruction. U.S. President Joe Biden said that the cost of climate change would mount as we delay the mitigation measures.

Indian Prime Minister Narendra Modi was special in his address to COP 26. He surprised the World by announcing 2070 as the target for net Zero

emissions for India. He gave five points program for mitigation and called it 'panchamrit'. The roadmap for 2070 net-zero was loud and was fully justified. India raised its climate targets to increase the use of renewable energy, reduce carbon emissions, and achieve net-zero by 2070.

The 'panchamrits' are (1) increase non-fossil fuel-based energy capacity to 500 GigaWatt by 2030 (up from 450 Giga Watt committed as nationally determined contributions (NDCs) in Paris climate accord), (2) increase share of renewable energy use to 50% by 2030, (3) reduce carbon emissions by one billion tonnes annually till 2030 from total projected emissions, (4) reduce emission intensity (carbon equivalent emitted per unit of GDP) by 45% of 2005 level (up from 33 to 35% reduction pledge, NDC in Paris accord) and (5) achieve net-zero carbon status by 2070. Besides these 'panchamrits' PM reiterated the need for rich countries to raise one trillion dollar carbon finance for poor and developing nations to undertake mitigation measures.

People are raising eyebrows at us that 2070 would be too late to become carbon neutral; they should compare our annual emission trajectory with China, the U.S., and the European Union. We are the fourth highest emitter of GHG as regards the quantity is concerned. If we leave the European Union, a conglomerate of 27 countries, then we are a distant third. In other words, what U.S. and China would emit before their pledge for the year of net-zero, our total emission in the atmosphere would be far too less even if our net-zero comes in 2070.

Our present annual emission rate is in the region of 3 billion tonnes, which is projected to go up to 4.2 billion tonnes by 2030. In this period, China's emissions would grow from 14 billion tonnes to 22 billion tonnes and the U.S. from 10 billion tonnes to 15 billion tonnes. There is a strong case for rich nations and top emitters to peak their emissions early

and even achieve net-zero early. The entire planet is already warmed by 1.1<sup>o</sup> Celsius since around 1870, the pre-industrial era. The warming is because of accumulated CO<sub>2</sub> in the atmosphere, mainly by rich nations. Therefore, no one should raise an eyebrow over India, as we have hardly contributed to it.

United Nations Framework Convention on Climate Change (UNFCCC) on 7<sup>th</sup> November 2021 released a preliminary draft of the decision of COP 26, called Pact, emphasizing the need for urgent efforts to achieve 1.5<sup>o</sup> Celsius target, keeping the temperature rise well below 2 degrees. It responded to the findings of the Intergovernmental Panel on Climate Change on pre-2030 action, transitioning to global net-zero by 2050 and carbon budget.

Several governments, including India, have made key announcements over climate financing, net-zero commitments and pledges to end deforestation. The E.U. and US-led pledge to cut methane emission by 30% by 2030. Nearly 40 countries have jointly pledged to phase out coal on the sidelines of COP 26. However, the U.S., China and Australia are not part of this group. At COP 15 at Copenhagen in 2009, developed countries had committed to mobilizing 100 billion dollars annually to assist developing countries in achieving their goal of transition to cleaner energy. The draft expresses concern for having not met this goal and highlights to scale up the flow of finance to developing nations.

State Forest Departments have a role to play in creating an additional carbon sink. On various other occasions, Prime Minister Narendra Modi has called for reforesting 26 million hectares of degraded lands available across the country by 2030. This is a dream; if it comes true, it will provide annual storage of 2.5 to 3 billion tonnes of CO<sub>2</sub> equivalent. A Forester can easily understand why the forests add storage capacity of carbon every year. Annual growth of the trees and the recruitment of young ones will provide

additional space for sequestration. Ministry of Environment and Forests & Climate Change (MoEF & CC) should lay their hands on the inventory and break this figure of 26 million hectares of degraded lands into states and districts/ Forest divisions. The respective Forest department should develop plans to afford, and MoEF & CC should provide funds. Maybe the entire 26 million ha is available for planting as it could have been partly encroached and partly unsuitable for growing trees. But even if we succeed in growing trees over three fourth of it, we provide storage space for 2 billion tonnes of CO<sub>2</sub> equivalent.

Further, there is thinking in some quarters that pacts like Glasgow's may not produce any tangible result and may fail like our several five years plans

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Continuation from page No. 26

epithet, **Encyclopedia of Forest**. She can correctly identify mother trees with confidence. She worked for 50 **years**, 35 years in nursery and 15 years after retirement. She continued the mission until she was 70. She is considered a pride of her community. She is a **Vriksha Mitra** Awardee of 1986 and was honoured with **Padma Shri Award** in 2021.

12. **Dusharla Sathyanarayana**: An Agriculture graduate born in a family of landlords of Raghavapuram village in Mothe Mandal in Suryapet district, held a Field Officer post of a Bank. He gave up the bank job, regenerated a 70-acre land of ancestral property and turned it into a nature's paradise. He believes that the real owners of plants and animals thrive in the 70-acre land, and he is only a servant. He says that the land does not belong to him; he is only a part of it. It took five decades to establish

in the past. But this is a misplaced perception. A lot of funds is flowing to the renewable energy sector. Big giants globally are hesitant to invest in fossil fuel-based industries and wind energy, solar energy and the green hydrogen sector. Renewable energy costs have become lower than fossil fuel-based power. Researchers are working on the storage of power and are bound to succeed as the investments go up. Manufacturers are also working on bringing down the cost of electric vehicles and are resolving the bottlenecks of charging stations. Pledges for transition to renewable energy and net-zero in 30 to 50 years down the line may look hollow, but the mood of investment suggests that the planet's warming would be restricted to 1.5<sup>o</sup> Celsius. I am pretty optimistic about it.

the forest. He toured extensively and collected seeds of different tree species for the project. He raised plants of several species. Whatever grows and dies in the area is left to decay. Fruits and leaves are meant to feed animals and birds. He dug a canal for harvesting rainwater and for storing water in the seven ponds. A bore well is installed to draw underground water when there is drought condition. When someone asked him as to who would manage the forest land after his death, he would say, Panchabhutas (Five Elements) will take care of it. After creating the forest, people would call him a **Nature Lover, a Forest Lover**, and a **Forest Dweller**. There is good publicity for his creative work in print and electronic media. BBC Telugu made a video of his work. Alas, there seems to have been no recognition of his work either by the State or Central Government.

Source: Internet

## For Your Tiny Tots

1. Like fingerprints, everyone's tongue print is different.
2. A cat's tail contains nearly 10 percent of all the bones in its body.
3. Butterflies taste with their feet.
4. Hot water will turn into ice faster than cold water.
5. Lungfish are the only fish that have both lungs and gills.
6. Ants never sleep.
7. Minus 40 degrees Celsius is exactly as minus 40 degrees Fahrenheit.
8. Goats have rectangular pupils in their eyes.
9. Chocolate can kill dogs as it contains Theobromine, which affects their heart and nervous system.
10. The strongest muscle in the human body is the tongue.
11. A crocodile cannot stick its tongue out.
12. All polar bears are left-handed.
13. 'Stewardesses' is the longest word typed with only the left hand.
14. Electric eels are in fact not eels, and give a shock strong enough to knock out a horse.
15. It's impossible to lick your elbow.
16. When you sneeze, your heart stops for a millisecond.
17. 'Rhythm' is the longest English word without a vowel.
18. Otters "hold hands" while sleeping, so they don't float away from each other.
19. Hummingbirds are the only birds that can also fly backwards.
20. The animal having the shortest lifespan in the world is the Mayfly. 24 hours.
21. Baby elephants suck their trunks for comfort.
22. Orangutans are the heaviest tree-dwelling animals.
23. Grey-headed Albatross can circle the globe in only 46 days.
24. A tiger's rear legs are so powerful, that they can keep the animal standing even after its death.
25. The Mariana snailfish is the deepest fish in the ocean, living up to around 8000m below the surface.

*Explain your anger but don't express it.  
You will immediately open the door to solutions  
instead of arguments - Lessons learned in life.*



## Innovative Soil Conservation Measures in Australia

K. Pradeep

During my several trips to Australia in the past 10- 15 years, I have been observing the techniques implemented here -in planting, soil erosion preventive measures, slope planting, planting the recreational parks etc. Generally, all these activities are executed by corporate organizations [ private sectors] - supervised by the concerned departments, viz., Municipal councils, Gardens, Forestry sectors, etc. The corporate sectors engage highly skilled and specially trained personnel with the latest equipment/ machinery, etc., precision. The local governments- be it Municipal Council or Town Council -are very powerful. Seldom State or Federal Governments interfere. The Council themselves generates the financial resources and decisions regarding the execution of works, supervision, budgeting—all such issues are handled by these councils only. Even if the Premier needs to repair his home- the Council has to approve. This local governance helps in quality control- very minute scrutiny of the execution of works- and very severe punitive measures – usually with heavy fines - help attain good results.

I am trying to put forth some of my observations implemented here regarding soil erosion.

### JUTE MATTING:

Jute Mat is 100% organic and is the traditional erosion control blanket used to protect soils in areas exposed to wind or high rainfall. The heavier grades of Jute Mat are also used as weed suppressants, while the lighter grades of Jute Mat provides an ideal media for seed germination as it protects the soil from erosion while still allowing the seed to grow through the matting. The innate characteristic of “moulding” to the ground enables Jute Mat to reduce moisture loss from the soil that aids the growth of desired plants. It has a life expectancy varying from 10 to 18 months, depending on grade and climatic conditions.

Wooden rubber pegs are driven into the soil to keep the mats in place- in the regular interval— depending on the slope, type of soil and anticipated runoff velocity, and planting will be taken up over the mats.

Again, there are individual discs made out of thick coir fiber with a radial slit- to arrange around an already planted seedling/ tree. This will help as a mulch and soil conservation measure.





Planting along the pathway for pedestrians and cyclists, which runs along the main road. Tall seedlings with grass slips sprinkled with wood chips. These chips are good as mulch – maintains moisture, prevents runoff and prevent the plants from exposure to heat.

**COIR ROLLS AND COCONUT FIBER ROLLS:**

Coir logs, also known as coir rolls, coconut fibre rolls or coco logs, are tubes filled with loose but densely packed coconut fibre, then wrapped with coir netting. Aussie Environmental Coir logs are lightweight and easy to install – ideal for constructing check structures, establishing vegetation, managing changes in streamflow velocity, shaping channels and stabilizing shorelines. Aussie Environmental

Coir Logs are 100% biodegradable, can blend into their surroundings and over time, provide habitat for animals and plants and are flexible, curve around river banks and existing vegetation. Coir logs can be used in open drains to slow water velocity and capture sediments or be used in streams and rivers to produce a natural wall of protection for plants and soil.

*(The writer is Retired Dy. C.F., presently in Sydney, Australia. Feed back: Pradeep\_kyanam@yahoo.com and mobile: +919848178693)*



## Effects of Ozone-Depletion

V. Santhaseela Babu

For a long time, much has been discussed about the 'OZONE' layer, its depletion and the resultant adverse effects on humans and other life on the Planet. What is this OZONE layer? What are the factors responsible for its depletion? How does it affect human beings and a different life on the Earth?

Ozone is a naturally occurring molecule made up of three Oxygen atoms with the chemical formula  $O_3$ . Ozone formula, also known as Trioxxygen formula or Triatomic Oxygen formula. This inorganic molecule is an allotrope of Oxygen. It consists of three oxygen atoms, with one single bond, one double bond and an additional of two partial charges viz; a negative charge and a positive charge. 'Ozone is derived from the Greek word "Ozein", meaning "to smell". This meaning comes from ozone at the ground level, which gives off a pungent, acrid odour. Its strong smell allows scientists to detect it even in low amounts. Ozone is found in different levels of the Earth's atmosphere. About 90% of the Ozone in the atmosphere is concentrated between 15 and 30 kilometres above the Earth's surface (Stratospheric Ozone). It provides a protective shield from the Sun; we think of this as good Ozone. It is also found at ground level in lower concentrations (Tropospheric Ozone). Here Ozone is a pollutant that is a crucial part of smog over cities, and we think of it as lousy Ozone.

The Ozone layer is the common term for the high concentration of Ozone found in the Stratosphere between 15 and 30km above the Earth's surface. It covers the entire Planet and protects life on Earth by absorbing harmful Ultraviolet-B (UV-B) radiation from the Sun. The thickness varies seasonally and

geographically. From there, it protects the living things on the Earth from exposure to the harmful radiation of Ultra Violet (UV) rays emitted from the Sun. Charles Fabry and Henri Buisson, the Physicists of France, have first discovered the existence of the OZONE layer during the year 1913. Measurements of the Sun showed that the radiation sent out from its surface and reaching the ground on Earth is usually consistent with the spectrum of a black body with a temperature in the range of 5,500–6,000 K (5,230–5,730 °C), except that there was no radiation below a wavelength of about 310 Nanometer at the Ultraviolet end of the spectrum. It was deduced that the missing radiation was being absorbed by something in the atmosphere. Eventually, the spectrum of the absent radiation was matched to only one known chemical, 'OZONE'. Its properties were explored in detail by the British meteorologist G.M.B.Dobson, who developed a simple Spectrophotometer called the Dobsonmeter that could be used to measure Stratospheric Ozone from the ground. Between 1928 and 1958, Dobson established a worldwide network of ozone monitoring stations, which continue to operate today. The "Dobson unit", a convenient measure of the amount of Ozone overhead, is named in his honour. The Ozone layer absorbs 97 to 99 per cent of the Sun's medium-frequency ultraviolet light (from about 200 nm to 315 nm wavelength), which otherwise would potentially damage exposed life forms near the surface.

The Photochemical mechanisms that give rise to the Ozone layer were discovered by the British Physicist Sydney Chapman in 1930. Ozone in the Earth's Stratosphere is created by Ultraviolet light

striking ordinary Oxygen molecules containing two oxygen atoms ( $O_2$ ), splitting them into individual oxygen atoms (atomic oxygen); the atomic oxygen then combines with unbroken  $O_2$  to create ozone ( $O_3$ ). The Ozone molecule is unstable (although, in the Stratosphere, long-lived). When Ultraviolet light hits Ozone, it splits into a molecule of  $O_2$  and an individual atom of Oxygen, a continuing process called the Ozone-oxygen cycle.

Chemically, this can be described as follows:
$$\{ce {O2}+{\mathit {h}}\nu _{uv}->2O\}$$

Ozone  $O_3$  is generated through Oxygen  $O_2$  through a high voltage potential resulting in the attachment and formation of a third oxygen atom. The molecular formula for ozone ( $O_3$ ) was established by taking the change in volumes when  $O_3/O_2$  mixtures were either heated or exposed to turpentine and cinnamon oil.

#### Other names – Triatomic oxygen

$O_3$	OZONE
Density	2.14kg/m <sup>3</sup>
Molecular Weight/Mass	48g/mol
Boiling Point	-112 <sup>0</sup> C
Melting Point	-192 <sup>0</sup> C
Chemical Formula	$O_3$

$\{displaystyle \{ce {O + O2 <-> O3}\}$  About 90 per cent of the Ozone in the atmosphere is contained in the Stratosphere. Ozone concentrations are most significant between about 20 and 40 kilometres (66,000 and 131,000 ft), ranging from about 2 to 8 parts per million. If all of the Ozone were compressed to the pressure of the air at sea level, it would be only 3 mm thick.

Ultraviolet radiation capable of penetrating Nitrogen is divided into three categories, based

on its wavelength; these are referred to as UV-A (400–315 nm), UV-B (315–280 nm), and UV-C (280–100 nm). UV-C, which is very harmful to all living things, is entirely screened out by a combination of dioxygen (< 200 nm) and Ozone (> about 200 nm) by around 35 kilometres (115,000 ft) altitude. UV-B radiation can be harmful to the skin and is the leading cause of sunburn; excessive exposure can also cause cataracts, immune system suppression, and genetic damage, resulting in problems such as skin cancer. The Ozone layer (which absorbs from about 200 nm to 310 nm with maximal absorption at about 250 nm) is very effective at screening out UV-B; for radiation with a wavelength of 290 nm, the intensity at the top of the atmosphere is 350 million times stronger than at the Earth's surface.

Nevertheless, some UV-B, particularly at its longest wavelengths, reaches the surface and is vital for the skin's vitamin D. Ozone is transparent to most UV-A, so most of this longer-wavelength UV radiation reaches the surface constitutes most of the UV reaching the Earth. This type of UV radiation is significantly less harmful to DNA, although it may still potentially cause physical damage, premature ageing of the skin, indirect genetic damage, and skin cancer. UV radiation also affects terrestrial and aquatic ecosystems, altering growth, food chains and biochemical cycles. Marine life just below the water's surface, the basis of the food chain, is particularly adversely affected by high UV levels. UV rays also affect plant growth, reducing agricultural productivity.

In 1974, chemists Mario Molina and Frank Sherwood Rowland discovered a link between CFCs and the breakdown of Ozone in the Stratosphere. In 1985, Geophysicist Joe Farman and Meteorologists Brian G Gardiner and Jon Shanklin published findings of abnormally low Ozone concentrations above the Antarctic, which galvanized worldwide action. In 1995, Mario Molina, Frank Sherwood Rowland and

Paul Crutzen, also an atmospheric chemist, were jointly awarded the Nobel Prize in Chemistry for their work in “atmospheric chemistry, particularly concerning the formation and decomposition of Ozone”. Atmospheric concentrations of Ozone vary naturally depending on temperature, weather, latitude and altitude, while substances ejected by natural events such as volcanic eruptions can also affect Ozone levels. However, these natural phenomena could not explain the levels of depletion observed, and scientific evidence revealed that certain artificial chemicals were the cause. These Ozone-depleting substances mainly were introduced in the 1970s in a wide range of industrial and consumer applications, especially Refrigerators, Air Conditioners and Fire Extinguishers.

The Polar Ozone holes are areas of lower concentration of Stratospheric Ozone that form over the Antarctic and the Arctic due to human activities. Ozone-depleting substances containing Chlorine and Bromine atoms are released into the atmosphere through human activity, for example, through the use of aerosols and from refrigeration and air conditioning equipment. When these chemicals combine with certain weather conditions, particularly prolonged, extreme cold and strong winds that often occur in the Stratosphere over the poles in Spring, chemical reactions cause Ozone molecules in the Stratosphere to be destroyed faster to severe depletion the Ozone layer.

Abnormally low Ozone concentrations in the Stratosphere above the Antarctic were first reported by British scientists in 1985. The Antarctic Ozone holes in 2000 and 2006 were the largest on record, measuring around 29.8 and 29.6 million square kilometres, respectively (more than three and a half times the size of Australia). At times they extended overpopulated areas in Chile, South America. With the decrease in Ozone-depleting

chemicals in the atmosphere, Antarctic Ozone holes in recent years have not been as large or as deep as these earlier holes. However, a very cold, stable Stratosphere could still lead to a large amount of Ozone depletion in future years. The Stratosphere might cool significantly through the continued build-up of Carbon dioxide (CO<sub>2</sub>) and other Greenhouse gases, along with Synthetic Greenhouse gases, in the atmosphere. Synthetic greenhouse gases are artificial chemicals commonly used in Refrigeration and Air Conditioning, Fire extinguishing, Foam production and Medical Aerosols. However, Synthetic Greenhouse Gases generally have high Global Warming potential; when released, they trap heat in the atmosphere. Because of their stability and long life, they can remain in the atmosphere for a long time, increasing their contribution to climate change.

Ozone depletion is most significant at the South Pole. It occurs mainly in late winter and early Spring (August-November), and peak depletion usually happens in early October, when the Ozone is often wholly destroyed in large areas. This severe depletion creates the so-called “Ozone hole” that can be seen in images of the Antarctic Ozone, made using satellite observations. In most years, the maximum area of the hole is more significant than the Antarctic continent itself. Although Ozone losses are less radical in the Northern Hemisphere, significant thinning of the Ozone layer is also observed over the Arctic and even over continental Europe. Most of the Ozone-depleting substances emitted by human activities remain in the Stratosphere for decades, meaning that Ozone layer recovery is a prolonged and lengthy process.

Atmospheric research revealed that the Ozone layer was being depleted by chemicals released by industry, mainly Chlorofluorocarbons (CFCs). Concerns that increased UV radiation due to Ozone

depletion threatened life on Earth, including increased skin cancer in humans and other ecological problems that led to bans on the chemicals. The latest evidence is that Ozone depletion has slowed or stopped. The United Nations General Assembly has designated September 16 as the International Day for the Preservation of the Ozone Layer.

Ozone-depleting substances are chemicals that destroy the Earth's protective Ozone layer. They include:

- Chlorofluorocarbons (CFCs)
- Halon
- Carbon tetrachloride ( $\text{CCl}_4$ )
- Methyl chloroform ( $\text{CH}_3\text{CCl}_3$ )
- Hydrobromofluorocarbons (hbfc)
- Hydrochlorofluorocarbons (HCFCs)
- Methyl bromide ( $\text{CH}_3\text{Br}$ )
- Bromochloromethane ( $\text{CH}_2\text{BrCl}$ )

The main uses of Ozone-depleting substances include:

- CFCs and HCFCs in Refrigerators and Air Conditioners,
- HCFCs and Halons in Fire Extinguishers,
- CFCs and HCFCs in Foam,
- CFCs and HCFCs as Aerosol Propellants, and
- Methyl Bromide for Fumigation of Soil, structures and goods to be imported or exported.

One kilogram of Halon 1211 can destroy 50 tonnes of Ozone. Production and import of these chemicals are controlled by the "Montreal Protocol on Substances that Deplete the Ozone Layer (the Montreal Protocol)". There are other Ozone-depleting substances, but their Ozone-depleting effects are minimal, so they are not controlled by

the Montreal Protocol. The ozone-depleting potential measures how much damage a chemical can cause to the Ozone layer compared with a similar mass of Trichlorofluoromethane (CFC-11). CFC-11, with an Ozone depleting potential of 1.0, is used as the base figure for measuring Ozone depleting potential. The higher the number, the more damage a chemical can cause to the Ozone layer. Bromotrifluoromethane (halon1301) has an Ozone depleting potential of 10.0. Carbon dioxide ( $\text{CO}_2$ ), a naturally occurring greenhouse gas, has an Ozone depleting potential of 0.

Production of most Ozone-depleting substances has been phased out under the Montreal Protocol. In Australia and other developed countries, the phase-out of the most potent chemicals happened between 1991 and 1995. Australia's import of HCFCs, which have lower Ozone depleting potential, dropped from 250 ODPt (Ozone depleting potential tonnes) in 1996 to 2.5 ODPt in 2016. "The Ozone Protection and Synthetic Greenhouse Gas Management Act 1989" controls Australia's manufacture, import-export, use and disposal of Ozone-depleting substances. Bulk import into Australia of most of these substances (except HCFCs and methyl bromide) is banned.

Some Ozone-depleting substances with a high Ozone depleting potential are still used in quarantine and safety applications as no suitable alternative exists. Methyl Bromide is highly effective as a quarantine fumigant. Halon's immediate fire suppression qualities are needed in confined spaces such as on Airplanes and in Submarines. Research is continuing to find suitable replacements.

The global community has taken action to restore the Ozone layer. "The Montreal Protocol on Substances that Deplete the Ozone Layer (the Montreal Protocol)" came into effect in 1987. It commits countries to phase out production and import

of all the significant Ozone-depleting substances. Australia manages its obligations to this international agreement through the "Ozone Protection and Synthetic Greenhouse Gas Management Act 1989". Every four years, the World Meteorological Organisation and the United Nations Environment Programme review the state of the Ozone layer. These reviews show that the abundance of Ozone-depleting chemicals in the atmosphere is now declining. The ozone layer is expected to recover to pre-1980 levels over the mid-latitudes by 2050 and over the Antarctic by 2065.

On August 2, 2003, Scientists announced that the global depletion of the Ozone layer might be slowing down because of the international regulation of Ozone-depleting substances. In a study organized by the American Geophysical Union, three satellites and three ground stations confirmed that the upper-atmosphere Ozone-depletion rate slowed significantly during the previous decade. Some breakdowns can be expected to continue because of

ODSs used by nations that have not banned them and because of gases already in the Stratosphere. Some ODSs, including CFCs, have very long atmospheric lifetimes, ranging from 50 to 100 years. It has been estimated that the Ozone layer will recover to 1980 levels near the middle of the 21st century. A gradual trend toward "healing" was reported in 2016.

Compounds containing C-H bonds (such as Hydrochlorofluorocarbons or HCFCs) have been designed to replace CFCs in specific applications. These replacement compounds are more reactive and less likely to survive long enough in the atmosphere to reach the Stratosphere, where they could affect the Ozone layer. While being less damaging than CFCs, HCFCs can have a negative impact on the Ozone layer, so they are also being phased out. These, in turn, are being replaced by Hydrofluorocarbons (HFCs) and other compounds that do not destroy stratospheric Ozone at all.

**(SOURCE: Internet.)**

*(The Author is a Retired D.F.O. from Andhra Pradesh and can be reached on Mobile No: 8019722292 and Mail ID: vssbabu@gmail.com)*

*Do not judge me by my success, judge me by how many times I fell down and got back up again.*

**– Nelson Mandela**

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*The secret of change is to focus all of your energy, Not on fighting old, but on building the new.*

**– Socrates**

# Sighting of Grey-headed Lapwing and Grey Hypocolius

G. Ramakrishna Rao

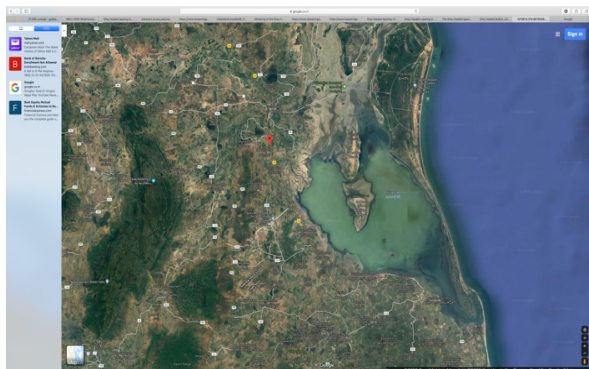


Grey-headed Lapwing (*Vanellus cinereus*) breeds in NE Asia and winters in the Northern parts of Southeast Asia (Piersma 1996). The Species is under surveyed with no exact estimation of population size existing than the broad range of 25000 – 1,00,000 mature individuals in the world. (Wetlands Internationals 2006). The Species has an extensive range and is listed as ‘Least Concern’ in the IUCN Red List of Threatened Species.

## DESCRIPTION:

The grey-headed Lapwing is 34–37 cm long. It has a grey head and neck, darker grey breast band and white belly. The back is brown, the rump is white, and the tail is black. It is a unique species in flight, with black primaries, white underwings and upper wing secondaries, and brown upper wing coverts.

Adults of both sexes are similarly plumaged, but males are slightly larger than females. Young birds have the white areas of plumage tinged with Grey, a less distinct breast band, and pale fringes to the upper part and wing covert feathers. The call of the Grey-headed Lapwing is a sharp *chee-it*.



Sighted location Grey-headed Lapwing

## BEHAVIOUR:

This species nests from April to July in wet grassland, rice fields and marshland edges. It winters in similar habitat and is then gregarious. It feeds in shallow water on insects, worms and molluscs.

85-100 Grey-headed Lapwings (*Vanellus cinereus*) were sighted near Sullurupet – Tada of National High way of Chennai, precisely 5 km away from Sullurupet. The location is 130 39'12.3" N and 80000'49.4" E. I have sighted the birds on 20th January 2019 and 21st January 2019. There were (2) small types of square ponds near the Tank, i.e., between the national highway and Tank. The location was shown on Google map. It has been sporadically reported from Andhra Pradesh. I sighted these birds on the shores of Irakkam Island on 27th December 2013, and others sighted on the Irakkam Island in 2011 also. Recently the birds were sighted in Kolleru Wildlife Sanctuary near penumakalanka near Eluru in 2018, previously also recorded the bird in Machilipatnam near Kolleru in 2013 (Conroy,2003). On 24th February 2021, I have photographed the



Distribution of Grey Hypocolius

Grey-headed Lapwing in the Kolleru area, which is on page:

Mr Sivaramprasad, Forest Beat Officer, Sullurpet Division, has reported the sighting of the Grey-headed Lapwing near the dugout trenches on the right side of Chennai- Kolkata Highway from 2019 onwards regularly.

### Grey Hypocolius (*Hypocolius ampelinus*)

Grey Hypocolius, an uncommon winter migrant, has been a regular visitor in a specific area of Greater Rann of Kutch ( particularly near the village of Fulay in the Banni region of Kutch) since 2005. The bird was seen regularly on the tree *Salvadora persica* (Toothbrush tree ). The bird is a very slim, pale sandy grey bulbul like a bird with a short, broad bill and long dark-tipped tail, dark eye, pale lower mandible with pink legs - males having a black triangular mask around the eyes. The distribution of the birds is in

Northern Africa, Afghanistan, Saudi Arabia, Pakistan and western India ( only some specific areas in Rann of Kutch ). Grey Hypocolius arrive in Fulay scrub forest in October – November and stay till March-April. The bird feeds on the ripe berries of *Salvadora persica*. It is a timid bird, always seen in the inner canopy of trees. When in a flock, generally 20-25 birds emit a sweet musical two-note call ' piew-piew'.

Due to the increased charcoal business in the Kachh area, the number of *Salvadora persica* species is reduced. Hence, the birds are found roosting on *Prosopis juliflora* and *Acacia arabica* too. Consequent to the publication of several research papers on the destruction of the species, Gujarat Government has banned charcoal making to protect *Salvadora persica* species and, in turn, the Grey Hypocolius.

I photographed these birds during the last week of February 2019 near the village of Fulay in the Banni region of Kutch (Photographs on page no: )

(The writer is retired, Dy. Conservator of Forests from A.P. and presently working as a consultant with [www.wildlife.solutions.in](http://www.wildlife.solutions.in) and can be contacted over mobile no: +91 7702537369 and email: [gubbala\\_rkrishnarao@yahoo.com](mailto:gubbala_rkrishnarao@yahoo.com))

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If you have already written, you may need to figure out a new angle. Please note- though Forestry and Wildlife-related material is preferred, other exciting day-to-day subjects can also be considered.

“Don't forget - writing is a big stress buster” and add a splash of writing skills to your life. Do share.

- [thayyab@gmail.com](mailto:thayyab@gmail.com)



*Birthday Greetings*  
*We wish the following born on the dates mentioned*  
*"A Very Happy Birth Day"*



S.No.	Name of the Member	D.O.B.	S.No.	Name of Serving Officers	D.O.B.
<b>Sarva Sri</b>			<b>Sarva Sri</b>		
1.	Satish Chandra	06-12-1939	1.	Sidhanand Kulreti	19-12-1961
2.	B. Naganath	08-12-1949	2.	P.V. Raja Rao	20-12-1962
3.	Ch. Lylaiah	08-12-1949	3.	Binod Kumar Singh	02-01-1964
4.	P. Satyanarayana	10-12-1953	4.	G. Ramalingam	05-01-1965
5.	A.V. Govinda Rajulu	11-12-1945	5.	G. Nageshwar Rao	10-12-1960
6.	S.D. Mukherji	14-12-1940	6.	Kavitha Narayandas	11-12-1980
7.	T. Shankaraiah	16-12-1931	7.	M. Nagabhusanam	14-12-1964
8.	S.K. Das	17-12-1947	8.	A. Venkateshwarlu	15-12-1958
9.	P. Ravinder Reddy	19-12-1946	9.	Dr. B. Prabhakar	16-12-1966
10.	V. Sathasheela Babu	21-12-1947	10.	Vinay Kumar Sahu	27-12-1980
11.	G. Krishna Murthy	25-12-1954	11.	V. Venkateshwara Rao	01-01-1966
12.	G. Ravinder	30-12-1958	12.	V. Tirumala Rao	04-01-1964
13.	G. Ramana Goud	01-01-1949	13.	Mrs.V.V.L.Subhadra Devi	03-01-1982
14.	K.S. Moses	02-01-1959			
15.	C. Sudhakar Rao	04-01-1947			
16.	Y. Nageshwar Rao	04-01-1946			





## ***Stirring speech of “A Girl from Earth”***

**Vinisha Umashankar,  
Earth shot prize Finalist from Tamil Nadu at COP26**

Vinisha Umashankar, a 14-year-old girl from India and one of the finalists for the Earthshot Prizewas invited by Prince William to speak at the COP26 in Glasgow. Among her audience were world leaders, including British Prime Minister Boris Johnson, U.S. President Joe Biden, and Prime Minister Narendra Modi. She mesmerised everyone with her powerful speech on the importance of climate change. During her around 5-minute-long speech, Umashankar called for an urgent action, saying that many of her generation are angry and frustrated at world leaders who've made empty promises that they have failed to deliver. Her speech-

“For the next two weeks of Cop26, we will speak about our future - deadlines, milestones, hopes and fears. I, however, I'm not here to speak about the future; I am the future. In 2030 by when we must cuthalf our carbon emissions,I'll be just 24 years old. By 2050, when we will assess whether NetZero has been achieved or not,I'll be in my early 40s. And by 2100, hopefully still going strong at 94. The point is that me and my generation will live to see the consequences of our actions today. Yet, none of what we discussed today seems practical to me. You are deciding whether or not we will have a chance to live in a habitable world. You are deciding -whether or not we are worth fighting for, worth supporting and worth caring for.”

“Many of my generations are angry and frustrated at leaders who have made empty promises and failed to deliver. And we have every reason to be angry. But I have no time for anger. I want to act. I'm not just a girl from India, I'm a girl from Earth, and I'm proud to be so. I'm also a student,

innovator, environmentalist and entrepreneur. But most importantly, I'm an optimist. Today I ask with all due respect that we stop talking and start doing. We, the Earth shotprize winners and finalists, need you to back our innovations, projects and solutions. Not an economy built on fossil fuels, smoke and pollution.”

“We need to stop thinking about old debates because we need a new vision for a new future. So you need to invest your time, money and effort in us to shape our future. Now, just before we started your shot prize, we all watched a video in which the former U.S. President John F Kennedy gave his legendary moon shot speech. And here,on the cop 26 stage today, I would like to update that speech for the Earth shot prize. Where there are shot prize winners and finalists choose to by the end of this decade to protect and restore our nature, clean our air, revive our oceans,build a waste-free world and fix our climate and we are the proof that the greatest challenge that the history of our Earth has ever seen, is also the greatest opportunity.”

“We lead the greatest wave of innovation that humanity has ever known. On which shows not to complain, but to take actions that will make us healthier and wealthier. And we choose to do these things not because they are easy, but because they are hard. And rising today's challenges will shape the new generation - a generation that will build a better world for all of us and generations to come.”

“On behalf of the Orchard prize winners and finalists, I invite you to join us. I invite you to stand with us. And we hope that you will give up the old

Contd.. on page No.55

## Rheumatoid Arthritis (R. A.)

Dr. N.V. Jayanth Babu



**Rheumatoid Arthritis (R.A.) is a chronic, progressive, systemic, auto-immune disorder that causes painful inflammation in the bone joints - leading to deformity and immobility in fingers, wrists, feet, and ankles.** Generally, a person's immune system protects the body and gives strength to resist diseases. It creates antibodies to fight against pathogens, foreign bodies that enter into our system. **In R.A., a person's immune system attacks their body tissues. As a result, such a body becomes susceptible to the invasion of pathogenic organisms like bacteria and viruses that cause damage to our system.**

The tissues like cartilage, ligaments and synovial glands of all joints are affected initially. If neglected, it will also affect the lungs, eyes, mouth, heart, kidneys and other vital organs in the body. The percentage of incidence of R.A. Globally is about 1 %, and in India, it is 0.75 % of the total population. This occurs at the age in-between 40 to 60 years. In some cases, even children and young adults are also prone to R.A. **Women are more susceptible to this disease.** In the initial stages, people with this disease may experience tiredness, loss of body weight, numbness in hands and sometimes experience fatigue.

It starts appearing in small joints initially. Symptoms indicating- Symmetrical polyarthritis, pain, swelling, and rheumatoid nodules appear at the opposite sides of limbs, like elbows and wrists. Gradually synovial membrane linings are subjected to infection followed by inflammation at the bone joints. Cartilage, tendons and ligaments

are damaged, resulting in bone erosion. Bones are bent, and alignment is lost, resulting in deformity. Joints become stiff, and movements would be arrested. Finally, R.A. affected people are to be confined to a wheelchair.

R.A. can be diagnosed based on overall patterns and symptoms and from the analysis of blood samples for R.A. factor, E.S.R., C.R.P., C.B.P., T.C., DC, X Rays, M.R.I. scan and Ultrasound tests.

**Doctors follow various approaches to treat R.A., like medications, changing of lifestyle, surgery. Their goals are to relieve pain, reduce joint damage and inflammation, but permanent cure and complete eradication are not assured.**

### Classification of Stages in Rheumatoid Arthritis based on symptoms:

As R.A. progresses, specific changes in the body can be noticed clearly, and some changes cannot be seen. Each stage has different treatment goals, and hence for ascertaining the intensity of the disease.

- 1) **Stage - I:** Initially starts appearing in small joints like fingers of hands or feet. It is associated with pain in joints, stiffness and inflammation of synovial linings.
- 2) **Stage - II:** Synovial linings inflammation leads to damage of cartilage in the affected joints. Movements become limited.
- 3) **Stage - III:** This stage is considered severe. The damage extends from the synovium and cartilage up to the bone joints. Bone joints start eroding.

4) **Stage - IV:** This is the end stage of R.A. Loss of mobility due to stiffness, pain, swelling and reduced muscle strength are experienced. Joints are destroyed, and bones in the joint become fused. This condition of joint is called Ankylosis. Cartilage, ligaments, tendons are damaged, resulting in bone erosion. Bones are bent alignment lost, resulting in deformity. To be confined to a wheelchair.

**The factors responsible for Rheumatoid Arthritis are yet not known clearly. Whereas, most of the factors contributing to the incidence of R.A. are as detailed below.**

1. Inheritance through Genes.
2. Imbalance in the secretion of hormones.
3. Accumulation of toxins, free radicals, chemical wastes and uric acid in blood in excess.
4. Consumption of more salt in our daily food and deposition of the same in excess, in the bone joints.
5. Usage and consumption of more oils, spices in our food.
6. Adverse environmental conditions.
7. Unhygienic and irregular food habits.
8. Constipation – chronic in nature and bowel infections.
9. Obesity and lack of regular physical exercises.
10. Usage of Tobacco.
11. Viruses and infectious agents.
12. The presence of low immunity in the body resulted due to stress and deficiency of vitamins & minerals.
13. Psychosomatic disorder.

**\*In Allopathy,** medicines containing antioxidants, vitamins A, E, and supplements of Zinc, copper are being prescribed to be used for more extended periods continuously for more than

1 to 2 years. Other drugs being prescribed are 1. DMARDS (Disease-Modifying anti-rheumatic Drugs) like methotrexate, Leflunomide, Hydrochloroquine, Minocycline and Sulphasalazine. 2. NSAIDs (Non-Steroidal Anti Inflammatory Drugs) like Ibuprofen, Aspirin, Diclofenac Sodium, external application capsaicin cream, topical OTP cream, D.F. sodium gel etc. are generally being prescribed. Whereas using such medicines for more prolonged periods results in side effects like stomach ulcers, damage to the kidney, erosion or burning a hole through intestines or stomach result in bleeding, Osteoarthritis etc. 3. Corticosteroids like betamethasone, prednisone, cortisone, dexamethasone etc., are used. The side effects are high B.P., stomach ulcers, high blood sugar, osteoporosis, hair fall, cataract etc. 4. Immune suppressants like cyclosporine, cyclophosphamide, Azathioprine, Hydro chloroquine are being used. The side effects are a decrease in immunity power in the body. As a result, the body becomes susceptible to illness and infections.

**\*In Homoeopathy, generally,** the following drugs are being used based on the symptoms:

Bryonia alba, Antimonium crudum, Calophyllum, Actea spicata, Ferrum phos, Ferrum met, Natrum mur, Calcarea flour, and Rhustox. Whereas the symptoms and associated feelings experienced by R.A. patients differ from person to person and from time to time. Hence it requires the attention of well experienced senior Homeo doctors as this involves a laborious and time-consuming process to select the suitable drugs for treating the R.A. patients.

**\*In Ayurveda,** Rheumatoid arthritis is described as **“Aama vaaham”**, which originates from malfunctioning the digestive system due to intake of foods that are not healthy and unwanted.

**The below mentioned medicinal plants are being used for curing RA.:**

1. Ricinus communis 2. Withania somnifera 3. Boswellia serrata 4. Tinospora cordifolia 5. Aloe vera, 6. Commiphora species (Mukul) of family Burseraceae 7. Terminalia chebula, 8. Emblica officinalis. The prescribed diet contains an intake of bajra, barley, methi, turmeric, garlic, cumin, dry ginger, long pepper, flax seed and others.

**The following are to be avoided and discarded totally in Ayurveda treatment:**

Wheat, Maize, Soya bean, Pea, Potato, Hibiscus cannabinus (Gongura), Brinjal etc.,

**\*In Naturopathy**, for curing R.A., the following treatment procedure is being followed for 6 to 12 months depending on the intensity of the disease under the supervision and guidance of a doctor in a pleasant and serene atmosphere. **The doctors assure complete cure. At the same time, the same lifestyle modifications are to be continued further throughout our lifetime.**

Various processes are involved in the **elimination** of the accumulated preponderance of toxins,

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salts, chemical wastes, free radicals and dead cells, and other harmful wastes from the body through ('visarjanam'), 'vamanam', 'virochanam,' 'swedanam' and other methods - are attended periodically.

1. Constipation problem, if any, is addressed suitably.
2. Water intake of 4 to 5 litres per day is ensured to eliminate unwanted wastes and cleanse inner organs.
3. Intake of natural food in lunch without salt, oils, spices, chillies, tamarind, rice, chapatti, curds is ensured
4. For dinner and breakfast, the only menu would be dry fruits, fruits, sprouts, and fruit juices - in limited quantities are provided.
5. Fasting with fruit juices is to be done periodically repeatedly.
6. Meditation, pranayamam', 'nadi sudhhi pranayamam' and relevant exercises are to be done every day in the morning and evening.

**(To be continued.)**

*Failure is an option. If things are not failing,  
you are not innovating enough.*

**– Alon Musk**

Continuation from page No.52

ways of thinking and the old habits. But let me be clear - when we invite you to join us, we will lead even if you don't. We will act - even if you delay. And we'll build the future, even if you are still stuck in the past. But please accept my invite, and I assure you, you

will not regret it. And finally, just remember - when it comes to climate change, there is no stop button. We can't hit pause or even rewind. We can only move together towards the future. So United, we rise, and together we will definitely succeed. Thank you."



## LEGAL NOTES

### State of Madhya Pradesh Vs. Uday Singh

Forest Officers in Madhya Pradesh seized a tractor and trolley on 26.03.2011, as they were illegally used for excavation of sand from Chambal River which is a Sanctuary. Cases were booked under the Forest Act and Wildlife Protection Act. The Magistrate having jurisdiction over the area was informed of the seizure of the property.

An application under S. 451 Cr.P.C was filed by the owner of the tractor and trailer before the Magistrate with a request to release the seized property; but the application was dismissed on 21.04.2016 by the Judicial First class Magistrate, Ambah. On appeal against the order of the Magistrate, the order was confirmed by the Additional Sessions Judge, Morena..Thereupon, the appellant/petitioner approached the High Court and filed an application under S. 482 Cr.P.C. The High Court passed an order directing the Magistrate for interim release of the seized property.

Aggrieved by the order of the High Court, the State of M.P filed Crl. A. No. 524/2019 in the Supreme Court. The matter was heard by a Bench comprising The Hon'ble Justice Dr. Dhananjaya Y. Chandrachud and The Hon'ble Justice Hemant Gupta. The court after hearing the arguments of both sides passed the verdict on 26.03.2019.

Their Lordships took into consideration rival contentions and examined the case in the light of the several decisions of the Supreme Court and High Court, chief among them are:

From the statutory provisions and the analysis of the facts made, the position that emerged was that the Learned Magistrate and the Learned Sessions Judge were right, in the facts and circumstances of the case, it is the Authorised Officer who is vested with the power to pass order for interim custody and not the Magistrate. Criminal Proceeding is distinct from Confiscation proceeding. The proceedings can be held parallel.

The following observations of Their Lordships are worthy of attention:

“The Madhya Pradesh amendments to the Indian Forest Act 1927 are infused with a salutary public purpose. Protection of forest against depredation is a constitutionally mandated goal exemplified by Article 48 A of the Directive Principles and Fundamental Duty of every citizen incorporated in Art. 51 A (g). By isolating confiscation of forest produce and instruments utilized for commission of offence from criminal trials the Legislature intended to ensure that confiscation is an effective deterrent. The absence of effective deterrence was considered by the Legislature to be deficiency in the legal regime. The State amendment has sought to overcome that deficiency by imposing stringent deterrents which threaten the pristine existence of forests in Madhya Pradesh. As effective

tool for protecting and preserving environment, these provisions must receive purposive interpretation. Art. 48 A lays down, that the State must endeavour to protect and improve the environment and safeguard forest and wildlife of the country.”

“Art 51 A (g) provides that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes and rivers and wildlife, and to have compassion for living creatures. For, it is only when the interpretation of law keeps pace with the object of legislature that the grave evils which pose a danger to our natural environment can be suppressed. The avarice of humankind through the ages has resulted in an alarming depletion of the natural environment. The consequences of climate changes are bearing down on every day of our existence. Statutory interpretation must remain eternally vigilant to the daily assault on the environment.”

In the circumstances the Supreme Court was pleased to allow the appeal and set aside the order of the High Court dated 07.07.2011.

For the reasons which have been indicated in the judgment in the present appeal (S.L.P. No. 2001of 2012), Crl. A. No. 525/2019 (S.L.P. No. 5413of 2013) State of M.P. Vs. Rakesh Lavaniya, the order of the High Court dated 07.07.2011 is set aside and the appeal is allowed.

For the reason which have been indicated in the judgment and orders of the High Court dated 07.07.2011in Adikshak Rashtriya Chambal Abhiyan Vs. Narotham Singhare set aside and the appeals are accordingly allowed.

For the reasons which have been indicated in the judgment (S.L.P. no. 2001 of 2012), Authorised Officers & Sub-DFO Shivpuri Vs. Jasraj Singh, the judgment dated 07.07.2011is set aside and appeal is allowed.

**Source:** Internet

**K.B.R**

## **NEWS AND NOTES**

Forest Survey of India Cell is likely to be set up in Aranya Bhavan. Director-General of FSI Sri Anoop Singh, during his visit to the Department on 20.11.2021, has made a request to the Telangana Forest Department to provide space and necessary manpower for the same. The Prl.CCF&HoFFSmt R. Sobha informed that a letter has already been addressed accepting the proposal.

Sri Anoop Singh has suggested for involvement of Survey of India, apart from Telangana State Remote Sensing Applications Centre, National Remote Sensing Centre and for forming of a working group for the monitoring the digitization of forest boundaries. (**Source:** *The Hindu* dated 21.11.2021)

## KAISER-I-HIND is Arunachals's State Butterfly

The insect with a 90-120 mm wingspan is found in the eastern Himalayas



An elusive swallow tail butterfly carrying 'India' in its name and found in next-door China has become the State butterfly of Arunachal Pradesh.

The State Cabinet headed by Chief Minister Pema Khandu approved the large, brightly coloured Kaiser-i-Hind (*Teinopalpus imperialis*) as the State butterfly. Kaiser-i-Hind, literally means Emperor of India. This butterfly with a 90-120 mm wingspan is found in six States along the Eastern Himalayas at elevations from 6,000-10,000 feet in well-wooded terrain. The butterfly also flutters in Nepal, Bhutan, Myanmar, Laos, Vietnam, and southern China.

### SAVING THE SPECIES

The State Wildlife Board had in January 2020 accepted the proposal from Koj Rinya, the divisional forest officer of Hapoli Forest Division in the Lower Subansiri district to accept the Kaiser-i-Hind as the

State butterfly. The proposal was made with a view to boosting butterfly tourism and saving the species from extinction in the State.

Protected areas under the Hapoli Forest Division are popular with butterfly enthusiasts. Although the Kaiser-i-Hind is protected under Schedule II of Wildlife (Protection) Act, 1972, it is hunted for supply to butterfly collectors.

### HABITAT CONSERVATION:

According to Assam-based butterfly expert Monsoon Jyoti Gogoi, the species is confined to very few pockets of Arunachal Pradesh and could become extinct if not conserved. "The State butterfly tag can translate into its habitat conservation," she said.

The first dead specimen of Kaiser-i-Hind was recorded in Sikkim by Usha Lachugpa, a senior forest official of the State, in 2012. It was captured live on camera by a few participants during a butterfly watching meet in Arunachal Pradesh's Talle Valley Wildlife Sanctuary in 2014.

An International Union for Conservation of Nature red-listed species, the Kaiser-i-Hind usually flies at tree-top level and descends to sit on low vegetation when there is strong morning sunlight. It is in flight during April-July and lays eggs on the underside of leaves.

(SOURCE: THE HINDU, dated:15.11.21)

*Success is a slow process,  
but quitting won't speed it up*



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